

Towards improving community pharmacy practice in the United Arab Emirates

A thesis submitted for the degree of
DOCTOR OF PHILOSOPHY

by

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Notice 1

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Errata and Addendum

Page 69: Table 1: years in practice, 2nd line: “6-15” for “5-15”

Page 138: line 11, close parenthesis: “for optimum pharmacotherapy”).

Page 240: Divide quote into two quotes on pages 240 & 244:

Page 240 only as: “The mentality should be changed first, the awareness of such coordination or such process.

AM-F# 5”

Page 244, after 1st para: Insert the remainder of quote from AM-F# 5: “....and second, it should give some benefit. Meaning not only to complicate the process, but to have some benefit out of that, to be sure that it is more beneficial for the patient, (that) the doctor is now having more time for other procedures, other things, to sit with the patient. I mean it should show that it is better than the old system, then why not?

AM-F# 5”

Page 254: line#4: (Snyder et al., 2010) for Snyder et al., 2010

Page 267: 1st para: Replace 2nd sentence with: “Competency standards and the code of ethics governing the type and level of practice expected from pharmacists in the UAE need to be expanded to include standards of practice and ethical guidelines pertaining to this new career path.”

Page 268: Replace entire 2nd para with: “Training programs for pharmacists are needed with academics having a pivotal role in providing these programs. This may be through continuing professional development programs that are structured to serve competency standards for new skills. For instance, these programs should initially be tailored to provide training in primary care provision and communication skills, gradually becoming more specialised to deliver education and training in the skills required to provide higher level pharmaceutical care.”

Page 269, 2nd para: Replace 1st sentence with: There is a need for academics to conduct research in collaboration with community pharmacy to investigate pharmacists’ perspectives on collaboration with physicians.”

Page 269, 3rd para: Change to two para’s:

“2. Modelling of collaborative practice in pilot studies involving physicians who are willing to collaborate with pharmacists would illustrate the concept to the wider professional community. Publishing the collaborative experience and its findings possibly at local multidisciplinary conferences would help disseminate the information.”

“3. Introducing interprofessional education (IPE) at colleges of pharmacy in collaboration with other health disciplines such Medicine where pharmacy and medical students/residents are trained at university hospitals or clinics should be explored. Early exposure of health professionals to collaborative learning and practice philosophy will help in fostering team building and collaborative interprofessional care, and overcome some of the barriers embedded in current practice.”

*To my family; my husband Asad, my boys Ehab and Osama,
and my girls Daneya and Manar*

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Abstract

Medication use has become complex due to increase in medications available on the market and other advances in medicines and patient management. Pharmacists, given their unique position in the healthcare system and accessibility to communities at large, have a pivotal role in optimising medication therapy and patient safety. Often, they are the patients' first point of contact with the healthcare system. Accordingly, it is important to strategically ensure optimal pharmacy services. This can be achieved with input from key stakeholders (i.e. pharmacists, patients and physicians).

The limited evidence from developing countries shows sub-optimal quality of community pharmacy services and the need for major improvements. Indeed, evidence about community pharmacy services from the key stakeholders' perspectives in the United Arab Emirates (UAE) remains unknown. Such information is valuable to facilitate development of policies and interventions to optimise community pharmacy services in the UAE context. Therefore, this thesis aimed to characterise current community pharmacy practice in the UAE and propose recommendations for improvement. The research presented in this thesis comprised three phases.

Phase one was a survey of the characteristics of community pharmacy practice and the type and frequency of professional services provided through community pharmacies in the UAE. A self-completed questionnaire was delivered by hand to a systematic sample of community pharmacies (n = 700; response rate 49%). Community pharmacists worked long hours (≥ 48 hours/week) and were possibly inadequately trained to provide enhanced pharmacy services. There is no

professional pharmacy organisation in the UAE, which may be a barrier to development of services. High turnover of pharmacists was recognised, which could be due to low job satisfaction and poor remuneration. Sub-optimal quality of services was reported. Fewer than one-third (29%) reported they always supplied medication information to patients; most pharmacies (92%) did not routinely keep patient records; and screening and monitoring services were provided by only a small number of pharmacies. Clearly, enhancements in human resource-related conditions and improvements to the professional role of the pharmacist are needed. This phase has, for the first time, documented baseline workforce and service-related information that is critical for future improvement of the community pharmacy practice in the UAE.

Phase two was an investigation of patients' satisfaction with current community pharmacy services and other services that they would be likely to use if they were provided through community pharmacies. A questionnaire was specifically developed and validated for the Arabic context, and was hand delivered to a convenience sample of participants in public places for self-completion (n = 500; response rate 93%). Four dimensions of satisfaction emerged from factor analysis: Information, Relationship, Accessibility and Availability. Low patient satisfaction scores (on a 5-point Likert-type scale: 1 = poor to 5 = excellent) with most services were observed. Patients wanted more information about their medications, self-management and advice on healthy lifestyle (mean±SD = 2.49±1.19). They also requested more personal care, which was considered a measure of trust in the competence of the service provider (mean±SD = 3.05±1.07). Patients were also dissatisfied with the physical characteristics of the pharmacy such as waiting and private areas (mean±SD = 2.80±1.33). Patients would be likely (on a 3-point Likert-type scale: 1 = unlikely to 3 = very likely) to use a wide range of services if provided in

the future. This study has, for the first time, provided pivotal information on areas needing improvement from the perspective of patients, and on what could possibly lead to better patient satisfaction and utilisation of the services provided through community pharmacy in the UAE.

Phase three utilised a qualitative approach involving 27 one-to-one semi-structured interviews and five focus group discussions among physicians to explore their opinions on pharmacists' roles in providing primary care services in the community and on collaborating with pharmacists. Emerging themes included: Competency, Business orientation, Territorial control and Service delivery/patient care. There was support for roles that related to the provision of information on medications and their use. Benefits of collaborative care were recognised. Facilitators of success were identified as clear role definition, efficient communication and trust building. Barriers to success included lack of acceptance by both physicians and patients, pharmacists' competence, and administrative factors. This was the first study to provide valuable insight into pharmacist-physician relationships in the UAE and into what promotes collaboration between them.

In working towards improving community pharmacy practice in the UAE, this research is unique in that it has considered the views of the key stakeholders: pharmacists, patients and physicians. This thesis has identified shortcomings in the provision of community pharmacy services which could have negatively affected patient satisfaction and physicians' perspectives of pharmacists' roles. Significantly, this thesis has generated crucial recommendations to guide decision making by stakeholders such as policy makers, government authorities and pharmacists with respect to the planning, design and offering of interventional programs that will lead to improvement of community pharmacy practice in the UAE.

General Declaration

Declaration for thesis based or partially based on conjointly published or unpublished work

In accordance with Monash University Doctorate Regulation 17/ Doctor of Philosophy and Master of Philosophy (MPhil) regulations the following declarations are made:

I hereby declare that this thesis contains no material which has been accepted for the award of any other degree or diploma at any university or equivalent institution and that, to the best of my knowledge and belief, this thesis contains no material previously published or written by another person, except where due reference is made in the text of the thesis.

This thesis includes **three** original research papers published in peer reviewed journals and **three** unpublished (submitted) manuscripts. The core theme of the thesis is *Towards improving community pharmacy practice in the United Arab Emirates*.

The ideas, development and writing of all the papers in the thesis were the principal responsibility of myself, the candidate, working within the Centre for Medicine Use and Safety, Monash University, under the supervision of Dr David CM Kong, A/Prof Kay Stewart, Prof Colin Chapman and Prof Mohammed Yousif Hasan (University of United Arab Emirates).

The inclusion of co-authors reflects the fact that the work came from active collaboration among researchers and acknowledges input into team-based research.

In the case of Chapters 3, 4, 6, 7, 9, and 10, my contribution to the work involved the following:

Thesis chapter	Publication title	Publication status	Nature and extent of candidate's contribution (%)
3	Community pharmacy in the UAE: characteristics and workforce issues.	Published	Conducted literature review; participated in survey design and methodology; secured ethics approval; participated in data collection, management and analysis; and prepared manuscript (80%).
4	Community pharmacy services in the UAE	Published	Conducted literature review; participated in survey design and methodology; secured ethics approval; participated in data collection, management and analysis; and prepared manuscript (80%).
6	Assessing patient satisfaction with community pharmacy in the UAE using a newly validated tool	Published	Designed and validated questionnaire based on literature review; established survey methodology; secured ethics approval; participated in participant recruitment and data collection, management and analysis; and prepared manuscript (75%).
7	Patient expectations of primary care pharmacy services in the UAE	Submitted	Designed and validated questionnaire based on literature review; established survey methodology; secured ethics approval; participated in participant recruitment and data collection, management and analysis; and prepared manuscript (75%).
9	Physicians' attitudes towards provision of primary care services in community pharmacy in the UAE	Submitted	Developed interview guide; secured ethics approval; recruited participants; conducted interviews and focus groups; sought external collaboration; analysed data; and prepared manuscript (80%).
10	Pharmacist-physician collaboration in patient care: physicians' perspectives in the UAE	Submitted	Developed interview guide; secured ethics approval; recruited participants; conducted interviews and focus groups; sought external collaboration; analysed data; and prepared manuscript (80%).

I **have not** renumbered sections of submitted or published papers within the thesis.

Sanah Hasan

Date

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Publications and presentations

Published/In Press journal articles

- 1) **Hasan S**, Suleiman H, Stewart K, Chapman CB, Hasan MY, Kong DCM. Assessing patient satisfaction with community pharmacy in the UAE using a newly-validated tool. Research in Social and Administrative Pharmacy. In Press. Available online 29 Oct 2012: www.sciencedirect.com.
- 2) **Hasan S**, Suleiman H, Chapman CB, Stewart K, Kong DCM. Community Pharmacy Services in the United Arab Emirates. International Journal of Pharmacy Practice. 2012; 20(4): 218-225.
- 3) **Hasan S**, Suleiman H, Chapman CB, Stewart K, Kong DCM. Community pharmacy in the UAE: characteristics and workforce issues. International Journal of Pharmacy Practice. 2011; 19(6): 392-399.

Submitted journal articles

- 1) **Hasan S**, Sulieman H, Stewart K, Chapman CB, Hasan MY, Kong DCM. Patient expectations of primary care pharmacy services in the UAE. Patient Education and Counselling, February, 2013.
- 2) **Hasan S**, Stewart K, Chapman CB, Hasan MY, Kong DCM. Physicians' attitudes towards provision of primary care services in community pharmacy in the UAE. Research in Social and Administrative Pharmacy, March, 2013.

- 3) **Hasan S**, Stewart K, Chapman CB, Hasan MY, Kong DCM. Pharmacist-physician collaboration in patient care: physicians' perspectives in the UAE. Social Science & Medicine, March, 2013.

Conference presentations

- 1) **Hasan S**, Stewart K, Kong DCM, Chapman CB, Hasan MY. Physicians' perspectives on community pharmacists' role in promoting medication safety. Poster presentation. The 5th Medication Safety Conference. Abu Dhabi, UAE. November, 2012.
- 2) **Hasan S**, Stewart K, Kong DCM, Chapman CB. Patient satisfaction with community pharmacy services in the UAE. Invited speaker. World Pharmacist Day, MoH-Sharjah University collaboration. Sharjah, UAE. September, 2012.
- 3) **Hasan S**, Chapman CB, Stewart K, Kong DCM. Public Health Roles and Perspectives of Community Pharmacy in the UAE. Poster presentation. European Society of Clinical Pharmacy Conference. Dublin, Ireland. October, 2011.
- 4) **Hasan S**, Chapman CB, Stewart K, Kong DCM, Suleiman H, Hasan M Y. Community Pharmacy Practices in the UAE: Reflections on Patient Safety. Oral presentation. The 4th Medication Safety Conference. Abu Dhabi, UAE. April, 2011.
- 5) **Hasan S**, Chapman CB, Stewart K, Kong DCM. Community Pharmacy in the UAE: Characteristics and workforce issues. Proceedings of the Australasian Pharmaceutical Science Association Annual Conference (Posters: Pharmacy Practice – P-09), Brisbane, Australia, December, 2010.
- 6) **Hasan S**, Chapman CB, Stewart K, Kong DCM. Community Pharmacy Practice: What is happening in the UAE. Oral presentation. DUPHAT Conference. Dubai, UAE, 2010.

List of Abbreviations

Ad hoc	Latin abbreviation meaning “for the specific purpose”
ANOVA	Analysis of Variance
APTCare	Anticipatory and Preventative Team Care
ASHP	American Society of Health System Pharmacists
BNF	British National Formulary
BPS	Board of Pharmacy Specialties
CATI	Computer-assisted telephone interviewing
CHD	Coronary heart disease
CI	Confidence interval
CWAs	Collaborative Working Agreements
DHA	Dubai Health Authority
EAFP	European Association of Faculties of Pharmacy
FIP	International Pharmaceutical Federation
FP	Family physician
FTE	Full-time equivalent
GPP	Good Pharmacy Practice
GPs	General practitioners
HAAD	Health Authority of Abu Dhabi
IMPACT	Integrating family Medicine and Pharmacy to Advance primary Care Therapeutics
INR	International normalised ratio

IOM	Institute of Medicine
IP	Independent prescribing
KMO	Keiser-Meyer-Olkin
LPS	Local Pharmaceutical Services
MoH	Ministry of Health
MTM	Medication Therapy Management
MUR	Medicines Use Review
NP	Nurse practitioner
OSCE	Objective structured clinical examination
OTC	Over-the-counter
PCSQ	Pharmaceutical Care Satisfaction Questionnaire
PES	Pharmacy Encounter Survey
PharmD	Doctor of Pharmacy
PHC	Primary health care
PhD	Doctor of Philosophy
PPCI	Pharmacist-Physician Collaborative Index
PSQ	Patient Satisfaction Questionnaire
RPSGB	Royal Pharmaceutical Society of Great Britain
SD	Standard Deviation
SP	Supplementary prescribing
STIs	Sexually transmitted infections
SWOT	Strengths, Weaknesses, Opportunities and Threats
TB	Tuberculosis

UAE	United Arab Emirates
UK	United Kingdom
USA	United States of America
VAPS	Value-Added Pharmacy Services
VSQ	Visit-specific Satisfaction Questionnaire
WHO	World Health Organisation
WWW	World Wide Web

Chapter 1: Community pharmacy practice: roles, influences and services

1.1 Introduction

Provision of quality healthcare services faces many challenges, including high cost of health care, limited finance and manpower, inefficient healthcare systems and the burden of disease.[1] Additionally, problems with medication misuse are on the rise. These range from improper prescribing by physicians and improper dispensing by pharmacists to improper adherence to therapy by patients.[2] The Institute of Medicine (IOM) report entitled *To Err Is Human: Building a Safer Health System* drew attention to the occurrence, clinical consequences, and cost of medical errors in the United States of America (USA).[3] The report estimated that between 44,000 and 98,000 deaths occur annually from medical errors. In 2006, the IOM report, *Preventing Medication Errors*, estimated that at least 1.5 million patients are harmed each year in the USA by medication errors.[4] Drug misadventure can result in consequences ranging from minor discomfort, to hospital admissions, to death. Patel *et al.* attributed 28% of emergency room visits to medication-related problems, and of these, 24% resulted in hospital admission.[5] In addition, over the last 40 years, the number of medications, including the so-called lifestyle medications, available in the market has grown significantly; add to that the increased use of medications resulting from evidence-based treatment protocols.[1] This rising misadventure and complexity associated with the use of medications emphasises the need for increased pharmacist involvement in providing care for patients.

Empirically, pharmacists have a unique position in the healthcare system because of their location within communities, making them the most accessible healthcare provider; patients visit

community pharmacies more often than any other healthcare setting.[6] This also means they are often the first port of entry into the healthcare system, acting as a gate keeping mechanism for access to secondary care.[7] In many developing countries, pharmacists are the only health professional available to the population, making their responsibility in providing safe, effective and reasonably-priced pharmaceuticals even more pressing in these regions.[8]

Pharmaceutical care is the pharmacy profession's approach to providing optimal and safer patient care. It is defined as "the responsible provision of drug therapy for the purpose of achieving definite outcomes that improve a patient's quality of life." [9] In pharmaceutical care (or patient-centred care), the role of the pharmacist is that of a provider of health care (i.e. patient focused) rather than a drug compounder and distributor (i.e. product focused). As such, the pharmacist takes responsibility for the outcomes of a patient's drug therapy by ensuring that it is appropriately indicated, using the safest and most effective available agent(s), all with the aim of achieving better quality of life for the patient.[9] The value of pharmaceutical care in achieving better patient safety and outcomes has been documented in many studies, most of which come from developed countries.[10-20] Better patient outcomes have been reported for a wide range of disease states such as heart disease, infectious diseases, haematology, hyperlipidaemia, hypertension and diabetes.[11,13,16,17,19,20] Other documented benefits include cost-effective therapy, prevention of medication errors, improved patient quality of life and better collaboration with other health professionals.[10,12,14,15,18]

For pharmacists to deliver optimal pharmaceutical services, input from key stakeholders such as patients and physicians is needed. Patients' perspectives are an important element in assessing the quality of the services. Assessment of patients' satisfaction can help improve clinical, service

and cost outcomes of healthcare systems through understanding patients' views on how well these systems are meeting their expectations.[21] Additionally, pharmacists' contribution is best delivered in a multidisciplinary fashion; enhanced pharmacist-physician collaboration has produced positive outcomes including safe, effective and less costly therapy, ultimately leading to better patient care.[22-27] Physicians' input into pharmacists' roles is vital in identifying areas of the services needing improvement, and in helping to improve interprofessional collaboration.

1.2 What is the role of a community pharmacist?

In addition to the pharmaceutical care role, the World Health Organization (WHO) concept of the seven-star pharmacist offers a holistic view of the role of the pharmacist as care-giver, communicator, decision-maker, teacher, life-long learner, leader and manager.[28] This concept was adopted by the International Pharmaceutical Federation (FIP) in 2000 and subsequently expanded to the 7+1 star pharmacist, with the added function of the pharmacist as a researcher.[1] The WHO, FIP and other professional organisations emphasise the underuse of local pharmacy services and propose that pharmacists could offer much more to the health care of individuals and populations, especially in developing countries.[29,30] For pharmacists to deliver quality care, they need to be adequately trained and resourced. Unfortunately, this is not the case in many countries especially those in the developing world. The number of pharmacists per 10,000 population varies greatly among countries, with the lowest-income developing countries having the lowest numbers.[31]

The WHO Revised Drug Strategy resolution, relating to the role of the pharmacist in public health and the use of medicines, emphasised the responsibility of the pharmacist to provide

informed and objective advice on the use of medicines and in illness prevention and health promotion.[32]

More specifically, the Royal Pharmaceutical Society of Great Britain (RPSGB) proposed that community pharmacists' contribution to health care is centred around five themes:[33]

- Management of prescribed medications: pharmacists should help patients get the maximum benefit from their medications; their involvement ranges from drug development to dispensing to the supply of information and counselling.
- Management of long-term medications: pharmacists should be involved in the development of treatment protocols assuring best available treatment options are followed.
- Management of common ailments: pharmacists play an important role in advising patients in self-treatment, in helping them choose appropriate non-prescription medications and in referring them to other professionals when appropriate.
- Promotion and support of healthy lifestyles: pharmacists help people stay in good health by involvement in screening services and community education. These include blood pressure measurement, cholesterol testing, pregnancy testing, glucose testing, diabetes education and smoking cessation programs.
- Giving advice and support for other health professionals: pharmacists offer expertise about the appropriate use of medications.

An important element in defining the pharmacist's role and influencing a mindset for adopting the pharmaceutical care philosophy, is the type of education and training a pharmacist receives.

Establishing standards for pharmacy practice is also pivotal in influencing and ensuring consistency and type of pharmacy practice.

1.3 The education of the pharmacist

To deliver quality care for their patients, pharmacists need to have appropriate education and training. Pharmacy education varies from country to country and contributes to shaping the nature of practice prevailing within a specific country.[30] As the practice of pharmacy becomes more patient-centred, pharmacy education at both pre-registration and post-registration levels needs to support this change.[34,35] The FIP policy states that the changes in the pharmacist's role must be reflected in the basic and continuing education of pharmacists, and recommends that educational outcomes include pharmaceutical care of both patients and populations, resource management (e.g. human, medical, informational, technological and medication usage), and involvement in public health at the micro and macro levels.[34,35]

In 1999, the European Association of Faculties of Pharmacy (EAFP) proposed a shift in pharmacy education programmes from laboratory-based sciences to practice and clinical sciences.[36] These changes require major commitment to the development of teaching staff to enable them to deliver education in innovative ways, such as problem-based and team-based learning methodologies.[30] Experiential placements are also important in exposing students to role model practices.[37] These approaches have been adopted by pharmacy schools at universities in a number of developed countries, such as the USA, UK,[38-40] Australia and the Netherlands.[30]

1.3.1 Pharmacy education in Arab countries

Most pharmacy education programs in Arab countries including the UAE, typically offer a five-year baccalaureate degree, with a one to two year post-graduate training period being required in some countries.[41] Higher level degrees are also offered, with nine countries offering an MSc degree, six offering a PhD and five offering a PharmD degree.[41] These higher level programs are usually accredited nationally, but lack regional or international accreditation.[42] The number of admissions to pharmacy programs varies greatly between countries with 20 students in Qatar to 13,000 in Egypt.[43,44] Countries with high numbers of graduates, like Egypt and Jordan, are major contributors to the pharmacy workforce in Arab countries whose graduate numbers do not meet their manpower demands.[44] Experiential training needed to fulfil the requirements of a pharmacy degree varies among Arab countries, with some not requiring any training (as is the case in some Egyptian universities) while others require structured periods of training that range from 10 to 36 weeks (36 weeks in the case of the PharmD degree).[44-47] Students mainly receive training in distributive functions and drug manufacturing in community pharmacies, inpatient and outpatient hospital pharmacies and in the pharmaceutical industry.[41] Most programs in Arab countries focus on basic and pharmaceutical sciences with less emphasis on clinical and behavioural skills.[41] However, there are signs of increasing interest in enhancing clinical skills of graduates,[44,48,49] evident by the increasing number of schools offering the PharmD degree and the collaborative agreements that are being established between local and western universities.[41] Pharmacy education in the UAE began two decades ago in response to increased demand for pharmacists to work in hospitals, private community pharmacies, and the growing pharmaceutical industry in the country and the region.[50]

Currently in the UAE, there are six baccalaureate, one entry-level PharmD and one post-graduate PharmD programs.

1.4 Standards for community pharmacy practice

Standards of practice to assure the provision of consistent service, and permit assessment of the quality of pharmacy services, have been recommended by the FIP. In the *Standards for quality of pharmacy services: Good Pharmacy Practice (GPP)*, the FIP acknowledged that the characteristics of practice differ from country to country and that each national pharmacy organisation should decide what could be achieved in their own country.[34] It also suggested that a country's national standards for quality pharmacy services should be based on provision of primary care services such as promotion of health, supply of medicines and medical devices, aiding patients in self-care and improving prescribing and medicine use.[34] In an initiative to update the GPP's definition and philosophy, the FIP/WHO provided new guidelines in 2011 to reflect contemporary standards of practice and thinking.[35] The guidelines emphasised that pharmacists should have input into decisions about the use of medicines, whereby a system should exist to enable pharmacists to report and obtain feedback about medicine-related adverse events, medication errors, medicine misuse or abuse and detection of counterfeit products. Other highlighted areas were: the relationship with other health professionals, mainly physicians, which needs to be a collaborative partnership that involves mutual trust and confidence; the pharmacist should have access to essential medical and pharmaceutical information (i.e. diagnosis, laboratory test results and medical history) about each patient; and the pharmacist needs to have access to current evidence-based, unbiased, comprehensive and objective information about medications. While it is pharmacists' personal responsibility to maintain their

competence, a component of assessment and monitoring by national pharmacy organisations would be important in ensuring that pharmacists comply with requirements for continuous professional development.[35]

1.4.1 Standards for community pharmacy practice in developing countries

To help developing countries improve community pharmacy practice, the FIP has recommended a set of guidelines that could serve as the basis for negotiations with governments and regulatory bodies to ensure that pharmacists are utilised to achieve the maximum benefit of their expertise and knowledge in providing pharmacy services.[29] In setting these guidelines, the FIP acknowledged varying levels of services in different developing countries and even within the same country; urban areas tend to have more pharmacists and a higher concentration of private health coverage than rural areas. Also, as the availability of well-trained staff may not be guaranteed in all developing countries, it needs to be acknowledged that many of the pharmacists will, by default, be working in a distributive role. Consequently, FIP has recommended a step-wise approach by which an individual country could identify the level of community pharmacy services it is currently operating at and then move to a higher level of practice when it is appropriate. This suggested approach is designed to encourage individual countries to take the next developmental step in their environment.

The FIP recommendations cover various areas affecting community pharmacy practice including:[29]

- Personnel: it is acknowledged that many developing countries may not have adequate numbers of pharmacists; however, this should not compromise the principle that people

should have access to a quality pharmaceutical service. This suggests the need to train other pharmacy staff in order for appropriate services to be adequately provided. Training needs to be appropriate for the level of the service required from the pharmacy staff.

- Training: the aim is to be self-sufficient in pharmacy staff training with standards and curricula in place to assure an adequate level of local training if possible, otherwise resources must be made available to enable pharmacists to be trained elsewhere.
- Standards:
 - Facilities: standards are provided for well-equipped, adequately clean, separate premises from which to provide the service.
 - Dispensing: standards for dispensing are provided, relating to appropriate drug, dose form and instructions, containers and appropriate labelling instructions on containers, instructions about appropriate medication use, side effects, drug interactions and storage.
 - Records: standards are provided for keeping of patient records and documentation of dispensing activities to allow for retrieval of patient information and medications used.
 - Health information: appropriate health information resources need to be available to advise patients on general and specific health issues, to enable involvement in health promotion programs and to supply information to other professionals.
 - Self-medication: standards for developing protocols in responding to symptoms are recommended in order for the advice to be accurate.
- Legislation and national drug policy: all standards, guidelines and regulations need to be enforced to be successful.

1.5 Nature of community pharmacy practice

Country-specific factors have influenced the extent and speed of adoption of pharmaceutical care and recommended standards in pharmacy practice throughout the world.

1.5.1 Factors influencing community pharmacy practice

As expected, there is a wide variation in the practice of pharmacy among and within countries.[51] Countries differ in the way medications are paid for, including out-of-pocket expenses as well as private or public insurance coverage. Medication supply is completely controlled by health professionals in some countries, while in others, medications are available to the public through “free outlets”, like petrol stations.[52] Differences also exist in the requirements for pharmacy ownership; some countries require an owner to be a pharmacist while others allow non-pharmacist and corporate ownership of pharmacies.[52] Enforcement of regulatory issues also varies among countries, with fewer than one in three developing countries having an operational regulatory body.[53] Different systems to handle drug acquisition, distribution and management exist in different countries. All such factors will influence the type of pharmacy services available and define the pharmacist’s role in the healthcare system.

Goel *et al.* identified four factors that define pharmacy practice in a country: pharmacy factors, patient expectations, physician practice and local regulatory factors.[54] The pharmacy factors were related to staffing and organisational patterns (including availability and role of professional staff), sources of information on pharmaceuticals, economic incentives, staff training/education, authority structure, workload, location, competition, and pharmacy ownership. The authors argued that, since many patients self-treat, dispensing behaviour in

community pharmacies is affected by patient-related factors, which in turn depend on patients' perceived efficacy of the products and/or patients' knowledge of their illness. They also argued that physicians' quality of practice, including medical malpractice, affects pharmacy practice, as community pharmacists are likely to model their behaviour on physicians' prescribing patterns. Lastly, six regulatory factors were found to affect community pharmacy behaviour, including the number and type of products available, the education requirements of staff, scheduling of medications as prescription-only or over-the-counter (OTC), pharmacists' freedom to substitute prescribed medications, requirements for providing information, and profit margins compared to procurement costs.

1.5.2 Community pharmacy in developed countries

Pharmacy practice in Europe has seen rapid changes due to government policies, commercial pressures and therapeutic advances.[55] Governments are eagerly seeking ways to control costs, including changing the status of many medications from prescription-only to OTC availability. This means patients who would have otherwise seen a doctor, can now directly seek advice from a pharmacist to access these medications. Regulations controlling pricing of medications have become less complex, allowing sale and rebate offers to occur in pharmacies. Another factor contributing to the change in practice in many European countries is the availability of "general sales list" medications, which can be bought at a variety of retail outlets and not solely through pharmacies.[55]

An example of a European country that has undergone significant change in community pharmacy practice is the United Kingdom (UK). Multiple retail pharmacy ownership is allowed,

and services usually comprise dispensing and health advice, while in hospitals, pharmacist services are clinically-oriented.[55] Primary care pharmacy, which is a combination of clinical and administrative work in collaboration with the general practitioners, is beginning to emerge as part of pharmacy practice.[51,56,57] While most primary care pharmacists work with individual general practitioners to assist with drug audits and medication reviews, some develop pharmaceutical policy and manage Primary Care Trust budgets.[58] Primary care pharmacists tend to have a post-graduate clinical pharmacy degree to ensure appropriate competency and have access to courses specially designed to enhance collaboration with other healthcare professionals.[59]

Another major change affecting pharmacy practice in the UK was pharmacist prescribing. This resulted from two reports published in 1998 and 1999, which made recommendations to the UK government about expanding the prescribing roles of healthcare professionals.[60,61] Currently, there are two models of pharmacist prescribing in the UK, supplementary prescribing (SP) and independent prescribing (IP). SP involves a voluntary partnership between the responsible independent prescriber (a physician or a dentist), the supplementary prescriber and the patient, to implement an agreed patient-specific clinical management plan.[62] In IP, the independent prescriber is responsible for the assessment and consequent management (including prescribing) of both undiagnosed and diagnosed conditions.[63] Research into pharmacist prescribing in community pharmacy, primary care and secondary care reveals conflicting opinions as to which setting is most suitable for pharmacist prescribing.[63]

An example of a developed country with diversity in practice is the USA.[64] Individual states are governed by general federal regulations but also have their own specific laws for the control

of medicines and their dispensing. Most states have undergone legislative modifications to allow pharmacists to provide advanced patient preventive and curative therapies, such as vaccine administration and prescribing under protocol, respectively.[64] There are now several recognised pharmaceutical specialties in the USA that enable pharmacists to acquire the competencies needed to provide advanced pharmaceutical care for patients with diverse medical needs.[65] Pharmacists offering pharmaceutical care are committed to, and in some cases have succeeded in, negotiating reimbursement for these services in the same way they have for the products they dispense.[66]

The American Society of Health System Pharmacists (ASHP) considers pharmacists as vital partners with other health professionals in meeting the primary care needs of patients. Primary care has been defined as “the provision of integrated, accessible healthcare services by clinicians who are accountable for addressing a majority of personal healthcare needs, developing a sustained partnership with patients, and practicing in the context of family and community.”[67] In this definition, the core primary care element is comprehensive and coordinated care provided by an individual or a team of healthcare professionals that is tailored to patients' needs. Clinicians who provide these services are responsible for the quality of care, the satisfaction of patients, and the efficient use of resources, as well as for their own ethical behaviour.[68] Specifically, according to ASHP, primary care pharmacists perform a number of functions in collaboration with physicians and other members of the primary care team, including:[68]

- “Perform patient assessment for medication-related factors;
- Order laboratory tests necessary for monitoring outcomes of medication therapy;
- Interpret data related to medication safety and effectiveness;

- Initiate or modify medication therapy care plans on the basis of patient response;
- Provide information, education, and counselling to patients about medication-related care;
- Document the care provided in patients' records;
- Participate in multidisciplinary reviews of patients' progress;
- Communicate with payers to resolve issues that may impede access to medication therapies;
- Communicate relevant issues to physicians and other team members;
- Provide individualised health promotion and disease prevention, including administration of immunisations where this is legally and organisationally authorised; and
- Perform limited physical assessment and supervise medication therapy with appropriate collaborative drug therapy management authority.”

1.5.3 Community pharmacy in developing countries

Community pharmacies in developing countries are usually small businesses that are concentrated mainly in urban areas.[69] Urban populations in developing countries are usually wealthier than rural populations, leading to the concentration of private health care in urban areas.[30]

1.5.3.1 Arab countries

Pharmacy practice across Arab countries is similar and is affected by factors such as each country's capability to meet its own regulatory, pharmacist manpower, and pharmacist migration issues.[41] The number of pharmacy graduates in some countries, e.g. Egypt and Jordan, exceeds the needs of the country, so these countries tend to be “exporters” of pharmacists to other

countries where there is an insufficient number of local graduates, as in the case of Qatar, Saudi Arabia and the UAE.[41]

Whilst the pace of change in pharmacy education in Arab countries has been relatively rapid over the past decade, the overall pace of change in pharmacy practice has been slower.[47,70] Most community and hospital practice is distributive and product-oriented, although there has been some positive change, mainly in the hospital setting with the adoption of clinical pharmacy philosophy. As in the western environment, hospital pharmacists in Arab countries often possess an advanced degree and tend to enjoy a higher level of practice compared to that in the community.[41]

Most community pharmacies are privately owned, although there are some local and international chain stores, e.g. Life™. Generally, there are two categories of medications in the region, prescription and non-prescription. The degree of enforcement of regulations pertaining to the supply of prescription medications only on the presentation of a prescription varies between countries; the sale of prescription medications without prescription is anecdotally common practice in most Arab countries.

There is a dearth of information about the practice of pharmacy in the UAE. Pharmacists in the UAE practise in community pharmacy, hospital pharmacy, the pharmaceutical industry, drug information centres, regulatory authorities and academia.[41] Most of the pharmacists are educated outside the UAE, but this situation will change in the near future due to increased numbers of pharmacy schools in the country.[50] Notably, the UAE's pharmacy law specifies

that pharmacies must be owned by UAE citizens, and requires pharmacy operation and management to be at all times under the supervision of a registered pharmacist (not necessarily a UAE citizen).[71] This has led to a situation where pharmacists in private pharmacies fulfil administrative and managerial roles, while dispensing and patient contact is mostly undertaken by pharmacy assistants. Anecdotally, most of the private community pharmacies in the UAE do not use computerised dispensing or keep patient medicine records. As in all Arab countries, a wide range of prescription medicines, including antibiotics, anti-diabetics and anti-hypertensive medications are sold over-the-counter.[50]

1.5.3.2 Studies about the type and quality of community pharmacy services

Studies investigating community pharmacy services have used methods such as self-completed questionnaires, structured or semi-structured questionnaires administered by interviewers, simulated client methodology, and observations of pharmacy actions and interactions.[72]

Different methods have advantages and disadvantages. Self-completed questionnaires allow exploration of a wide range of pharmacy services and inclusion of a large representative participant sample, but may not accurately reflect what actually happens in practice.[73] Interviews can provide more valid assessment of participants' attitudes and knowledge than self-completed questionnaires.[74] Although the simulated client method reflects actual staff response to a requested service in the pharmacy, it is more labour intensive than other methods as it requires developing a realistic scenario of interest and careful detailed recording of the response of the pharmacy staff to the scenario.[75] Simulated client methodology is, however, limited to assessing the aspects of the services that the scenarios have been designed to cover; it

does not include the wider range of services, nor does it give explanations of the perceptions and knowledge of pharmacy staff.[75] Using more than one approach (also called triangulation) to assess pharmacy services can add objectivity to study results. Studies using multiple methodologies are able to highlight discrepancies that exist between knowledge and/or reported behaviours and actual practices occurring in community pharmacy. Unfortunately, in addition to being labour-intensive, when more than one methodology is used, or when the methodology depends on objective measures such as observation of pharmacy interactions, sample size may be compromised.[76,77]

A review of studies (discussed below) on the type and quality of community pharmacy services in the developing world (Africa, South East Asia, South Central America and India) highlighted the importance of the pharmacist's role in the supply of medications and the potential for increased involvement of pharmacists in advising patients about the selection and use of medications. Regrettably, pharmacists in such countries have been criticised for selling medications without questioning their suitability and without advising patients on appropriate use.[52]

A qualitative study of the perceived role of the pharmacist used a phenomenographic approach in interviewing pharmacists from nine African countries.[78] The pharmacist was perceived as a provider of pharmaceuticals and information about medicines, and as a provider of health care. This study offered an insight into the status of African pharmacists that could serve as a starting point for further discussion and research on the development of pharmacy practice in these countries. The fact that all 15 participants had recently attended the FIP 2002 congress, raises the

issue of whether the full range of views was explored. The interviews were conducted by pharmacy students whose ability to conduct the interviews was not discussed, raising concerns over the robustness of the data. Similar findings and recommendations were made from a study utilising self-completed questionnaires distributed to 110 pharmacists in Benin City, Nigeria.[79] Data suggested that better training programs for pharmacists were needed to improve their involvement in primary care services. The needs for curricular modification and changes to regulatory policies that define pharmacists' roles and responsibilities in patient care were also highlighted. Despite the 90.9% response rate, the study surveyed only 110 pharmacists from one city in Nigeria, limiting generalisation of the findings. A Ugandan study involved an eight-month observation period in two pharmacies to record patients' self-medication behaviour, pharmacy-initiated treatments, prescription-filling and customer service.[77] The study reported that more than half of the patients' visits to the pharmacies were to request an OTC or a prescription-medication for self-treatment; fewer than one-third of the visits resulted in a pharmacy-initiated treatment and about 14% were for filling a prescription obtained from a health professional. The need for pharmacists to be properly trained was highlighted, since more than half of the visits were for self-medication. Other pharmacy staff were identified as candidates for education, as the country had a very small number of pharmacists per capita (201 pharmacists serving 25 million people), which resulted in most interactions within pharmacies being carried out by non-professional staff. The study was limited to observations in only two pharmacies, again limiting generalisation of results to the broader community pharmacy population. Additionally, pharmacy staff were aware of the study, which may have influenced their behaviour.

Studies from South East Asia have focused on the quality of pharmacy services including the type of advice given to patients, the dispensing and labelling process, and specific disease management by pharmacy staff.[76,80,81] A case study of private pharmacy services in Vietnam used a triangulation approach involving inventory register reviews, observation of pharmacy operations, customer interactions, interviews with patients and in-depth interviews with pharmacy staff in two pharmacies.[76] Data collection over a two-week period revealed that more than 90% of drug supply was without prescriptions and that almost all of the customers made their own decisions about which drugs to buy. Problems associated with this system included inappropriate use of antibiotics. There was very little provision of information to the customers and drugs were handled like any other commodity. The findings highlighted the need for regulation of medicine use, promotion of rational drug use and the need for community pharmacy involvement in health promotion and patient education programs. A triangulation approach to data collection used a variety of methods and included the perspectives of the customers, pharmacy staff and independent observers.

In describing the quality of public and private pharmacy services in the Savannakhet province of Lao People's Democratic Republic (one of the poorest countries in the world), structured interviews with pharmacy staff (referred to as “drug sellers” in the study), semi-structured exit interviews with patients and observations of pharmacy operations were used.[80] The study revealed that, while 54% of pharmacy staff in public pharmacies were medical assistants and nurses, 60% in private pharmacies were low level nurses. The study found deficient regulatory systems pertaining to the licensing of pharmacy personnel; deficiencies in handling, packaging and storage of drugs; and sub-standard dispensing processes, including counselling, labelling and

safe drug handling. The study involved 105 randomly-selected pharmacies and the first ten patients who presented at each pharmacy during a two-hour period. The timing of data collection each day was chosen conveniently by researchers with no regard to pharmacy operations. Patients were interviewed on the pharmacy premises, which could have influenced their responses in favour of the services.

Studies from Central and South America have focused on the pharmacist's role in infectious diseases, such as treating sexually transmitted infections (STIs),[82,83] and dispensing of antibiotics.[84] Pharmacy staff were interviewed to elicit their responses to hypothetical case scenarios of STIs in a randomly selected sample (5%) of community pharmacies in Mexico City.[82] The study found suboptimal diagnosis of and treatment recommendations for STIs by community pharmacists; thus, the need for training. The report did not detail the procedures used to develop the three hypothetical cases and lacked live interaction with patients, which could have affected diagnosis and treatment recommendations. Another study from Brazil used simulated clients (trained medical students) who visited 62 pharmacies randomly selected from 863 registered community pharmacies in the city of Porto Alegre.[83] The students presented to the pharmacy complaining of dysuria and urethral discharge. After obtaining advice, they asked for additional instructions to be followed. Immediately after leaving the premises, the instructions were anonymously recorded.[83] The study reported that medications were prescribed in 90% of the cases, none of which was in accordance with the local ministry of health's recommendations. The authors highlighted the lost opportunity for more advice and counselling and the comprehensive management of these conditions by pharmacy staff. They also indicated that the staff could benefit from additional training to better diagnose and treat

STIs.[83] This study relied on the simulated clients' recollection of interactions and recommendations given by pharmacy staff, which may be affected by poor memory as the encounters were not recorded. An assessment of antibiotics that were dispensed with or without prescriptions in 107 pharmacies in Joinville, Santa Catarina, Brazil used simulated clients (trained medical students) who presented with symptoms of uncomplicated rhinosinusitis.[84] In 74% of the community pharmacies, antibiotics were sold without a medical prescription or consultation. Pharmacists sold more antibiotics without a prescription than did other pharmacy staff. As this study was conducted in one small city, the results may not be representative of all community pharmacies in Brazil. The study design was such that the clients were persistent in requesting an antibiotic, which could have influenced the staff's readiness to dispense antibiotics.

Studies in India have explored dispensing practices, pharmacists' roles in the use of medications, and provision of advice in managing disease.[85-87] A study explored the advice from and medications recommended by pharmacy staff in response to simulated patients presenting symptoms of mild persistent asthma in 52 pharmacies.[85] Most patients did not receive appropriate advice or medications and only 24% were recommended for referral. As the data were only obtained from 52 pharmacies, generalisability of the findings may be limited. Another study explored the role of private pharmacies in tuberculosis (TB) control using a researcher-administered survey to assess the awareness of pharmacy staff of the availability of national TB programmes in the Chennai district.[86] There was a lack of awareness about the programmes, although most pharmacy staff (97%) said they would be willing to learn about TB and participate in the programmes. The study also evaluated self-reported dispensing practices for TB medications in 300 community pharmacies (150 of which participated in TB programmes).

Supply of medications occurred with and without prescriptions, frequently not in accordance with established recommendations. The owners of participating pharmacies were interviewed, which could have introduced response bias. A third study conducted in the rural setting interviewed the persons in charge of community pharmacies (n=110).[87] Pharmacists were only present in 43% of the pharmacies, while “drug retailers” who had no pharmacy education were managing and providing dispensing services and advice to patients in about half of the pharmacies. Response bias could have resulted from interviewing only the persons in charge of the pharmacies.

1.5.3.2.1 Studies from Arab countries

From Arab countries, only two publications were found assessing pharmacy services, one in the hospital setting [88] and the other in the community setting.[89] The former used structured questionnaires administered to 80 pharmacists by face-to-face interviews in four public government hospitals in Kuwait, evaluating pharmacists’ activities, their perception and awareness of the concept of pharmaceutical care and the barriers to its implementation.[88] Identification of poor participation by pharmacists in patient care activities emphasised the need for training pharmacists in providing counselling, interacting with physicians and providing enhanced patient care services. This study involved only 15% of the total pharmacist workforce in public hospitals in Kuwait, thus not allowing these findings to be generalised to other types of hospitals or community pharmacy. The latter study (92% response rate) used a self-completed questionnaire distributed to 223 community pharmacists to investigate self-reported practices of pharmacists in health promotion and education activities and the barriers that may limit involvement in these activities.[89] Respondents indicated they were involved in counselling

patients on health behaviours related to the use of medicines, side effects of medicines, weight management, dietary modification and stress reduction. The majority of respondents indicated their willingness to learn more about health promotion; lack of time was reported as the major likely barrier limiting provision of health promotion. Stratified and systematic sampling was used to recruit participants, but not clearly described. Participant's self-reported beliefs and behaviour could have been biased towards positive answers.

Published studies have reported deficiencies in the quality of community pharmacy practice in developing countries, specifically in relation to dispensing activities, information about medications and their use, labelling and general advice given to patients.[76-89] The lack of consistent availability of a pharmacist to provide professional services was reported in many studies.[77,80,83,85,87] Studies investigating the supply of prescription drugs without prescription have identified problems with unauthorised and inappropriate sale of these drugs.[76,77,82-87] These studies revealed poor adherence by pharmacy staff to guidelines concerning the appropriate use of medications in the management of the conditions investigated, highlighting the need to educate both pharmacists and other pharmacy staff on appropriate management of various clinical conditions, and to enforce regulations concerning unauthorised sale of prescription drugs.

To date, evidence about the type and quality of pharmacy services in the developing world remains limited and evidence from the UAE is completely lacking. Studies from the developing world are often criticised for small sample size and biased sample selection, preventing generalisation of their findings, even within their own geographical boundaries. In addition,

given that different countries or regions in the world are influenced by local regulatory, economic and organisational factors, it is not valid to generalise the findings from existing studies to the local setting of the UAE. Therefore, a study of the characteristics of practice and the type and range of community pharmacy services in the UAE is warranted to generate information to guide stakeholders and policy makers in developing strategies to improve the availability and delivery of enhanced pharmacy services. To optimise the development of such strategies, the views of all key stakeholders are important. These include not only community pharmacists but also patients and physicians.

1.6 Patient satisfaction with healthcare services

Patient satisfaction is considered “a personal evaluation or appraisal of a service or product received”.[90] It is an important factor in predicting patients’ behavioural intentions after receiving services and in evaluating the quality of healthcare services.[90] The effects of satisfaction on patients' health-related decisions and treatment-related behaviours include patients’ likelihood to continue using healthcare services,[91,92] patient’s willingness to follow-through with treatment plans, appropriate use of services, and treatment outcomes.[93-97] High satisfaction promotes compliance [98-100] and continuity to seek care from the same provider.[101,102]

In the provision of health care, patient satisfaction is an important humanistic outcome to achieve along with clinical and economic outcomes. Consequently, at the system level in developed countries, patient satisfaction has become an integral component of the assessment of quality of health care,[103,104] effectiveness of medical treatments and systems of healthcare

delivery,[105-108] namely, in performance assessment, reimbursement of services, and in quality management.[90,109] In developing countries, there is evidence that interest in patient satisfaction is growing.[110] Whilst there are a number of studies on patient satisfaction within the primary healthcare setting in Arab countries,[111-119] only three have assessed satisfaction with community pharmacy services.[120-122] In the UAE specifically, there are only two studies exploring patient satisfaction with primary healthcare services [120-121] and none were related to pharmacy services. Additionally, there have been no validated tools available to adequately assess patient satisfaction with pharmacy services in the Arabic context. Knowledge about patient satisfaction with pharmacy services could help pharmacists identify potential areas for service improvement and recognise what services would meet their patients' expectations in the future.

1.7 Physicians' perspectives on pharmacists' roles in community pharmacy

Understanding physicians' opinions of the pharmacist's role in the provision of services in community pharmacies is important in gauging the feasibility of implementing such services. Whilst physicians have long been supportive of pharmacists' roles in drug distribution and control, their acceptance of extended roles for pharmacists has not been consistent.[123,124] It is important that community pharmacists understand what physicians expect of them and how receptive the physicians are to their recommendations. This is especially important since prescribing remains primarily the physicians' responsibility; thus, physicians' support for pharmacists' interventions is critical for successful implementation.[124]

Current literature recognises the contribution of pharmacists to patient therapy and that this contribution is enhanced by collaboration with physicians.[125] A deeper understanding of what physicians perceive as the pharmacist's role would offer valuable insight into what contributes to better collaboration and communication between the two professions and, eventually, better care for patients. Improving the relationship between physicians and pharmacists brings benefits to both professionals and patients alike; it allows efficient communication of patient information, prompt resolution of drug therapy problems and provides for a positive work setting.[126]

Knowledge about physicians' perspectives of pharmacists' roles in Arab countries is limited and comes mainly from the hospital setting.[127-129] Such information is nonexistent for the UAE. Information is also lacking about physicians' views of collaborative working relationships between pharmacists and physicians in Arab countries in general, and the UAE in particular. Consequently, there is a need to explore physicians' attitudes towards community pharmacists' roles and their readiness to collaborate with pharmacists. This information would help in the design of interventions to enable community pharmacists to adopt extended roles and, consequently, provide better care for their patients.

1.8 Rationale for the research

Due to the increased availability of medicines in the market, the increasing evidence for the use of medicines in many disease states, and the increased incidence of misadventure associated with the use of these medicines, the need for pharmaceutical care is evident. Different health and pharmacy organisations have called for pharmacists to play a greater role in the health of individuals and populations. The limited evidence from developing countries shows sub-optimal

quality of pharmacy services and the need for major improvement. Information about the characteristics of community pharmacy practice or the nature and range of community pharmacy services provided to patients and the community in the UAE is completely nonexistent.

Similarly, no previous studies have explored patient satisfaction with community pharmacy services in the UAE, although this is recognised as an integral component in assessing the range and quality of healthcare services. Additionally, no validated tools were identified that could adequately assess patient satisfaction with pharmacy services in the Arabic context.

Physicians' opinions of the pharmacist's role in providing community pharmacy services in the UAE are also unknown, as are physicians' views of collaborative working relationships between pharmacists and physicians, and the barriers to establishing such relationships. Without such information, it is difficult to strategically plan or initiate interventions to improve the delivery of community pharmacy services and to implement effective training programs to improve the practice of pharmacy in the UAE. The terms 'physicians' and 'general practitioners (GPs)' are used interchangeably in this thesis depending on the terminology used in various international studies.

1.8.1 Aims

Accordingly, the aims of the research presented in this thesis were:

- 1) to determine the characteristics, workforce issues related to community pharmacy practice and the type and frequency of community pharmacy services in the UAE;

- 2) to assess patient satisfaction with current community pharmacy services in the UAE and determine primary care services patients would be likely to use if they were provided through community pharmacies;
- 3) to explore physicians' views on pharmacists' roles in providing community pharmacy services, and their attitudes towards collaborative relationships with community pharmacists; and
- 4) to make recommendations regarding areas of community pharmacy practice needing improvement, and training and interventional programs that would help pharmacists provide better care for their patients.

To achieve these aims, the research was conducted in three phases:

- Phase one: assessment of community pharmacy practice and services in the UAE. (Chapters 3-4).
- Phase two: assessment of patient satisfaction and expectations of community services. (Chapters 5-7).
- Phase three: exploration of physicians' perspectives on pharmacists' roles in the provision of services in community pharmacy in the country. (Chapters 8-10).

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Chapter 2: Quantitative research methodology

2.1 Introduction

Health services research, including pharmacy practice research, has commonly used either quantitative or qualitative methods, or a combination of both (mixed methods).[1] For the research in this thesis, both quantitative and qualitative research methods were used. This chapter discusses the quantitative research methods that are relevant to this thesis, and the concepts that helped inform the use of these designs. Qualitative research methods, focusing on the specific designs used in this research, are discussed in Chapter 8.

The aim of quantitative research is “to establish, confirm, or validate relationships and to develop generalisations that contribute to theory.”[2] It employs mechanisms of inquiry including experimental and survey designs to collect numeric data using predetermined instruments and tools.[3] Statistical analyses are used to examine the data from these measurements so that an explanation of the relationships between variables is established. In essence, quantitative research derives new scientific knowledge through deductive reasoning, by commencing with specific concepts or hypotheses that are tested and analysed.[4]

Quantitative research has been classified as: descriptive, experimental, and causal comparative.[2] Descriptive research, based on observation, portrays the characteristics, activities or opinions of a population and explores correlations between two or more phenomena. Experimental research, on the other hand, involves the application of an intervention in the study group and measurement of the outcomes of the intervention. In causal comparative research, the

researcher investigates how the independent variables affect the dependent variables and explores cause and effect relationships among the variables.[2]

2.2 Survey research methods

Surveys have become the most widely used design in pharmacy practice research,[5] being used to explore, describe or explain issues such as medication-taking behaviour, health outcomes, patient satisfaction, health-related quality of life and other aspects of healthcare.[5] While survey research may be experimental or quasi-experimental, it is mostly descriptive.[6] Descriptive surveys estimate proportions or counts of variables in samples and determine how often certain observations occur together and, hence, their association.[7] They are not suitable for explaining why the relationships occur; they do not determine the causality of events.[7] In descriptive surveys, data collection may be cross-sectional which means different groups of the population are described or compared at one point in time, or longitudinal which means the same group of respondents is questioned repeatedly over a period of time to discover any trends or associations.[1,7,8] Because descriptive surveys follow the trend of events in the natural setting, their findings are closer to reality than those from the controlled environment of experiments.[7] Consequently, if conducted on large samples, the findings from descriptive surveys can be generalised to the wider population.[9]

Survey research can be extremely powerful due to its strengths.[10] Surveys:

- are generally inexpensive;
- allow many questions to be explored about a given subject since the analytical process is flexible;

- can be administered to a large sample using different methods like mail, email, hand delivery, or telephone; making it a good method to produce statistically significant results;
- use standardised questions, which lead to more accurate and reliable measurements; and
- provide the same questions to all respondents, which allows intergroup comparisons.

Naturally, survey research design has its limitations:[10]

- a large sample of the selected population is needed for significant results;
- questions could be highly general and thus not entirely appropriate for all respondents;
- once data collection is started, the initial tool and administration of the tool must remain unchanged; and
- it may be difficult for participants to remember information or to tell the truth about a private or controversial issue.

2.2.1 Data collection in surveys

An important consideration in survey research design is how data are collected, as this may be the most expensive and time consuming step.[5] Various factors affect the decision to use a particular data collection method including the research topic, questionnaire design, potential response rate, study population characteristics, sampling techniques and the availability of resources such as computers and on-line access.[5] Several methods of data collection are used including self-completed (by mail, fax, personal delivery, or electronic methods e.g. e-mail and web-based), structured face-to-face or telephone interviews. The main difference among methods is the amount of interaction or contact occurring between the researcher and the participants.[5,7,11]

2.2.1.1 Self-completed survey

A self-administered questionnaire is the optimal data collection method for surveying a large number of participants at low cost in a relatively short period of time.[5] The use of invitation and explanatory statements to detail the purpose of the project, affirm confidentiality, explain the importance of participating and give any directions needed for completing the questionnaire can help increase participant response rate.[12] Incentives, may be offered if the researchers anticipate they will enhance response rates.[12] The contact details of the researcher(s) should be included with the questionnaire. Reminders are usually sent to participants in the form of postcards, letters (mail or electronic), or telephone calls at intervals dictated by study length (usually after 2-3 weeks) and available resources.[13] Four separate reminders are recommended by Salant & Dillman.[14]

Mail surveys are one of the cheapest types of survey methods.[14] Other advantages include their ability to reach a large diverse sample, and convenience for the researcher and the participant. Because mail surveys do not involve any personal contact between the researcher and the participant, the potential for bias is decreased.[5] On the other hand, they require access to a complete sampling frame, which may not always be available. When random samples are drawn from the frame, not all respondents may be able to complete a mailed survey on their own due to language or physical difficulties.[15] It is usual to supply a self-addressed, reply-paid envelope to facilitate return of the questionnaire, which in turn may increase response rates.[12]

Fax surveys are very similar to mail surveys in both advantages and disadvantages.[5] They are intended for short surveys (1-2 pages) and require only a short distribution and receipt time, which makes the participants' responses available quickly.

Delivering a survey in person shares the advantages of both mail and face-to-face surveys.[14] Hand-delivery of surveys to potential participants is not only convenient for participants but also encourages their participation due to the personal contact with the data collector. Completed surveys can be collected on the spot, collected at a later time or mailed by the participant, which again adds to the convenience for the participant. A disadvantage with hand-delivered surveys is that the time and labour demands associated with their distribution could possibly jeopardise sample diversity,[14] unless researchers are aware of the limitation and effort is exerted to follow appropriate sampling procedures.

Questionnaires can also be delivered to participants via electronic mail or the internet. With the ready availability of survey software, (e.g. Survey Monkey, available at www.surveymonkey.com) this form of data collection is becoming popular as it is less costly than other approaches and is time-efficient in collecting data.[16] As these types of surveys are designed for participants who have access and skill to use the technology, caution should be exerted by the researchers regarding bias originating from these samples. The need for participant-protected passwords to assure privacy and confidentiality, and proper accessibility to survey materials is a major concern.[16] Other technological problems include the potential for multiple entry by the same participant, and different survey layout occurring with various internet browsers.[16,17]

2.2.1.2 Face-to-face interviews

This type of data collection is best if the survey requires provision of highly specific explanations and/or illustration with visual aids (such as videos, pictures, etc.) to participants.[18] It is more expensive than self-completed surveys and thus, is better suited for studies requiring smaller sample size.[5] Two practical problems could arise with this method, the effect of the interviewer on the interviewee (e.g. his/her tone of voice and facial expressions), and the inter-rater reliability (the extent of agreement among raters) if more than one interviewer is conducting the interviews.[18] Most researchers would require an inter-rater reliability of at least 0.7 before deeming the data to be reliable.[5]

2.2.1.3 Telephone survey

Face-to-face interaction is eliminated in telephone surveys, which may hinder participation;[19] on the other hand, it is more convenient for participants located in distant geographical areas.[14] It is less costly than face-to-face interviews but still requires the interviewer to be appropriately trained.[5] Computer-assisted telephone interviewing (CATI) uses random digit dialling technology, which assists with selecting the sample, scheduling the interviews and computerised entry of the data.[16]

2.2.2 Response rate

Response rates to surveys are affected by several factors including the research topic, data collection methods, survey design, questionnaire length and complexity, study population, personal contact with participants, incentives and reminders.[20] There is no minimum acceptable response rate for surveys; however, the higher the response rate, the higher the chance

of statistically-significant conclusions being valid to the wider population.[21] Different survey methods have different response rates due to the characteristics inherent in the methods. Mail and fax surveys have the lowest response rate amongst all methods (10-40%) [13,22] while surveys conducted through face-to-face interviews have the highest response rate (50-80%), which could be due to researcher-participant contact.[13] Hand-delivered surveys tend to have higher response rates than mail surveys but lower than survey conducted through face-to-face interviews.[23] For electronic surveys, a 30-40% response rate is common, even with populations that are young and have easy access to the internet.[16] Telephone survey (response rates generally around 40%) are on the decline, possibly due to reduced telephone number listings and increasing resistance to unwanted phone calls.[19]

2.2.3 Survey instrument (questionnaire) design

The design of the survey instrument (questionnaire) is dependent on the topic being investigated, the population surveyed and the data collection method.[5] Questions within instruments can either be open-ended or closed-ended.[3] Open-ended questions prompt respondents to give answers in their own words. These type of questions are normally included in a survey to seek more information from respondents than what could be provided through closed-ended questions.[5] Qualitative methods are usually used to analyse and report findings from these data. Conversely, closed-ended questions use various scale formats for measuring items, including Guttman scales, semantic differential scales, visual-analogue scales, binary scales and Likert scales.[24]

2.2.3.1 Guttman scales

The purpose of Guttman scaling (cumulative scaling) is to establish a one-dimensional continuum for the concept of measurement; it consists of a number of items representing progressively higher levels of the attribute.[25] In this scale, respondents who agree with any specific question in the list of questions would have also agreed with all previous questions, this would enable item responses to be predicted by only calculating the total score for the respondent. To exemplify, a respondent might be asked to rate their smoking behaviour such as, “Are you a smoker? How many cigarettes do you smoke per day? How many years have you been smoking?” If the respondent scored a three, this would mean that he/she agreed with the first three statements. Whilst this scale has its place in service evaluation, the difficulties in applying the scale can outweigh its benefits.[26]

2.2.3.2 Semantic differential scales

A semantic differential scale measures attitudes toward concepts.[24] It employs questions that are mainly contrasting (bipolar) adjective pairs (e.g. good-bad, valuable-worthless), listed on the opposite ends of the scale. The respondent is asked to rate an object, person or concept, by putting a mark on one of the spaces along each dimension. This scale has been shown to work well with different age groups, cultures, and languages, which makes it popular as the scale is easy to develop and administer, and provides valid and reliable results.[24] However, this scale requires respondents to be intelligent, cooperative, with good language skills and capable of understanding subtle differences in meaning.[27]

2.2.3.3 Visual analogue scales

A visual analogue scale is similar to a semantic differential scale in measuring subjective characteristics or attitudes that cannot be directly measured.[24] Respondents mark their level of agreement to a statement on a continuous line between two end-points. This continuous line is what makes this scale different from discrete scales, e.g. Likert scales (discussed below). A visual analogue scale is considered superior to a discrete scale with its metrical properties, lending itself to a variety of strong statistical tests.[28] An advantage of a visual analogue scale is its sensitivity to subtle changes in participants' responses. This is especially beneficial in before and after studies of interventions that have weak effects that would not be captured using a Likert-type scale for example.[24] A disadvantage with visual analogue scales is the potential differences in the interpretation of the physical space and its relation to the values within the scale among different individuals and/or investigators.[28] In addition, it is usually used as a single item measure which precludes any determination of internal consistency in the scale.

2.2.3.4 Binary scales

A binary scale gives participants a choice between two options, such as answering “yes” or “no” to a list of activities or emotional reactions, or checking off all the adjectives that they think apply to them from a dual list of contrasting items.[24] It is simple and easy to administer as participants need only to choose between two options. This in turn leads to increased response rate in comparison to an ordinal scale for which participants are required to exert a higher level of judgment before answering the scale questions. The disadvantage of a binary item is that it has minimal variability and each pair of responses only has one level of covariability: agreement or disagreement with the item. This means that more items are needed

in the scale to achieve the same level of variance as in an ordinal scale, where item variability is high due to the availability of multiple choices of responses.[24]

2.2.3.5 Likert scales

A Likert scale is one of the most commonly used scale formats. It is an ordered, one-dimensional scale from which respondents choose one option that best describes their view.[29] The response is usually presented to the respondent in the form of a statement for which the respondent is required to indicate a varying degree of agreement to the statement.[30] There are typically four to seven options in a Likert scale, although three is possible; five is the most common.[31] In scoring items, numbers are usually assigned to each option (such as 1 to 5). Controversy exists as to how many choices should be offered in a Likert scale. An odd number of choices allow participants to take a neutral stand, while an even number forces participants, sometimes inaccurately, to make a choice. Many participants do not like extreme choices and are less inclined to choose the extreme options. Increasing the number of choices helps to stretch the number of options available.[31]

A debate exists as to what a true Likert scale and what a “Likert-type” scale is. Dr. Likert's original scale ranged from “Strongly Agree” to “Strongly Disagree” covering five points running from one extreme to the other, with a neutral central point.[29] As such, other similarly-constructed scales are often referred to as “Likert-type” in the literature.[30]

Another debate concerns whether the distance between each item and other items within the scale is equivalent or not; for some researchers, this is practically inferred.[31] In constructing

Likert scales, it is wise to consider establishing symmetry of items about a middle point which would infer this equidistant property between items on the scale (such as in 3,5,7, etc. point scales). The symmetric and equidistant properties would allow the scale to behave like an interval as compared to an ordinal measurement.[31] Many argue, however, that because a Likert scale is constructed on an ordinal basis, it would be more appropriate to discuss the central tendency of responses on the scale using either the median or the mode, usually with quartiles as the interval representing the spread of data around these measures.[31] This would warrant the use of non-parametric tests for statistical inferences, such as Chi-squared test, Mann–Whitney test, Wilcoxon signed-rank test, or Kruskal–Wallis test. Others consider the use of parametric analysis is justified for Likert scales given the Central Limit Theorem.[30,32] This is of great value given the power and strength of the parametric statistical tests in detecting differences in item responses between participants and in establishing statistical significance of such differences.[33] Obviously, this would be more justified when the Likert scale has symmetry and equidistance between its item responses so that interval-type tests could be correctly applied.[31] The Central Limit Theorem and statistical tests used in analysing data are discussed later in this chapter.

2.2.4 Quality of the survey

The quality of a survey is measured by its reliability and validity. When the intent is to study variables not related to a specific abstract construct, these could directly be measured using one or more questions within the instrument.[5] Alternatively, in developing instruments that measure constructs, several inter-related items are usually needed to define the construct while

the reliability and validity of the items within the construct need to be established for accurate measurement.[5]

2.2.4.1 Reliability

Reliability refers to the extent to which the survey provides consistent or reproducible results when surveying similar populations. It is the probability that the instrument is free from random error.[1,7] Factors that can cause poor reliability include ambiguity of wording of questions, variation in the style of questioning, different interpretations of questions by respondents, respondents' inability to answer questions leading to guesses and wrong information.[34] After careful review of the instrument questions, it is recommended that pilot work be undertaken to identify any problem items which may reduce the reliability of the questionnaire.[5] Pilot participants are often asked about how they understood the terms used in the questions, how they reached their answers and about clarity of directions.[34] Pilot testing also assures that planned study procedures and data collection are feasible and acceptable to participants in real life situations, all of which contribute to effective, efficient, reliable and valid data collection.[5]

There are several procedures for assessing the reliability of questionnaire items, including test-retest, split half, multiple form and internal consistency using Cronbach's alpha.[1]

The test-retest reliability check involves administering the same measure to the same participants on two occasions.[7] This approach assumes that there is no change in the construct being measured between the two occasions, which is evidence for the stability of the measure. The time elapsed between the two measurements is important because the correlation between the

two measurements will depend on this time. This makes the test re-test reliability check hard to conduct. Also, participants may respond differently to a questionnaire the second time and the answers may be based on their experience with the first time, so in reality, the results are not comparable to those of the initial administration.[7]

The split-half reliability test involves dividing the items within a measure into two halves; each half is analysed separately, and then the results are correlated to assess reliability.[6]

The multiple or parallel form method of assessing reliability involves the development of multiple (parallel) versions of an instrument constructed to contain similar items measuring the same construct. Reliability is estimated by administering both forms of the measure to the same group of participants after a relatively short period of time, again to avoid the effect of time on the results. The participants' scores are then correlated in order to determine how similar the two forms function.[6]

Internal consistency is a statistical method where reliability is based on an average calculated correlation between the measured items, the Cronbach's alpha coefficient (α).[35] Internal consistency means that individual items on the scale are measuring the same thing, which also means different items within a scale produce similar scores. Within a questionnaire, reliability refers to a construct, and not to the reliability of the questionnaire as a whole. If the questionnaire measures more than one construct, then it is prudent to report the reliability of all constructs within the questionnaire.[24] It is accepted that an α value above 0.7 is preferred in a grouping of items in order to reliably form a construct.[26,35] A low Cronbach's alpha means that the group

of items are not so correlated and do not completely represent the meaning of the construct. When this occurs, problematic items are usually dropped from the questionnaire so that the value of Cronbach's alpha is increased.[6] As the aim is to produce a group of inter-correlated items, which means each item is correlated to a large extent to other items within the same group, one could identify problematic items by reviewing the item-to-total correlations.[26]

While Cronbach's alpha is useful in establishing internal consistency of multiple items measuring an attitude or a characteristic, in cases where the assessment is based on the response to specific stand-alone items (not part of a group of items defining a construct), internal consistency may not be required.[15]

2.2.4.2 Validity

Validity refers to the extent to which the survey measures what it is designed to measure.[7] A measure may be reliable but not valid, but it cannot be valid without being reliable. What this means is that reliability is necessary but on its own, is insufficient to establish validity.[26] In surveys, validity refers to the extent to which the questions collect accurate data pertinent to the study objectives, this is referred to as internal validity.[6]

To establish the internal validity of a measure, there are three basic types of validations: subjective, criterion-related and construct validation.[26]

Subjective validation includes face and content validity [26] and is the most widely used and specifically relevant validity in surveys.[6] Face validity is usually the first test of validity that an

instrument undergoes and, it deals with the subjective assessment of the overall physical appearance and clarity of the instrument.[1] The aim of face validity is to detect any obvious problems such as the identification of problem questions which participants may not be able to answer or will not answer because of privacy issues. A good mechanism to ensure face validity is to follow a systematic approach of content validity.[1] Content validity refers to whether the instrument contains all the important or relevant issues to the construct. Participants should be able to comment on what would be in their opinion, important information on a specific subject.[1] One mechanism to establish content validity is to have a panel of experts review the questions to ensure all important issues are completely covered, both from the researchers' and respondents' perspectives.[1,6]

Criterion-related validity (predictive validity) refers to the extent an instrument correlates with other measures of the same variable.[24] Here, the results are compared with other known or previously validated methods (gold standard) used to collect the same information.[6] For example, in measuring patient adherence to medications, the researcher may correlate self-reported adherence with medication refill history. This type of validity test is best suited to instances where the measure is developed for practical applications and not necessarily to develop theory or advance knowledge.[24]

Construct validity refers to whether the question or group of questions correspond to what is understood by a specific construct.[6] This means the questionnaire should include items (questions) that are recognised as representative of specific components that explain the construct within the questionnaire. Two types of construct validity exist: convergent validity and

discriminant validity.[25] Convergent validity shows that a scale is related to what it should theoretically be related to, while discriminant validity is designed to measure the extent to which a given scale differs from other scales designed to measure a different construct. To establish convergent and discriminant validity, one needs to show that measure items are either related or not related, respectively. This is usually done by showing the degree of item inter-correlations for all item pairings within a construct; high item correlations would mean that items are converged while low item correlations would mean that items are discriminant.[25]

External validity refers to how the results of research conducted with selected individuals could be generalised to other populations.[15] External validity is mostly affected by the sampling procedure, sample size and response rates.[6] When the sample is properly selected and the sample size and response rate are adequate, then it may be possible to generalise the findings from the sample to the wider population.[15]

2.2.5 Sampling methods

As it is often neither possible nor necessary to recruit every individual from large study populations,[1] surveys often depend on information from a representative sample of the study population. Generally, there are two broad types of sampling procedures: probability and non-probability.

2.2.5.1 Probability sampling

Probability sampling methods ensure that there is a possibility for each person in a sample population to be included.[36] A random sample is necessary in order to apply probability

statistical analyses which permit generalising any inferences to the wider population.[15] Random sampling depends on the availability of a complete and accurate sampling frame, which is a list of everyone in the population.[6] Several methods are used to obtain a probability sample including:[7]

- **Simple random sample:** a sample is drawn randomly from a list of individuals in a population using a random number generator or a table of random numbers. Every member of the population has a statistically equal chance of being selected;
- **Systematic selection sample:** a random sample in which N^{th} number sampling is used. Here, a random number is chosen to be the first point and then every N^{th} number is selected for inclusion and so on;
- **Stratified sample:** a random sample is drawn from several population-derived smaller groups (e.g. based on demographics);
- **Cluster sample:** a random number is drawn from clusters of a population (natural groupings of individuals such as geographic location or time);and
- **Multistage sample:** a random sample is drawn first, then another random sample is drawn from the first sample and then individuals are selected from the second stage sample.

2.2.5.2 Nonprobability sampling

Nonprobability sampling targets specific individuals; there is no known probability of being included in a sample.[36] Nonprobability sampling is a viable option in many research projects, depending on the research topic or when it is the only mechanism available to select participants. Nonprobability sampling methods include the following:[36]

- **Purposive samples:** involving purposely selected individuals who would best enlighten the research topic for inclusion;
- **Opportunistic samples:** where a sample from a specific population of interest such as conference delegates is used;
- **Convenient samples:** where individuals who are most readily accessible or willing to participate are used; and
- **Quota sampling:** involves selecting specific numbers of individuals in different groups such as age, gender, etc.

2.2.6 Sources of error/bias in surveys

Empirically, there are different sources of error contributing to bias in the results generated from surveys.[37]

2.2.6.1 Sampling errors

Sampling errors arise from the fact that samples differ from their populations whereby participants with certain characteristics become over- or under-represented within the sample.[37] Sampling errors can be reduced by increasing the size and the representativeness of the sample. Two inter-related components are normally used to express the confidence that the sample's values fall within a specific interval from the true population values.[23] For example, a researcher may be “95% confident” that the sample value (e.g. 70% chose item X) is within plus or minus 5% of the population value. What this means, is that the researcher is 95% confident that between 65% and 75% of the total population would choose item X.

2.2.6.2 Nonsampling errors

Nonsampling errors could be due either to nonresponse or response errors.[37] Nonresponse could contribute to bias in a survey due to possible differences between the responses of those who participated and those who did not, from the original sample. Nonresponse bias could thus affect the results and measures to minimise this bias should be considered, such as selecting a larger sample size to start with.[37] Couper and Groves recommend that researchers should optimise survey design and training of the researcher/interviewer in an attempt to minimise nonresponse bias.[38]

Response bias, on the other hand, may arise in different situations, such as when participants give false information that could have a major impact on the study results.[16] This may be the consequence of social desirability, where the response is based on what is socially desirable or respectable, or due to acquiescence, where the response is based on respondents' perceptions of what is desired by the researcher or sponsor of the study. Response order bias occurs when participants lose track of all options and choose an easier option than a correct answer.[16] Lastly, response set bias occurs when participants are influenced by the way they answered previous questions.[25] For instance, if they answered positively several times in a row, they may continue to answer in the same way, or they may feel tempted to break the pattern by disagreeing with a response to which they actually agree. These pattern-related problems can be minimised by asking question(s) where the meaning is reversed in relation to previous statement(s).[25] It is almost impossible to eliminate response bias; however, it may be reduced by carefully developing the survey questions, and choosing the best survey design and administration methods.[37]

2.2.7 Data management and analysis

After data have been collected, they need to be analysed. The researcher should inspect the questionnaires for completeness, and if data are missing, make decisions on the usability of questionnaires and on how to manage the missing data; usually, a few missing/unanswered items are considered acceptable.[13] The data will then be coded and entered into a suitable database for analysis.

The statistical analyses used are dependent on the nature of the variables measured and the type and distribution of the data obtained.[39] Four types of data are possible in quantitative research:[5] categorical and ordinal (referred to as discrete), interval and ratio (referred to as continuous). Categorical (or nominal) data are data in unordered categories (e.g. gender), ordinal data are data in ordered ranking (e.g. age bands), interval data are ranked data in a specific order in which the change in size between units is consistent (e.g. age in years) and ratio data is similar to interval but include an absolute zero (e.g. heart rate = 0, means no pulse).[5] Statistical analytical measures used in the description of nominal and ordinal data include frequencies and median or mode distributions.[40] Statistical significance for associations between variables with these type of data is determined using nonparametric tests such as Chi-squared test, Mann–Whitney U test, Wilcoxon signed-rank test, or Kruskal–Wallis test.[40] On the other hand, statistical measures used in the analysis of interval, continuous or ratio data include descriptive reporting of frequencies and distributions such as the mean and standard deviations from the mean.[41] Statistical significance in associations between variables in these type of data is determined using parametric tests such as independent and paired t-tests, and various types of Analysis of Variance (ANOVA) tests.[41]

2.2.7.1 Statistical significance

Statistical significance is a mathematical tool used to determine the probability that the relationship (e.g. between variables) or difference (e.g. between means) in a sample occurred by pure chance.[39] The null hypothesis is a statement of the assumption that no correlation exists between variables. Clearly, there is a need to calculate the probability of chance within correlations between variables. If this chance is small, then the null hypothesis is rejected and it can be said that the correlation is significant; the lower the likelihood of obtaining a given result by chance, the higher the significance of the correlation between variables.[42] It has traditionally been accepted in areas like health services research that a margin of chance of 5% or less influencing the correlations between variables is acceptable for the correlations to be considered statistically significant.[39]

Both parametric and nonparametric tests are used to determine statistical significance; however, nonparametric tests are not as widely used as parametric tests.[33] Nonparametric statistics do not give specific measures of differences between population samples as they do not provide a confidence interval or a mean for the difference between the samples.[33] Moreover, nonparametric tests are known to be less powerful than parametric tests and thus, they usually require a larger sample size to demonstrate a significant difference between different groups. [33] In addition, some information can only be provided by parametric tests. An example of this is variable interactions (factor loading and groupings) in factorial analysis of variance where there is no equivalent nonparametric method to analyse these types of interactions.[40] Lastly, application of the principles of the Central Limit Theorem supports the use of parametric tests in quantitative data analyses.[33]

2.2.7.2 Central Limit Theorem

The Central Limit Theorem serves as the foundation for many statistical procedures in quantitative research. Its value lies in its capability to justify the omnipresence of the normality of distribution in the measurement world.[32] The Central Limit Theorem states that, when taking the means of a large number of random samples from the "parent" population and calculating the mean of all of these means, this mean (of all of the means) is always equal to the mean of the parent population from which the samples were drawn, and that the distribution of means will be very close to a normal distribution as the number of samples increases. What this implies is that the distribution of a mean tends to be normal, even when the distribution from which the mean is calculated is non-normal. In other words, the distribution of the phenomenon under study does not have to be normal because its mean will be. As a result, in large samples, if using means to make statistical inferences, one could use parametric statistics to analyse data regardless of whether the original data is normally distributed.[32]

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Chapter 3

Community pharmacy in the United Arab Emirates: characteristics and workforce issues

This chapter consists of the following publication:

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Institutional ethics committee and authorities' approvals for this work are given in **Appendix 1, 2 and 3**, and a copy of the questionnaire can be found in **Appendix 4**. Explanatory statement for the survey participants is provided in **Appendix 5**.

Monash University

3.1 Declaration for Chapter 3

Declaration by candidate

The nature and extent of my contribution to the work was:

Nature of contribution	Extent of contribution (%)
Conducted literature review; participated in questionnaire design; established survey methodology; secured approvals from relevant ethics committees and UAE health authorities to conduct study; secured funding for the study; participated in data collection; analysed and interpreted data; fully managed study; produced first draft of manuscript; and made revisions according to suggestions from other authors.	80%

The contributions of co-authors to the work were:

Name	Nature of contribution
A/Prof Hana Sulieman	Participated in: statistical analysis of data and interpretation of results.
Prof Colin Chapman	Participated in: survey design and methodology; ethics application; interpretation of results and manuscript review.
A/Prof Kay Stewart	Participated in: survey design and methodology; ethics application; interpretation of results and manuscript review.
Dr David Kong	Participated in: survey design and methodology; ethics application; interpretation of results and manuscript review.

**Candidate's
Signature**

Date
15 / 4 / 2013

Declaration by co-authors

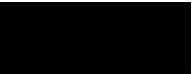

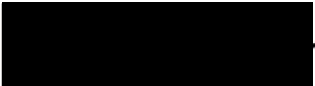

The undersigned hereby certify that:

- (1) the above declaration correctly reflects the nature and extent of the candidate's contribution to this work, and the nature of the contribution of each of the co-authors.
- (2) they meet the criteria for authorship in that they have participated in the conception, execution, or interpretation, of at least that part of the publication in their field of expertise;
- (3) they take public responsibility for their part of the publication, except for the responsible author who accepts overall responsibility for the publication;
- (4) there are no other authors of the publication according to these criteria;
- (5) potential conflicts of interest have been disclosed to (a) granting bodies, (b) the editor or publisher of journals or other publications, and (c) the head of the responsible academic unit; and
- (6) the original data are stored at the following location(s) and will be held for at least five years from the date indicated below:

Location(s)

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Signature 1

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Community pharmacy in the United Arab Emirates: characteristics and workforce issues

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Abstract

Objectives To determine the characteristics and workforce issues of community pharmacy practice in the United Arab Emirates (UAE).

Methods Data collection was by anonymous cross-sectional survey. Questionnaires were distributed by hand to 700 community pharmacies to collect information about the participating pharmacists, pharmacy characteristics, the types of products and professional pharmacy services available to patients, and the barriers to offering professional services.

Key findings A total of 344 pharmacists (49%) responded. Most were male (64%), had been in practice for less than 10 years (mean = 9.3, 95% confidence interval (CI) = 8.4–10.0) and were trained in India (35%) or Egypt (15%). The pharmacies were open for business 7 days/week (mean = 6.8, 95% CI = 6.7–8.8) with an average working day of 13 h (mean = 12.9, 95% CI = 12.7–13.2) and were mostly owned by independent non-pharmacists (70%). The pharmacies employed on average 2.6 full-time-equivalent (FTE) pharmacists (95% CI = 2.3–2.8) with 74% employing 1.8 FTE pharmacy assistants (95% CI = 1.7–2.0) and 47% employing trainee pharmacists (mean = 1.8 FTE, 95% CI = 1.6–2.0). Around three-quarters of the pharmacies dispensed fewer than 100 prescriptions (75%) and responded to fewer than 100 requests for over-the-counter medicines (69%) per day. Most pharmacists encountered limited immediate access to up-to-date resources.

Conclusions This is the first study to explore the characteristics of community pharmacy practice in the UAE. The study provides baseline data which are critical to inform the development of strategies to improve the quality of community pharmacy services in the UAE.

Introduction

Pharmacists have a unique position in the healthcare system because of their location within communities and because they are often the first port of call in the healthcare system.^[1] In many developing countries, pharmacists are often the only health professional available to the population, making the responsibility of offering safe, effective and reasonably-priced pharmaceuticals even more pressing.^[1] For pharmacists to be able to deliver quality care, adequate resources, including the appropriate training and manpower, are needed. Unfortunately, this is not the case in many countries, especially in the developing world. The number of pharmacists per 10 000 population varies greatly between countries, and the most adversely affected are the lowest

income developing countries.^[2] According to the latest World Health Organization core health indicators (2002) estimate, the number of pharmacists per 10 000 population in the UAE is reported to be four pharmacists.^[3] This is about half the density of pharmacists per 10 000 population in other countries such as the UK, Australia and the United States.^[4] The exact role of pharmacists in the community is determined by the economic, regulatory and organisational frameworks within which pharmacists work and so it will differ from country to country.^[5] Factors related to how medications are paid for, patient access to medications, pharmacy ownership, drug procurement and distribution processes will influence the type of pharmacy services

available and, ultimately, define the pharmacist's role in the healthcare system.^[6]

The United Arab Emirates (UAE) is a federation of seven small states called emirates situated in the southeast of the Arabian Peninsula on the Persian Gulf, bordering Oman and Saudi Arabia. The UAE is classified as a high-income developing economy by the International Monetary Fund.^[7] Its population exceeded the eight million mark in 2010.^[8] Most residents are of Indian origin (65%), the local Emirati population comprises about 16.5% of the population; 15% are Arabs from other countries and the remainder are from western and European countries.^[9]

In the UAE, there is no single regulatory body that supervises drug control but there are three institutions that govern drug procurement, registration and pharmacy practice: the Health Authority of Abu-Dhabi, the Dubai Health Authority and the Ministry of Health.

The current characteristics of pharmacy practice and services offered by pharmacists in the Arab countries have been explored on only a limited basis.^[10–15] Findings to date suggest shortcomings in the provision of services and availability of products. There are signs that pharmacists are beginning to provide more patient-centred services in the Middle East,^[14] but many pharmacists are concerned that they lack the skills and the resources to provide them.^[15] Barriers to offering patient-centred care in the Middle East commonly include the low perception that patients have of the pharmacy profession, whereby a pharmacist is often regarded as a business person rather than a health professional.^[14]

There is a dearth of information on the current state of pharmacy practice in the UAE. Pharmacists practising in this country come from varied backgrounds, viz. from India, other Arab countries and the UAE itself.^[16] The differences in education and training of these pharmacists will impact on the way they practice and care for their patients. Importantly, it will impact on how the pharmacy profession is perceived by consumers and the development of strategies to optimise the role of the profession. Little is known about the demographic characteristics of pharmacists, their training and education, the types of services offered in pharmacies, workload and personnel coverage, or the availability of adequate resources for the pharmacists. Such information is needed before any intervention to optimise the role of pharmacists within the UAE healthcare system can effectively occur. Such information will be pivotal in guiding policy makers in developing appropriate recommendations to improve existing pharmacy services and the quality of pharmacy practice in the UAE. Accordingly, this study was designed to explore the characteristics of, and workforce issues relevant to, community pharmacy services in the UAE.

Methods

Institutional ethics committee approvals were obtained from Monash University's Human Research Ethics Committee in Australia and Sharjah University's Research & Ethics Committee in the UAE.

An anonymous cross-sectional questionnaire was developed using literature precedents, including the International Pharmaceutical Federation *Standards for Quality of Pharmacy Services: Good Pharmacy Practice* adopted in 1997^[17] and the Australian 'National Pharmacy Database Project' reported by Berbatis *et al.*^[18] The questionnaire was validated for face and content by several individuals from health authorities and practising pharmacists in the UAE. The refined questionnaire was then piloted on a group of 15 community pharmacists.

The questionnaire included demographic information about the pharmacists, their training and education, a description of the pharmacies including location and workload issues, access to resources and types of pharmacy services provided – including herbal and nutritional supplements, diabetic care supplies, children's health products, weight reduction products and wound care products. The type and depth of professional services were explored using a five-point Likert-type scale (i.e. 1 = Never, 2 = Occasionally, 3 = Sometimes, 4 = Mostly and 5 = Always) and will be discussed in a separate manuscript. Participants were also asked to rate a list of items that pharmacists perceive as barriers that could limit their capability to offer pharmaceutical care-type services. A three-point scale (i.e. 1 = Not usually a barrier, 2 = Somewhat of a barrier, 3 = A strong barrier) was used.

There are 1227 community pharmacies in the UAE. The addresses of the retail, franchise and privately-owned community pharmacies are public information and were obtained from the various pharmacy registering agencies in the UAE. According to Krejcie *et al.*,^[19] 300 completed questionnaires were needed to have an estimate of precision at the 95% confidence interval (CI), with an $\alpha = 0.05$. Assuming a response rate of 50% and allowing for inaccuracies in pharmacy databases due to closures and relocations, we added a 15% margin. Hence, the questionnaire was distributed to 700 community pharmacies. To ensure wide geographic representation, after evaluating each individual emirate's database and each town's list of pharmacies, in streets with multiple pharmacies, systematic sampling of every second pharmacy in the street was used, starting with the first pharmacy in the street. Approval for these pharmacies to participate was obtained from their registering agencies. Only one pharmacist from each pharmacy was asked to complete the questionnaire to avoid duplication of responses.

The questionnaire was hand delivered between the beginning of May and end of June 2009, along with an explanatory statement and invitation letter. The delivery was made by

undergraduate pharmacy students from the Sharjah University College of Pharmacy. Hand delivery was used despite the availability of a register for pharmacists because the current postal system is not effective and an on-line approach was not favoured as not all pharmacists in the UAE will have access to the internet. This approach was made following extensive discussion with members from the Ministry of Health, the Health Authority of Abu Dhabi and with community pharmacists.

Pharmacists agreeing to participate were given the choice either to complete the survey on the spot when the questionnaire was handed to them or at a later time, in which case they were revisited after 2 weeks to obtain their responses. If the pharmacists failed to complete the survey within the first 2 weeks, they were given another 2-week period to complete the survey.

For data analysis, the data were entered into Microsoft Excel, cross-checked for data entry accuracy and analysed using SPSS for Windows (version 17).

Results

Of the 700 surveys distributed, 344 usable questionnaires were returned giving a response rate of 49%. As shown in Table 1, most of the participants were young, male, held a bachelor degree and had been in practice for less than 10 years. Most pharmacists (80%) worked 6 days per week and 72% had worked in their current pharmacy for less than 5 years. Most pharmacists had an initial pharmacy qualification from India, followed by Egypt, then the UAE and Jordan. Two hundred and twenty (66%) respondents did not belong to any professional organisation. Of those who reported being members of a professional pharmacy organisation, more than half were members of pharmacy organisations based in India while 10% belonged to organisations in Egypt.

Table 2 shows that on average, community pharmacies were open 7 days per week (mean = 6.8, 95% CI = 6.73–8.82) with an average working day of 13 h (mean = 12.9, 95% CI = 12.66–13.22) and a median of 12 h. (Note: these figures are skewed by the 17% of pharmacies offering a 24-h service.) The pharmacies were mostly owned by independent non-pharmacist owners (70%) who employ pharmacists to manage daily operations. On average, the pharmacies had 2.6 full-time-equivalent (FTE) pharmacists (95% CI = 2.33–2.79), 74% employed an average of 1.8 FTE pharmacy assistants (95% CI = 1.69–2.02) and 47% had pharmacist trainees (mean FTE = 1.8, 95% CI = 1.63–1.98). Around three-quarters of the pharmacies dispensed fewer than 100 prescriptions (75%) and responded to fewer than 100 requests for over-the-counter (OTC) medicines (69%) per day.

Table 3 shows there is deficiency in access to both printed and computerised resources for the pharmacists. The British National Formulary was reported to be the only print refer-

Table 1 Demographics of pharmacist respondents

Variables	Values	No. (%)
Gender (<i>n</i> = 344)*	Male	220 (64)
	Female	124 (36)
Age in years (<i>n</i> = 335)*	21–30	158 (47)
	31–40	120 (36)
	41–50	44 (13)
	51–60	13 (4)
	>60	0
Qualifications (<i>n</i> = 336)*	Bachelor	239 (71)
	Master	27 (8)
	PharmD	57 (17)
	PhD	10 (3)
	Other	3 (1)
Years of practice (<i>n</i> = 327)*	0–5	118 (36)
	5–15	164 (50)
	>15	45 (14)
Days worked per week (<i>n</i> = 340)*	1	3 (1)
	2	3 (1)
	3	3 (1)
	4	3 (1)
	5	41 (12)
	6	279 (82)
	7	7 (2)
Years of employment in present pharmacy (<i>n</i> = 336)*	≤5	242 (72)
	6–10	60 (18)
	11–15	24 (7)
	>15	10 (3)
Country of initial qualification	India	119 (35)
	Egypt	51 (15)
	United Arab Emirates	36 (10)
	Jordan	26 (8)
	Syria	21 (6)
	Other Middle Eastern countries	37 (11)
	Pakistan	14 (4)
	USA, Canada and Europe	13 (4)
	Other	27 (8)
Membership of professional organisations (<i>n</i> = 334)*	Yes	114 (34)
	India	45 (57)
	Egypt	8 (10)
	United Arab Emirates	5 (6)
	Jordan	5 (6)
	Other	16 (20)
	No	220 (66)

*Not all respondents completed every item, *n* = number of respondents completing the item.

ence used in more than 90% of pharmacies. Access to Medscape as an internet-based reference was reported by only 11 pharmacists.

Table 4 reports the pharmacists' ratings of barriers that they perceive to the provision of professional services. About 75% of the pharmacists reported the lack of physicians' recognition of their skill as a barrier to the provision of enhanced pharmacy services, with around half of those considering it to be a strong barrier. Insufficient patient demand for pharmacy

Table 2 Pharmacy-related information

Variables	Values	No. (%)
Location (<i>n</i> = 344)*	Abu Dhabi	79 (23)
	Dubai	152 (44)
	Sharjah	59 (17)
	Ajman	34 (10)
	Ras Alkhaima	10 (3)
	Um Al-Quwain	4 (1)
	Fujairah	6 (2)
Pharmacy setting (<i>n</i> = 341)*	Shopping centre	78 (23)
	Street	263 (77)
Type of pharmacy (<i>n</i> = 341)*	Independent	150 (44)
	Chain	191 (56)
Open 24 h (<i>n</i> = 344)*	Yes	59 (17)
	No	285 (83)
Availability (<i>n</i> = 323)*	Dispensing computer program	136 (42)
	Internet access	58 (18)
	Both	129 (40)
# of prescriptions per day (<i>n</i> = 339)*	<50	156 (46)
	50–100	98 (29)
	101–150	44 (13)
	151–200	20 (6)
	201–250	7 (2)
	>250	14 (4)
# of OTC per day (<i>n</i> = 338)*	<50	128 (38)
	50–100	105 (31)
	101–150	41 (12)
	151–200	34 (10)
	201–250	20 (6)
	>250	10 (3)
Is owner a pharmacist? (<i>n</i> = 339)*	Yes	129 (38)
	No	210 (62)
Is manager a pharmacist? (<i>n</i> = 340)*	Yes	265 (78)
	No	75 (22)
Type of staff (<i>n</i> = 337)*	Pharmacists	337
	Pharmacy assistants	280 (74)
	Trainee pharmacists	179 (47)
Training of students (<i>n</i> = 338)*	Yes	152 (45)
	No	186 (55)

*Not all respondents completed every item, *n* = number of respondents completing the item, # = number. OTC, over-the-counter medicines.

services was also rated as a barrier by two-thirds of the respondents, with more than one-quarter of pharmacists rating it as a strong barrier. Some pharmacists expressed their frustration with what they called a 'business image' to their profession that prevails in the UAE which is supported by some community pharmacists' behaviours resulting from pressures to meet profit margins and sales quotas.

Discussion

Most pharmacists in this study worked 6 days per week and 72% had worked in their current pharmacy for less than 5 years. The majority of the respondents had an initial pharmacy qualification from India, followed by Egypt, then the UAE and Jordan. Most of the pharmacists in this study did not belong to a professional organisation in the UAE. On average, community pharmacies were open 7 days per week with an average working day of 13 h giving consumers reasonable access to community pharmacy services. The pharmacies were mostly owned by independent non-pharmacist owners who employed pharmacists to manage daily operations. Three-quarters of the pharmacies dispensed fewer than 100 prescriptions and responded to fewer than 100 requests for OTC medicines. There seems to be a deficiency in access to both printed and computerised resources for pharmacists in the UAE. The pharmacists reported a lack of physicians' recognition of their skill and insufficient patient demand for pharmacy services as barriers to the provision of enhanced pharmacy services.

This work has provided, for the first time, important insight into community pharmacy characteristics and workforce issues in the UAE. The anonymous survey involved self reporting by the participants; consequently, there may be data inaccuracies resulting from poor memory or misunderstanding of the questions, which we have tried to minimise with face and content validation. Whilst the response rate in this study was 49%, the number of respondents exceeded the sample size calculated. The manual method of questionnaire distribution and collection was laborious and did not allow

Table 3 Print and computerised resources

Print references	Respondents no. (%) Total* = 344	Internet-based resources	Respondents no. (%) Total* = 40
British National Formulary (BNF)	319 (93)	Medscape	11 (28)
British Pharmacopoeia (BP)	54 (16)	Micromedex	4 (10)
United States Pharmacopoeia (USP)	23 (7)	Google	9 (23)
Monthly Index of Medical Specialties (MIMS)	108 (31)	Wikipedia	2 (5)
Martindale	94 (27)	Drugs.com	4 (10)
Drug Facts & Comparisons	21 (6)	BNF.org	3 (8)
		PubMed	2 (5)
		MEDLINE	2 (5)

*Total = number of respondents completing the item.

Table 4 Perceived barriers to provision of professional services

Barriers to pharmacy services	Not usually a barrier (%)	Somewhat of a barrier (%)	A strong barrier (%)	Total	Mean 95% (CI)
1 Lack of time to offer service	35	40	25	325	1.90 (1.81, 1.98)
2 Shortage of pharmacists/staff	40	32	28	328	1.89 (1.79, 1.98)
3 Lack of patient demand and acceptance	33	40	27	323	1.93 (1.85, 2.02)
4 Lack of appropriate knowledge/skills by pharmacist	60	27	13	327	1.52 (1.44, 1.60)
5 Lack of financial reward from services	45	30	25	326	1.81 (1.72, 1.90)
6 Doctors do not recognise pharmacist skills in enhanced pharmacy services	26	37	37	329	2.12 (2.03, 2.21)
7 Legal and regulatory constraints	43	35	22	319	1.79 (1.70, 1.88)

CI, confidence interval.

for the exploration of the non-respondents' characteristics or views, but it was the optimal approach in the absence of an effective postal system or access to computers by all community pharmacists.

Workload information

Community pharmacists in the UAE mostly work 6 days per week and for 8–10 h per day, as part-time pharmacy employment is not permitted in the UAE.^[20] This means that a pharmacist works at least 48 h per week. In comparison, pharmacists in the USA and Australia work an average of 42 and 38.6 h per week respectively.^[21,22] Similar to many developing countries, anecdotally a situation exists in the UAE whereby pharmacists are officially employed to manage a specific pharmacy but are physically absent from the premises.^[16] This leads to a setting where patient contact is often undertaken by the pharmacy assistants,^[16,23] who may not have the proper education or training to deliver such services. As a consequence, it would not be surprising if the majority of consumers in the UAE regard a community pharmacist or pharmacy as 'a business person' or 'a business', as opposed to being 'a health professional' or 'a health institution' respectively.^[16] The number of prescriptions and OTC requests observed in this study could be considered an average volume workload in most retail pharmacies in other countries like the USA.^[21]

Employment issues

Approximately 72% of the pharmacists in this study had been in their current employment for less than 5 years. This suggests that there is a high turnover of pharmacists within the

community pharmacy sector, which could impact on the ability of community pharmacy to deliver continuous care to its regular clientele. Factors contributing to high employee turnover usually include lack of professional job satisfaction, lack of adequate financial remuneration and long working hours.^[24] As such, improvements to the professional role of the pharmacist, provision of greater opportunities for professional development and enhancements in human resource-related conditions (e.g. adequate staffing, reduced workload and better compensation) are needed to increase professional satisfaction^[24] hopefully leading to a stable workforce.

Professionalism

Many of the pharmacists who responded did not belong to a professional pharmacy organisation. This could be attributed to the fact that there is no professional body to represent pharmacists within the UAE. Those who reported being a member of a professional body were affiliated with the organisation in their country of qualification. The presence of a local professional organisation is important, given that such an organisation can influence practitioners' competency, set standards of practice, deliver continuing education to its members and, importantly, serve as an advocate for the pharmacy profession.^[25] The UAE could benefit from the establishment of an independent professional organisation to represent the pharmacists in the UAE (similar to those in developed countries), and this needs to be addressed by the various stakeholders from academia, industry, business and regulatory bodies.

As in many developing countries, medications are available for sale without a prescription in most cases.^[16] Enforcement

of the regulations prohibiting the sale of prescription medications without a physician's order is needed in order to establish the appropriateness of diagnosis and, therefore, the appropriate treatment. An area that could benefit greatly from this enforcement is antibiotic use, as resistance rates of some types of bacteria to penicillins in the UAE is estimated to be 17.6%.^[26] Disappointingly, more than half (55%) of the respondents were not involved in the training of pharmacy students. Pharmacy schools within the UAE may need to offer incentives to increase participation in training students by community practitioners. The incentives may be in the form of monetary compensation, periodic offerings of continuing education programmes tailored to the pharmacists' needs,^[27] and allowing the pharmacists to serve on various college posts and committees.

Information resources

It is clear from this study that there is a severe deficiency with respect to immediate access to up-to-date information resources in most community pharmacies in the UAE. This will reflect negatively on the capability of the pharmacists in delivering evidence-based and unbiased information to consumers. This is especially crucial as pharmaceutical company representatives are the primary source of information to prescribers in developing countries.^[28,29] The quality of information provided by US pharmaceutical companies in four developing countries has been studied by the USA Office of Technology Assessment, which reported that 68% had information that deviated from scientific evidence about the interactions, adverse effects and indications of their marketed drugs.^[30] There is an urgent need in the UAE to equip community pharmacists with the information resources needed to deliver unbiased and evidence-based pharmaceutical care.

Barriers to offering professional services

The lack of time to offer professional pharmacy services as observed in this study has been reported to be a barrier in studies across the globe.^[31–35] Studies from neighbouring countries confirmed the low level of pharmacist–patient interaction due to low patient demand.^[10,12,14,15,36] International studies considered the lack of mandate by patients^[37,38] and practitioners^[34,39] to pharmacy services to be strong barriers to offering professional services. Likewise, pharmacists expressed their frustration with the lack of physician recognition of their knowledge and skill, and ranked this as a top barrier to offering professional services. Exploration of physicians' views of the pharmacist's role could lead to better understanding of the relationship between physicians and pharmacists in the UAE and may help to overcome some of the barriers reported in this study.

Pharmacist training

Our study affirms that pharmacists in the UAE come from varied backgrounds, which is consistent with findings from an earlier study by Dameh.^[16] The majority of pharmacists in the UAE are from India and Egypt where the focus of pharmacy education remains on the basic sciences with little emphasis on students attaining clinical skills.^[11,40] Whilst this study has not explored the clinical competency of the participants, encouragingly, there are signs of increasing interest in enhancing the clinical skills of graduates in the region.^[10,12,13,41,42] This is evident by the increasing number of schools offering the PharmD degree, the collaborative agreements that are being established between local and western universities, the impending evaluation of the pharmacy programme in Kuwait and Jordan by the US Council on Pharmaceutical Education and the Quality Assurance Agency in the United Kingdom respectively.^[42]

Conclusion

This is the first study to explore the characteristics of, and workforce issues relevant to, community pharmacy practice in the UAE. Significantly, the work has generated important data about workforce characteristics and workload assessments that could be useful to further support the development and successful implementation of strategies to improve the quality of community pharmacy services in the UAE. Future research should focus on workforce factors that contribute to the improvement of pharmacy-service offering in the UAE, such as the retainability of pharmacists, patient satisfaction with pharmacy services and the training of pharmacists.

Declarations

Conflict of interest

The Authors declare that they have no conflict of interest to disclose.

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Chapter 4

Community Pharmacy Services in the United Arab Emirates

This chapter consists of the following publication:

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Institutional ethics committee and authorities' approvals for this work are given in **Appendix 1, 2 and 3**, and a copy of the questionnaire can be found in **Appendix 4**. Explanatory statement for the survey participants is provided in **Appendix 5**.

Monash University

4.1 Declaration for Chapter 4

Declaration by candidate

The nature and extent of my contribution to the work was:

Nature of contribution	Extent of contribution (%)
Conducted literature review; participated in questionnaire design; established survey methodology; secured approvals from relevant ethics committees and UAE health authorities to conduct study; secured funding for the study; participated in data collection; analysed and interpreted data; fully managed study; produced first draft of manuscript; and made revisions according to suggestions from other authors.	80%

The contributions of co-authors to the work were:

Name	Nature of contribution
A/Prof Hana Sulieman	Participated in: statistical analysis of data and interpretation of results.
Prof Colin Chapman	Participated in: survey design and methodology; ethics application; interpretation of results and manuscript review.
A/Prof Kay Stewart	Participated in: survey design and methodology; ethics application; interpretation of results and manuscript review.
Dr David Kong	Participated in: survey design and methodology; ethics application; interpretation of results and manuscript review.

**Candidate's
Signature**

	Date 15 / 4 / 2013
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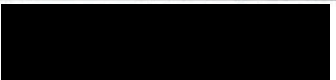
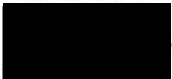
Declaration by co-authors

The undersigned hereby certify that:

- (1) the above declaration correctly reflects the nature and extent of the candidate's contribution to this work, and the nature of the contribution of each of the co-authors.
- (2) they meet the criteria for authorship in that they have participated in the conception, execution, or interpretation, of at least that part of the publication in their field of expertise;
- (3) they take public responsibility for their part of the publication, except for the responsible author who accepts overall responsibility for the publication;
- (4) there are no other authors of the publication according to these criteria;
- (5) potential conflicts of interest have been disclosed to (a) granting bodies, (b) the editor or publisher of journals or other publications, and (c) the head of the responsible academic unit; and
- (6) the original data are stored at the following location(s) and will be held for at least five years from the date indicated below:

Location(s)

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Signature 1	 A/Prof Hana Sulieman	Date 15 / 4 / 2013
Signature 2	 Prof Colin Chapman	15 / 4 / 2013
Signature 3	 A/Prof Kay Stewart	15 / 4 / 2013
Signature 4	 Dr David Kong	15 / 4 / 2013

Community pharmacy services in the United Arab Emirates

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Keywords

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Abstract

Objectives To identify the type and frequency of services provided through community pharmacies in the United Arab Emirates (UAE).**Methods** A survey was conducted using an anonymous questionnaire distributed by hand to 700 community pharmacies. Items included information about the pharmacists and pharmacies, type of products sold, type and extent of enhanced services provided and perceived barriers to providing these services.**Key findings** Most pharmacies provided a wide range of medicinal and non-medicinal products. The frequency with which services were provided was assessed on a scale of 1 (never) to 5 (always). Enhanced professional services were not provided to a large extent in most pharmacies. Fewer than one-third (29%) reported they always supplied printed information to patients (mean = 3.37, 95% confidence interval = 3.23–3.52); fewer than one-third (28%) counselled patients on a regular basis (3.25, 3.09–3.40); nearly two-thirds (62%) reported monitoring patients' adherence to therapy at least sometimes (2.96, 2.81–3.10). Most pharmacies (92%) in the UAE did not routinely keep patient records (2.09, 1.96–2.32). While just over a quarter of respondents claimed that they always reported medication errors (27%) and adverse drug reactions (28%), these activities were not often performed in around 40% of pharmacies.**Conclusions** This is the first study to explore the type and extent of professional services provided through community pharmacies in the UAE and provides baseline data critical to inform the development of strategies to improve the quality of community pharmacy services.

Introduction

Current knowledge about the scope and quality of pharmacy services in developing countries is limited. The contribution of pharmacists towards optimum therapy and medication safety in developing countries remains unknown, although it has been suggested that there are shortcomings in the quality of pharmacy services provided and that the level of service varies from country to country.^[1,2]

It is known that suboptimal medication use is on the rise worldwide, ranging from improper prescribing by physicians and improper dispensing by pharmacists, to improper adherence to therapy by patients.^[3] In 2006, the Institute of Medicine's report, *Preventing Medication Errors*, estimated that at least 1.5 million patients are harmed each year in the USA by medication errors.^[4] As more medicines are released onto the market, as the use of medicines becomes more complex, and

as the evidence of drug misadventure becomes more apparent, the need for pharmaceutical care is increasing. Pharmaceutical care was defined by Hepler and Strand as 'the responsible provision of drug therapy for the purpose of achieving definite outcomes that improve a patient's quality of life.'^[5] In providing this service to their patients, pharmacists need to offer care at the same time as they provide a product. The value of pharmaceutical care interventions in achieving better patient outcomes and safety has been documented in many studies, most of which are from developed countries.^[6–10]

In the Middle East, it has been suggested that introducing pharmaceutical care in pharmacy curricula in many countries has not translated to improved pharmacy services, especially in community pharmacies.^[11] The majority of newly

registered pharmacists work in community practice, a smaller number go to hospital practice, and a few join the industry.^[12–14] Most positive change which occurs in pharmacy practice in the Middle East has been in the hospital setting; pharmacists in this setting usually have advanced degrees and assume a higher level of responsibility than those working in community pharmacies.^[12,15,16] Drug laws differ from country to country, and the degree of enforcement to these laws is also different. Consequently medications which require a prescription by law may be available to patients without the presentation of a prescription in most Middle Eastern countries.^[12–15,17]

The United Arab Emirates (UAE) is one of the Gulf Cooperation Council countries of the Middle East. It is a federation constituting seven emirates: Abu Dhabi (the capital), Dubai, Sharjah, Ajman, Umm Al-Qaiwain, Ras Al-Khaimah and Fujairah. The UAE is classified as a high-income developing country by the International Monetary Fund.^[18] While the population of the UAE exceeded 8 million in 2010,^[19] the Emirati nationals comprise only about 16.5% of the population; most of its residents are of Indian origin (65%), 15% are Arabs from other countries and the remainder are from Western and European countries.^[20]

In the UAE, there are three institutions that govern drug procurement, registration and pharmacy legislation: the Dubai Health Authority (DHA), the Health Authority of Abu-Dhabi (HAAD) and the Ministry of Health (MOH). The prime legislation that regulates medicines and pharmacy in the country is UAE Federal Law number 4 of 1983 for Pharmaceutical Professions and Institutions which also mandates the separation of dispensing and prescribing, and how medicines may be procured by consumers.^[21] In the hospital setting, with the exception of a few hospitals providing clinical pharmacy services in the Emirate of Abu Dhabi,^[22,23] hospital pharmacy services are either inpatient drug-distribution services or outpatient dispensing services that resemble community practice. We recently reported on the characteristics and workforce issues of community pharmacy practice in the UAE.^[24] Community pharmacies in the UAE are either small independently owned or chain franchised shops located on a street or in shopping malls and are generally accessible to consumers.^[24] These community pharmacies generally dispense fewer than 100 prescriptions and attend to fewer than 100 requests for over-the-counter (OTC) medications per day.^[24] Although the law prohibits the sale of all prescription medicines without prescriptions, in practice, strict enforcement of the law in the UAE only applies to some medicines such as narcotics, hypnotics and tranquilizers. A wide range of prescription-only medicines including antibiotics, antidiabetics and antihypertensive medications are commonly bought over the counter from community pharmacies.^[17] The law specifies that community pharmacies must be owned by UAE nationals. Given that few UAE nationals are pharma-

cists, the majority of pharmacies in the country are owned by non-pharmacists who employ pharmacists to manage the community pharmacies,^[24] as the law mandates that a licensed pharmacist be on the premises whenever the pharmacy is open.^[21] Dispensing is mostly performed by pharmacy technicians, while pharmacists focus on administrative and managerial duties.^[17] Consequently, it is the 'business' rather than the 'professional' image that dominates community pharmacy practice.^[17] Most community pharmacies in the UAE do not use dispensing computer software^[24] or keep patient medicine records.^[17] Until recently, pharmacists did not need to provide evidence of continuing education in order to renew their license to practice in the UAE. This has changed; pharmacists are now required to submit 20 h of accredited continuing pharmacy education annually before their license is renewed.^[25,26] Currently, there is no professional body of pharmacy in the UAE that represents pharmacists, unlike the situation in many neighbouring countries.^[12–15]

The depth and type of patient care activities provided through community pharmacies in the UAE remains unknown, but is likely to be limited. Prior to the development and implementation of strategies to improve community pharmacy services in the UAE, it is important to understand the current situation.

Complementing our previous work, we now report on the type and frequency of pharmacy services provided through community pharmacies in the UAE.

Methods

This study is part of a larger study investigating the characteristics of community pharmacies in the UAE, part of which we have previously reported.^[24] A questionnaire was developed using the International Pharmaceutical Federation's *Standards for Quality of Pharmacy Services – Good Pharmacy Practice*,^[27] and the Australian National Pharmacy Database Project reported by Berbatis *et al.*^[28] Pharmacists from health authorities and practicing pharmacists in the UAE ($n = 10$) were used to establish face and content validity of the questionnaire. The validated questionnaire was then piloted by 15 community pharmacists.

The questionnaire requested demographic information about the pharmacists and the pharmacies, and the types of pharmaceutical and non-pharmaceutical products available in community pharmacies. The type and depth of professional services were explored using a five-point Likert-type scale (1 = never, 2 = occasionally, 3 = sometimes, 4 = mostly and 5 = always). The perceived barriers to the provision of enhanced pharmacy services were also explored and previously reported.^[24]

Based on the table related to sample-size calculation from Krejcie and Morgan,^[29] from a total of 1227 community

pharmacies operating in the UAE, a minimum of 300 responses would be needed to achieve a 95% level of confidence. Anticipating a 50% response rate, we doubled the sample size required (which gives 600) and then added a 15% margin to allow for inaccuracies in the pharmacy databases due to closures and relocations; hence, the questionnaire was distributed to 700 community pharmacies. Approval for pharmacies to participate was obtained from the various registering agencies. The addresses of community pharmacies are publicly available in the UAE. After checking the list of pharmacies in each emirate from the databases, in streets with multiple pharmacies, every second pharmacy was systematically selected, starting with the first pharmacy in the street. Only one pharmacist from each pharmacy was invited to complete the questionnaire in order to avoid duplication of responses for individual pharmacies.

Given that the postal services in the UAE were deemed unreliable, the questionnaire, along with the explanatory statement and invitation letter, was hand-delivered by undergraduate pharmacy students from the Sharjah University College of Pharmacy between the beginning of May and the end of June 2009. An online approach was not feasible as not all community pharmacists in the UAE have access to the internet.

Consenting pharmacists could choose to complete the questionnaire on the spot or at a later time, in which case they were re-visited after 2 weeks to obtain their responses. Pharmacists who failed to complete the questionnaire within the first 2 weeks were re-visited after a further 2 weeks. Institutional ethics committee approvals were obtained from the Monash University Human Research Ethics Committee and Sharjah University's Research & Ethics Committee.

All data were entered into Microsoft Excel and cross-checked for accuracy. SPSS for Windows, version 17, was used for data analysis. To determine the patterns of service provision, most professional pharmacy services that were actually provided, including the supply of written or printed material to patients, general counselling, disease detection and screening, monitoring of patient adherence to medications, smoking cessation counselling, identification and reporting of medication errors, and identification and reporting of adverse drug reactions, were cross-tabulated with demographics of the pharmacists (age, gender, qualification) and the pharmacies (location and type; i.e. chain versus independent). The chi-square test of independence was used to test for inter-relationships among the cross-tabulated data. The significance level was pre-set at 5%.

Results

Seven hundred questionnaires were distributed and 344 usable questionnaires were returned (response rate = 49%).

Table 1 Product supply services

Type of products supplied by the pharmacy	Yes	No	Total ^b
	n ^a (%)	n ^a (%)	
Herbal medicine/nutritional supplement	313 (92)	26 (8)	339
Nutritional support, e.g. Ensure™, Vivonex™	247 (74)	88 (26)	335
Diabetic care: insulin and injection supplies	325 (95)	16 (5)	341
Children's medication and health product supplies	328 (97)	10 (3)	338
Ear piercing (approved by Ministry of Health)	77 (23)	259 (77)	336
Skin care, beauty products and cosmetics supply	327 (96)	13 (4)	340
Smoking cessation aids and treatments	287 (84)	55 (16)	342
Specialised compounding for prescriptions	104 (32)	226 (68)	330
Supply of canes, wheelchairs, walkers and crutches	286 (84)	56 (16)	342
Weight-reduction treatments, herbals and aids	308 (91)	32 (9)	340
Wound-care products	329 (97)	9 (3)	338

^an = Number of respondents completing the item. ^bNot all respondents completed every item.

The demographic information about the pharmacists and other pharmacy-related information has been discussed in depth in an earlier publication.^[24]

Most pharmacies in the UAE provided a wide range of pharmaceutical (prescription and OTC medications) and non-pharmaceutical products (Table 1) including herbal and nutritional supplements, weight-reduction preparations and wound-care products. Only a small portion of pharmacies provided specialised compounding of prescribed medications.

Enhanced professional services were not provided to a large extent in most pharmacies (Table 2). Fewer than one-third always provided printed medication information to patients, fewer than one-third regularly provided counselling to patients and only 11% regularly provided counselling in private areas. The provision of screening services such as testing for blood glucose and blood pressure, and peak-flow measurements, were only provided by a small number of pharmacies. Involvement in health promotion activities, such as smoking cessation counselling and community health education, was not undertaken to a large extent in the majority of pharmacies. Most pharmacies in the UAE did not routinely keep individualised patient medicine records. Although around a quarter of the respondents claimed that medication errors and adverse drug reactions were always reported, 40% of pharmacies did not often report these events.

Older pharmacists (Table 3) were less likely to be involved in providing patients with written information, in

Table 2 Professional services provided

Type of professional service offered	Never <i>n</i> ^a (%)	Occasionally <i>n</i> ^a (%)	Sometimes <i>n</i> ^a (%)	Mostly <i>n</i> ^a (%)	Always <i>n</i> ^a (%)	Total ^b	Median	Mean (95% confidence interval)
Patient information leaflet or other written or printed material	39 (11)	50 (15)	94 (28)	59 (17)	97 (29)	340	3	3.37 (3.23, 3.52)
Use of extra small precautionary labels, e.g. Take with food, Don't drive, etc.	48 (14)	33 (10)	58 (17)	86 (26)	112 (33)	337	4	3.53 (3.38, 3.68)
Private counselling in designated closed area	113 (35)	59 (18)	83 (25)	37 (11)	37 (11)	329	2	2.47 (2.32, 2.61)
Counselling in an open area	59 (18)	51 (15)	65 (20)	64 (19)	94 (28)	333	3	3.25 (3.09, 3.40)
Monitoring of patient compliance and adherence to medication instructions	60 (18)	65 (20)	84 (26)	66 (20)	53 (16)	328	3	2.96 (2.81, 3.10)
Clinical testing/disease prevention and detection with devices such as								
Weighing scales	140 (43)	40 (12)	65 (20)	33 (10)	47 (15)	325	2	2.40 (2.24, 2.57)
Blood glucose meters	175 (54)	28 (8)	51 (16)	31 (9)	42 (13)	327	1	2.19 (2.03, 2.35)
Blood pressure meters	148 (45)	29 (9)	64 (20)	43 (13)	43 (13)	326	2	2.39 (2.23, 2.55)
Peak-flow meters (for asthma)	241 (77)	23 (7)	28 (9)	7 (2)	14 (5)	313	1	1.50 (1.38, 1.61)
Skin-care counselling	56 (17)	58 (18)	88 (26)	58 (18)	70 (21)	331	3	3.08 (2.96, 3.23)
Smoking cessation counselling	44 (13)	64 (19)	90 (27)	68 (21)	67 (20)	331	3	3.15 (3.00, 3.29)
Referral to specific-specialty health care provider	39 (12)	52 (16)	92 (29)	54 (17)	84 (26)	321	3	3.28 (3.13, 3.43)
Involvement in community education	78 (24)	52 (16)	85 (26)	49 (15)	63 (19)	327	3	2.90 (2.74, 3.05)
Keeping individualised patient records	150 (47)	63 (20)	64 (20)	18 (5)	27 (8)	322	2	2.09 (1.96, 2.32)
Identification and reporting of medication errors	60 (18)	73 (22)	58 (18)	49 (15)	91 (27)	331	3	3.11 (2.95, 3.27)
Identification and reporting of adverse drug reactions	59 (18)	62 (19)	55 (16)	62 (19)	92 (28)	330	3	3.20 (3.04, 3.35)

^a*n* = Number of respondents completing the item. ^bNot all respondents completed every item.

Table 3 Effect of pharmacists' age on provision of professional services

Service	Age (years)	Never <i>n</i> ^a (%) ^b	Occasionally <i>n</i> ^a (%) ^b	Sometimes <i>n</i> ^a (%) ^b	Mostly <i>n</i> ^a (%) ^b	Always <i>n</i> ^a (%) ^b	Total ^c	<i>P</i> value
Patient information leaflet or other written or printed material	21–30	11 (7)	23 (15)	44 (28)	27 (18)	50 (32)	155	0.051
	31–40	15 (13)	19 (16)	24 (20)	22 (18)	39 (33)	119	
	>40	11 (19)	6 (10)	21 (37)	10 (18)	9 (16)	57	
Monitoring of patient compliance and adherence to medications	21–30	24 (16)	23 (15)	38 (25)	36 (24)	29 (20)	150	0.002
	31–40	14 (12)	30 (26)	31 (27)	23 (20)	17 (15)	115	
	>40	20 (36)	11 (20)	14 (26)	5 (9)	5 (9)	55	
Identification and reporting of medication errors	21–30	20 (13)	33 (22)	23 (15)	32 (21)	42 (28)	150	0.043
	31–40	23 (20)	24 (21)	23 (20)	11 (9)	35 (30)	116	
	>40	16 (28)	14 (25)	10 (17)	4 (7)	13 (23)	57	
Identification and reporting of adverse drug reactions	21–30	24 (16)	24 (16)	21 (14)	39 (26)	41 (28)	149	0.038
	31–40	19 (16)	24 (21)	22 (19)	15 (13)	36 (31)	116	
	>40	16 (28)	12 (21)	11 (20)	6 (11)	11 (20)	56	

^a*n* = Number of respondents completing the item. ^b(%) = Percentage of respondents in each age category. ^cTotal = total of respondents in each age category.

monitoring patient adherence to therapy and in identifying and reporting medication errors or adverse drug reactions. Gender, type of qualification (e.g. bachelor, master degree, etc.) and country of initial qualification of the pharmacist did not reveal any statistically significant influences ($P > 0.05$) on the provision of professional services. There was, however, a significant difference with respect to the emirate where the community pharmacy was located (Table 4): the supply of patient information leaflets or printed information and

screening for blood pressure was carried out in pharmacies in Abu Dhabi and Dubai to a greater extent than in other emirates; general counselling and smoking cessation counselling were delivered significantly more in pharmacies based in Dubai; and medication error identification and reporting was performed more frequently by respondents from Abu Dhabi. Independent pharmacies provided some of the professional services to a much greater extent than chain pharmacies (Table 5).

Table 4 Impact of pharmacy location on provision of professional services

Service	Location	Never	Occasionally	Sometimes	Mostly	Always	Total ^c	P value
		n ^a (%) ^b	n ^a (%) ^b	n ^a (%) ^b	n ^a (%) ^b	n ^a (%) ^b		
Patient information leaflet or other written or printed material	Abu Dhabi	8 (10)	6 (8)	23 (29)	23 (29)	18 (23)	78	0.000
	Dubai	18 (12)	19 (13)	32 (21)	16 (11)	64 (43)	149	
	Sharjah	7 (12)	14 (24)	21 (36)	9 (16)	7 (12)	58	
	Ajman	2 (6)	10 (30)	11 (33)	6 (18)	4 (12)	33	
	Others	4 (18)	1 (5)	7 (32)	5 (23)	5 (23)	22	
Counselling in an open area	Abu Dhabi	11 (14)	15 (20)	20 (26)	18 (23)	13 (17)	77	0.002
	Dubai	21 (14)	18 (12)	24 (16)	23 (16)	63 (43)	149	
	Sharjah	13 (24)	9 (16)	10 (18)	12 (22)	11 (20)	55	
	Ajman	6 (19)	7 (22)	6 (19)	8 (25)	5 (15)	32	
	Others	8 (40)	2 (10)	5 (25)	3 (15)	2 (10)	20	
Clinical detection with devices such as Blood glucose meters	Abu Dhabi	40 (51)	4 (6)	15 (19)	12 (16)	6 (8)	77	0.001
	Dubai	61 (41)	17 (12)	31 (21)	14 (10)	23 (16)	146	
	Sharjah	41 (76)	4 (7)	1 (2)	2 (4)	6 (11)	54	
	Ajman	25 (76)	2 (6)	1 (3)	3 (9)	2 (6)	33	
	Others	8 (46)	1 (6)	3 (18)	1 (6)	4 (24)	17	
Blood pressure meters	Abu Dhabi	35 (46)	3 (4)	17 (22)	23 (17)	8 (11)	86	0.005
	Dubai	48 (32)	18 (12)	34 (23)	23 (16)	23 (16)	146	
	Sharjah	34 (62)	7 (12)	7 (13)	2 (4)	5 (9)	55	
	Ajman	21 (66)	1 (3)	4 (13)	4 (12)	2 (6)	32	
	Others	9 (53)	1 (5)	2 (11)	1 (6)	4 (24)	17	
Smoking cessation counselling	Abu Dhabi	10 (13)	23 (30)	19 (25)	11 (14)	14 (18)	77	0.001
	Dubai	16 (11)	20 (13)	34 (23)	37 (25)	41 (28)	148	
	Sharjah	13 (24)	11 (20)	22 (39)	7 (12)	3 (5)	56	
	Ajman	1 (3)	9 (27)	10 (30)	7 (21)	6 (18)	33	
	Others	4 (21)	1 (5)	5 (26)	6 (32)	3 (16)	19	
Identification and reporting of medication errors	Abu Dhabi	13 (17)	10 (13)	10 (13)	15 (20)	28 (37)	76	0.006
	Dubai	26 (17)	33 (22)	20 (14)	20 (14)	48 (33)	147	
	Sharjah	14 (25)	16 (28)	16 (28)	6 (10)	5 (9)	57	
	Ajman	3 (9)	12 (37)	6 (19)	5 (16)	6 (19)	32	
	Others	4 (21)	2 (10)	6 (32)	4 (21)	3 (16)	19	

^an = Number of respondents completing the item. ^b(%) = Percentage of respondents in each location category. ^cTotal = total of respondents in each location category.

Table 5 Influence of type of pharmacy on provision of professional services

Service	Type	Never	Occasionally	Sometimes	Mostly	Always	Total ^c	P value
		n ^a (%) ^b	n ^a (%) ^b	n ^a (%) ^b	n ^a (%) ^b	n ^a (%) ^b		
Patient information leaflet or other written or printed material	Independent	18 (12)	22 (15)	31 (21)	21 (14)	57 (38)	149	0.008
	Chain	21 (11)	27 (14)	62 (33)	37 (20)	41 (22)	188	
Counselling in an open area	Independent	18 (12)	27 (19)	23 (16)	26 (18)	51 (35)	145	0.016
	Chain	40 (22)	23 (12)	42 (23)	38 (20)	43 (23)	186	
Identification and reporting of medication errors	Independent	28 (19)	25 (17)	17 (12)	21 (14)	55 (38)	146	0.001
	Chain	31 (17)	48 (26)	40 (22)	28 (15)	36 (20)	183	
Identification and reporting of adverse drug reactions	Independent	24 (16)	22 (15)	16 (11)	27 (19)	56 (39)	145	0.002
	Chain	34 (19)	40 (22)	38 (21)	35 (19)	36 (19)	183	

^an = Number of respondents completing the item. ^b(%) = Percentage of respondents in each type of pharmacy category. ^cTotal = total of respondents in each type of pharmacy category.

Discussion

Most pharmacies in the UAE provided a wide range of pharmaceutical and non-pharmaceutical products. Enhanced professional services were not provided to a large extent through most pharmacies including the provision of print information and counselling to patients. Whereas health promotion services and screening for disease were only provided in a minority of pharmacies, individualised patient profiles were seldom kept on record in the vast majority of pharmacies. A quarter of the pharmacists reported medication errors and adverse drug reactions but 40% of the pharmacies were not often involved in such activities.

This is the first study in the UAE to investigate the extent and frequency of services provided through community pharmacies in the UAE. The somewhat unconventional hand-delivery method of distribution of the questionnaires was the optimal methodology given the absence of an effective postal system and non-universal access to the internet through pharmacies. Given the anonymous nature of the survey which did not allow exploration of the characteristics of non-respondents, non-response bias cannot be ruled out. As the data were dependent on self-reporting by participants, inaccuracies may be inherent due to social desirability bias. In addition, some of the data may reflect pharmacist-specific experiences and not necessarily a pharmacy-wide practice. The potential for misinterpreting questions was minimised by establishing face and content validity and piloting the questionnaire prior to distribution.

Product supply services

Pharmacies in the UAE offer a wide range of medicinal and non-medicinal products; however, access to the products offered is not always consistent, primarily because the UAE pharmaceutical market routinely experiences drug shortages.^[30] This may be due to a supply chain serving the UAE which stems from a single agent system that lacks competition, and the low demand for a specific product, leading to the supplier waiting to accumulate a minimum order size before importing the product.^[30] Pleasingly, the health authorities in the UAE are working to increase the number of pharmaceutical wholesalers and establish more flexible drug procurement policies.^[30,31]

Professional services

In many developing countries, pharmacists have much to offer with respect to services beyond what they have traditionally provided.^[32] The UAE is no different; this study has found that many professional services are not being provided through the majority of pharmacies. The fact that drug information and printed instructions are not given to patients in

many pharmacies may be due to the lack of access to the appropriate information. The usefulness of the drug package inserts provided to patients in other countries in the region is often questionable, as they have been found to convey limited and incomplete information.^[33,34] This is of concern given the role of printed information in assuring adequate knowledge, encouraging compliance and promoting patient empowerment.^[35–38] Similarly, counselling about medications is not provided to a large extent, perhaps in part due to the lack of patient demand for counselling. This is something reported by the pharmacists, in our earlier study, as a barrier to offering professional services.^[24]

Pharmacists in the current study are also minimally involved in screening for diseases, which may be attributed, in part, to their inability to charge for services they provide. Pharmacists identified the lack of financial reward for providing professional services as a barrier to the implementation of these services.^[24] Community pharmacists practising in Abu Dhabi and Dubai (the two largest emirates in the UAE) were more involved in providing enhanced professional services than those practising in other emirates. Of concern is that patients in other emirates may not have access to adequate primary care services within their communities,^[39] which emphasises the need to provide enhanced services in community pharmacies. Our study also found that those working in independent pharmacies were more involved in providing enhanced professional services. Similarly, a consumer report from the USA reported that independent pharmacies provide more one-on-one personal attention and a higher quality of patient counselling than chain pharmacies.^[40]

UAE and the International Pharmaceutical Federation's good pharmacy practice in developing countries

In its *Good Pharmacy Practice in Developing Countries* document, the International Pharmaceutical Federation (FIP) recommended a step-wise approach including four major categories by which an individual country could identify the current level of its pharmacy service and then move to a higher level of practice when the time and resources are appropriate.^[41] The health authorities, pharmacists and patients in the UAE could benefit from these recommendations. The four categories are: personnel, training, standards, and, legislative and drug policy.

In the personnel category, the aim of the FIP recommendation was 'all people have access to a qualified pharmacist'. There are five steps in this category, ranging from step 1, 'access to a community health care worker with appropriate pharmaceutical training', to step 5, 'direct access to a pharmacist'. The UAE is currently between steps four and five, as the population in the UAE has inconsistent access to pharmacists

but more consistent access to pharmacy assistants^[17] From the training perspective, the aim was 'for the country to be self-sufficient in training pharmacy personnel'. The UAE also ranks between steps four and five in this category, given that pharmacists can be educated in the UAE but the majority of its pharmacy staffing is from other countries.^[24] Although the recent introduction of continuing education (step 5 in this category) in the UAE is a step forward, it is important to ensure that the continuing education programmes introduced not only focus on enhancing pharmacists' knowledge but also help them attain the skills to engage in patient-centred care.^[42] The standards category in the FIP recommendations focuses on a variety of areas including the pharmacy premises, dispensing, containers used, labelling of containers, instructions to patients, keeping patient records, self-medication and assurance of product quality. This is where significant improvement is required for community pharmacy practice in the UAE. Our data suggest that improvements in the dispensing process, which includes labelling of containers, provision of patient counselling and instruction, provision of printed information and maintaining appropriate patient records, are all needed. The fourth category, legislation and national drug policy, aims 'to establish a national Good Pharmacy Practice (GPP) policy that can be adequately enforced' and 'to ensure equitable access to safe and effective drugs of good quality by establishing a National Drug Policy'. Although this study did not investigate the extent to which the existing UAE national drug policy is enforced, it is common practice in many developing countries that such policies are not always adequately enforced.^[17]

Conclusion

This study has documented the type and frequency of pharmacy services provided through community pharmacies in the UAE and has highlighted the need to improve the delivery of enhanced professional services. Although this study has provided valuable information about pharmacy services from the pharmacist's perspective, exploring physicians' and patients' perspectives on the role of pharmacists in contributing to patient care would help in developing strategies to improve the provision of community pharmacy services in the future.

Declarations

Conflict of interest

The Author(s) declare(s) that they have no conflicts of interest to disclose.

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Chapter 5: Patients' satisfaction with and expectations of community pharmacy services in the UAE

5.1 Introduction

As discussed in Chapter 1, patient satisfaction is an integral component of the assessment of quality of healthcare. High satisfaction promotes positive health behaviours, such as compliance with therapy and continuing to use healthcare services, and has been linked to patient loyalty to care providers. Whilst patient satisfaction has become an important factor in evaluating the quality of healthcare services in developed countries, it is still a growing interest in developing countries.

In Arab countries, there are only a few published studies that have assessed satisfaction with community pharmacy services,[1-3] none of which originated from the UAE. In addition, no tools or instruments have been validated to assess patient satisfaction with pharmacy services in the Arabic context. Evidence from the UAE suggests that community pharmacies are not providing primary care services to a large extent (Chapter 4), therefore, it was crucial to investigate patients' views and their likelihood of utilising primary care services if they were to be provided through community pharmacies.

This chapter provides background information fundamental to the investigations into patient satisfaction, which are presented in Chapters 6 and 7.

5.2 Definitions of patient satisfaction

Ware *et al.* defined patient satisfaction as “personal evaluation of healthcare services and providers.”[4] They viewed satisfaction as a multi-dimensional construct in which specific characteristics of the service have a different effect on patients' views of that service and the providers offering it. Another widely accepted definition is that proposed by Pascoe: “healthcare recipients' reaction to salient aspects of the context, process, and results of the service experience.”[5] In this context, satisfaction was regarded as a net result of the cognitive and affective response to what the patient perceives of the structure, process and outcomes of the service he/she receives, and the expectation he/she has of that service.

5.3 Conceptualisations and theoretical frameworks of patient satisfaction

In evaluating patient satisfaction with services, it is important to identify the purpose of the evaluation, since this would facilitate the appropriate conceptualisation of satisfaction to serve as the basis for the evaluation.[6] Schomer and Kucukarslan described four conceptualisations of patient satisfaction:[6]

- Performance evaluation: this is based on the concept of patient satisfaction as an evaluation of the characteristics of a service and/or the provider using the definition by Ware *et al.*[4] A limitation to this concept is that patients can evaluate the performance of health professionals only on services with which they can identify. It could also represent evaluations from a health system point of view rather than an individual patient's point of view since the areas for evaluation are decided upon by the evaluators.
- Disconfirmation of expectation: this assessment includes the psychological process patients use in their evaluation. In basic terms, satisfaction occurs when consumers compare the

service provided with the service they expected, and they are dissatisfied when the service does not meet their expectation.

- Affect-based assessment: this is based on a pleasurable response to a service encounter. This type of conceptualisation can be an independent factor leading to satisfaction or dissatisfaction, or it could be the consequence of a reaction to a service encounter preceded by an expectation; meeting patients' high expectations will result in happiness and pleasure, and failing to meet patients' moderate expectations is likely to result in disappointment.
- Equity-based assessment: this is based on patient evaluation of services in terms of outcomes versus inputs. Patients' perception of fairness increases when the difference between inputs and outputs is in their favour. If patients perceive the service is not benefiting them over what they are sacrificing (e.g. time, money), they are more likely to be dissatisfied.

In evaluating patient satisfaction, it is important to choose a conceptualisation which best serves the purpose of the evaluation. For example, if the objective is to assess patients' rating of specific aspects of a service performance, then an experience-based evaluation of that performance is appropriate; whereas, if the objective is to assess the likelihood of the patient to come back and use the service, then a satisfaction measure that includes affective reactions to the service would be more appropriate.[6] Theoretical frameworks used in most patient satisfaction studies with pharmacy services have based their assessments on the performance evaluation conceptualisation, and treated patient satisfaction as a multidimensional construct that evaluated different aspects of the service, and considered these aspects distinct from each other.[4] This type of evaluation is the least abstract and most convenient, especially in the evaluation of traditional pharmacy services as opposed to pharmaceutical-care services or pharmacist

interventions.[7] Other frameworks have used evaluations based on the disconfirmation of expectations,[8,9] or a mix of disconfirmation of expectations with performance evaluation.[10-15] The approach of using more than conceptualisation in the evaluation has mainly been used where the focus of the assessment was on patients' reaction to pharmaceutical-care services,[8-10,12,15-17] or to interventions [11,13,14,18] rather than traditional pharmacy services.

5.4 Instruments, dimensions and items measuring satisfaction

Ware and colleagues investigated patient satisfaction with medical care and introduced the Patient Satisfaction Questionnaire (PSQ) in the 1970s.[19] This instrument continues to be widely used to measure patient satisfaction with medical care.[20] Originally, it contained 80 items and covered eight categories or dimensions: interpersonal characteristics, technical quality, accessibility and convenience, finances, efficacy and outcomes, continuity, physical environment and availability.[19] The instrument has gone through successive modification resulting in a shorter form which contains 18 items.[21]

Using a modified version of the PSQ, satisfaction with community pharmacy services was explored by MacKeigan and Larson.[22] Their survey consisted of eight dimensions covering 44 items. The dimensions included: explanation, consideration, technical competence, financial aspects, accessibility, drug efficacy, non-prescription products and quality of the drug product dispensed. In an attempt to shorten and further validate their original instrument, Larson and MacKeigan refined their questionnaire, resulting in a version that used 33 items to measure seven dimensions of satisfaction.[23] The seven dimensions were: explanation, consideration, technical competence, finance, accessibility, product availability and general satisfaction.

Malone *et al.*, on the other hand, added three items to six from the MacKeigan and Larson questionnaire [22] to develop a scale that only measured one dimension, resulting in a major reduction in survey length but still with a reliability of 0.94 using Cronbach's alpha.[24] Treating patient satisfaction as a single dimension has been criticised by Ware and others, who viewed it as a multidimensional construct being affected by many factors and considered that, for an instrument to truly measure patient satisfaction, it needed to assess all dimensions.[19,20]

Gourley *et al.*, who developed the Pharmaceutical Care Satisfaction Questionnaire (PCSQ), were the first to investigate patients' satisfaction with pharmaceutical care.[25] The questionnaire reliably assess four dimensions of satisfaction with pharmaceutical care services, including patient-provider communication, patient empowerment, provision of pharmaceutical care and patient knowledge of medications. More recently, Larson *et al.* acknowledged the need to focus on patient satisfaction as it relates to pharmaceutical-care services, since the instruments they had developed [22,23] were before the advent of pharmaceutical care. Hence, they developed a new instrument focusing on addressing patient-centred care, including gathering of patient-specific information, identifying patient-specific problems, devising and implementing plans to prevent or resolve drug-therapy problems.[26] Four dimensions of care were proposed: considering/caring relationships, explanation, setting, and managing therapy, with an additional item to assess the overall pharmacy service.

Following this work, and with pharmacy practice moving towards pharmaceutical care, many studies assessing patient satisfaction with pharmacy services have focused on managing specific disease states.[11,13,27-34]

5.4.1 Effect of culture, ethnicity and language on instrument development

The role of culture and ethnicity on determining perceptions affecting health behaviour and attitudes has been studied and it has been suggested that satisfaction is influenced by individual and social values.[35-39] Zola found that patients from different ethnic backgrounds (Irish, Italian and Anglo-Protestant) had different reactions to symptoms of the same diagnoses; for instance, Italian patients felt that their symptoms affected their interpersonal dealings more often than other ethnicities.[36] In addition, patients differ in their perceptions about what qualities and characteristics constitute a good health practitioner, with some basing their confidence on the practitioner's character and their humanitarian attitude, while others based it on professional experience and training.[40] An understanding of the effect of the language spoken by the patient is necessary for any effective communication and relationship building with the healthcare provider to occur.[38] In one study, it was noted that patients who were interviewed in English rather than their native tongue were more "pathological".[38] As such, it is inappropriate to use a patient satisfaction instrument that has been developed and validated for one culture and language, and use it in another context. Knowledge of, and sensitivity to cultural differences is crucial to guide the development of measures of satisfaction.

5.4.1.1 Patient satisfaction instruments in non-English culture

Several attempts to develop and validate instruments for measurement of patient satisfaction with pharmacy services in languages other than English have been reported, with most focusing on adapting existing English-based instruments to the Spanish language and culture.[15,41,42] These studies focused on patient satisfaction with pharmaceutical care services,[42] with the pharmacists themselves being providers of care,[41] and with the dispensing process.[15] The

studies provided detailed discussion about item selection, English - Spanish translation and the development procedures for valid and reliable multidimensional instruments to measure satisfaction with pharmaceutical care [41] and the pharmacist providers,[40] and a one-dimensional instrument for the dispensing process.[15]

Table 5.1 summarises studies about patient satisfaction and expectations of community pharmacy services and the instruments they used.

Table 5.1: Summary of studies about patient satisfaction and expectations of community pharmacy services and the instruments used

Author(s), date	Participants/Setting	Conceptualisation of satisfaction/Method	Main findings/Outcomes	Limitations/Comments
Lang & Fullerton, (1992)[43]	391 outpatient records from a community pharmacy affiliated with a private, non-profit healthcare provider in a Midwestern city, USA	Performance evaluation Self-administered, mail questionnaire. Identified relevant components of outpatient pharmacy service which impacted patients' perception of satisfaction. Developed on-going instrument to track satisfaction with pharmacy services over time.	Two dimensions extracted: professional communication, and physical and emotional well-being of the patient. These formed the basis of consideration in the design of measures used to assess patient satisfaction over time in further studies.	A low response rate of 26.1% jeopardises generalisation to the population. This study founded the basis for further studies on patient satisfaction as a newly-validated questionnaire
Malone <i>et al.</i> , (1993)[24]	19 experimental pharmacies (16 control pharmacies) undergone a value-added pharmacy services (VAPS) program in Texas, USA	Performance evaluation Satisfaction with pharmacist counselling using six items from the original MacKeigan and Larson questionnaire plus three additional items. Examined effects of the value-added pharmacy services (VAPS) program on patient satisfaction and meeting patient expectations and needs.	Study found that patients of VAPS pharmacies received more pharmacy services and were more likely to report the services to other patients than those of control pharmacies. A measure of satisfaction as a one dimensional construct was developed.	Discussion of validity and reliability was provided. Unidimensionality has been criticised in the literature.
Briesacher & Corey, (1997)[44]	260 people immediately after visits to randomly selected chain (n=10) or independent (n=16) pharmacies from ten ZIP code areas in Philadelphia, USA.	Performance evaluation An interviewer administered the Pharmacy Encounter Survey (PES) face-to-face to participants to assess patient satisfaction with specific features of pharmacy and personnel. Satisfaction with time taken for prescriptions to be filled, technical skills courtesy of pharmacy personnel, convenience of the pharmacy's location, and others.	High satisfaction scores were achieved for both pharmacy types. Participants were most satisfied with the pharmacy location but least satisfied with wait times for prescriptions. Independent pharmacies were rated better than chain pharmacies in all service encounters.	The study was done in an urban setting in the USA so the results may not be extrapolated to other settings. However, it focused on general dimensions of care not specific pharmaceutical care so questionnaire items are close to a UAE focus. The PES was a previously validated tool.
Galt <i>et al.</i> , (1997)[14]	475 patients who attended a primary care community- based clinic, while waiting for clinic care in Nebraska, USA	Performance evaluation & disconfirmation of expectations A self-completed survey given to all patients to determine their level of satisfaction with services, medication-related education, services the patient would desire from pharmacists in future.	Patients reported general satisfaction with current pharmacy services. Majority indicated they would use enhanced services from a pharmacist, such as advanced medication monitoring services (60%), non-scheduled medication review sessions (40%), scheduled appointments (22%), and home visits (11 %).	No psychometric analysis of validity or reliability of instrument items provided, which may compromise findings.

Author(s), date	Participants/Setting	Conceptualisation of satisfaction/Method	Main findings/Outcomes	Limitations/Comments
Johnson <i>et al.</i> , (1998)[45]	509 patrons of traditional pharmacy services who participated in a previous longer-itemed study as part of further validation of data collection instrument, in USA.	Performance evaluation Data collected by telephone interview. Detailed discussion of validity and reliability of items in the instrument was provided. Aim: to determine dimensional structure of satisfaction and to determine whether satisfaction is best viewed as a unidimensional or multidimensional construct.	The data supported the five dimensional structure of patient satisfaction. The abbreviated four-item measure of general satisfaction could be enough to serve as a measure of general satisfaction with pharmacy services.	This study is useful to consult for developing an instrument for traditional type of practice such as in the UAE.
Liu <i>et al.</i> , (1999)[13]	208 patients seen in the University of Utah Asthma Clinic for at least 3 months undergoing an intervention program by pharmacists in Utah, USA.	Disconfirmation of expectation & performance evaluation A self-developed questionnaire mailed to a convenient sample of asthmatic patients. Patient satisfaction scores with pharmacist-administered counselling, patient perceptions of value and frequency of asthma education counselling. Secondary outcome: willingness to pay.	A significant relationship found between patient satisfaction and counselling despite it not being regularly provided by community pharmacists. 62% reported being at least somewhat satisfied with services. Most (75%) were unwilling to pay out-of-pocket for services.	The study used <i>ad hoc</i> questionnaire (no validation utilised) containing items specific for satisfaction with asthma management and counselling. Findings may not apply to traditional-type services. High satisfaction scores before intervention were observed.
Kradjan <i>et al.</i> , (1999)[29]	471 community-based patients receiving asthma medications from 44 intervention pharmacies and 1,164 patients from 46 usual care (control) pharmacies in Oregon, USA	Performance evaluation Mail questionnaire to a random sample, assessing patient satisfaction pre- and post-intervention on an asthma population. Patient satisfaction and perceived benefits of an asthma service involving pharmacist identifying drug-related problems, management of disease, device technique. Satisfaction items: timeliness, access, explanation, skills and collaboration with physicians.	Despite reported high general satisfaction with pharmacy services, which was not statistically different between intervention and control groups, patients had low expectations of their pharmacists regarding asthma-related management, probably due to unawareness.	The study used <i>ad hoc</i> questionnaire (no validation utilised) containing items specific for satisfaction with asthma management, a practice that does relate to UAE. Response rates of 39.0% (intervention) and 42.4% (control) may have introduced response bias.
Gourley <i>et al.</i> , (2001) [25]	360 patients in ambulatory pharmacies (control patients receiving routine care) and 311 patients (treatment patients) whose hyperlipidaemia was managed by pharmacists in multi-centres in 15 Department of Veterans Affairs medical centres in the USA.	Performance evaluation Pharmaceutical Care Satisfaction Questionnaire (PCSQ) (a 30-item instrument) was administered to assess instrument reliability, centred around four dimensions of satisfaction with pharmaceutical care services: patient-provider communication, patient empowerment, provision of pharmaceutical care and patient knowledge of medications.	Treatment patients were more satisfied with the care they received from their pharmacists than were control patients. The questionnaire was designed for use in various pharmacy service settings: community-based practice, ambulatory care and inpatient pharmacy.	Instrument was designed to assess satisfaction with pharmaceutical care and, may be too specific to apply to the practice in UAE. One of the first instruments to focus on pharmaceutical care.

Author(s), date	Participants/Setting	Conceptualisation of satisfaction/Method	Main findings/Outcomes	Limitations/Comments
Volume <i>et al.</i> , (2001)[12]	292 intervention and control elderly patients on three or more medications, receiving a general pharmaceutical care service in 16 community pharmacies, in Canada.	Performance evaluation, & disconfirmation of expectations A questionnaire adapted from previous studies administered via telephone to a random sample. Patient expectations and satisfaction with pharmacy services covering staff skills, establishing goals, therapy management, explanation, diligence, and collaboration with physicians.	High baseline satisfaction was reported. Patient satisfaction was influenced by pharmacists' management, establishing goals for patients and communication with other health care providers. Difference between control and treatment group was small.	The study utilised <i>ad hoc</i> questionnaire (no validation utilised). High baseline satisfaction did not permit group comparisons. This is a useful study to consult for developing an instrument for traditional type of practice such as in the UAE.
Kansanaho <i>et al.</i> , (2002)[46]	200 patients receiving an interventional program of counselling by one community pharmacy in Finland	Performance evaluation Questionnaire administered to a random sample of patients via telephone interviews. Patient perceptions of the effect of counselling on the patient's health, frequency of counselling and who usually initiates the counselling episode.	Patients reported a positive effect of counselling on patient behaviour (31%) including better understanding of medications (36%). In the majority of episodes, pharmacists initiated counselling (70%).	The study utilised items borrowed from another (no validation utilised). It was carried out in one pharmacy, a major limitation as this may not be representative of all pharmacies. 100% response rate is a strength.
Bultman & Svarstad. (2002)[30]	23 community pharmacies enrolled 100 patients taking antidepressants: 59 taking an antidepressant for the first time in Wisconsin, USA	Performance evaluation Pre- and post-intervention design; self-developed questionnaire administered through randomly-selected pharmacies to randomly-selected participants by telephone. Effect of Pharmacist monitoring, and patients' beliefs and perceptions of medications on patient satisfaction and adherence.	Pharmacist monitoring, such as inquiring if patients had concerns, listening to their concerns, and encouraging patients to ask questions, in addition to initial patient beliefs about medications, were related positively to satisfaction and adherence to therapy.	The study utilised <i>ad hoc</i> questionnaire (no validation utilised). Pharmacists and patients chose whether to participate. As not all eligible patients were invited by pharmacist; self-selection biases may exist. Number of patients in each setting was too small to allow comparison between groups.
Singhal <i>et al.</i> , (2002)[47]	160 patients post-intervention in 3 community pharmacies and 2 ambulatory clinics in New Mexico, USA.	Performance evaluation A questionnaire from a previously published study was administered on site to a convenient sample. Effect of directive guidance behaviour (such as information provision, feedback and goal setting by pharmacists) on patient perceptions and satisfaction with pharmaceutical care services.	Higher incidence of directive guidance behaviour by pharmacists was associated with higher rates of satisfaction with the services. Higher rates of directive guidance behaviour and patient satisfaction with the services were perceived by patients in the ambulatory clinics compared with community pharmacies.	Questionnaire depended on previously used items (no validation utilised). All study sites were University of New Mexico College of Pharmacy rotation sites. Study included only five pharmacy practice sites, thus results may have limited generalisability.

Author(s), date	Participants/Setting	Conceptualisation of satisfaction/Method	Main findings/Outcomes	Limitations/Comments
Pronk <i>et al.</i> , (2003)[31]	Pre- and post-test parallel intervention and control groups in 14 intervention and 14 control community pharmacies in the Netherlands.	Performance evaluation A self-developed questionnaire distributed at pharmacies but mailed back to researchers, administered to a convenient sample at three different occasions. Patient satisfaction with education program activities and pharmacy services including wait time, information provision and diligence of staff.	High rates of satisfaction with helpfulness, ease of asking for information, print information handed to patients, and favourable waiting time. Intervention was associated with positive effects on helpfulness of staff. Difficulties in asking questions were related to lack of privacy (16.9%), waiting time (8.8%) and busy employees (6.7%). Receiving too little information was the most frequent reason for lower satisfaction scores.	<i>Ad hoc</i> questionnaire developed for the study (no validation utilised). Convenience sampling may have caused selection bias. Decreasing response rates of 54%, 44% and 43% obtained for three occasions, intervention effects still retained at end of study.
Coleman <i>et al.</i> , (2004)[28]	16 patients attending an anticoagulation clinic in the UK.	Performance evaluation A self-developed questionnaire administered to a convenient sample on site pre-intervention and through mail post-intervention. Patient views on anticoagulation and stroke prevention service including measurement of INR, dose adjustment, medicines usage, anticoagulation control, information provision and patients' preferred service setting (pharmacy or hospital).	High level of satisfaction with the pharmacists and the services they provide. Majority s (63%) said they had increased knowledge of their therapy and 43% said they had better anticoagulation control after the initiation of the study. Majority of patients (86%) wanted the community pharmacy to provide the service permanently.	<i>Ad hoc</i> questionnaire developed for the study (no validation utilised). Interventional study of anticoagulation is specific for this type of practice; small sample size to draw any generalisations; findings may not be applicable to UAE setting.
Stuurman-Beize <i>et al.</i> , (2005)[27]	141 intervention patients receiving pulmonary management services at 22 community services in the Netherlands.	Performance evaluation A self-developed questionnaire mailed to a random sample of patients in a post-test study design in addition to consultation with a pharmacist one year after start of intervention. Assessing patient satisfaction with a service covering counselling education regarding disease state, medications and devices and self-care.	90% of patients considered service important; they reported increased knowledge about medications and devices (47%) and better skills (51%). 36% had better ability to cope with medications and reported fewer symptoms, 61% of whom indicated reduced symptoms were related to pharmacist consultation.	<i>Ad hoc</i> questionnaire developed for the study (no validation utilised). Convenience sampling limits generalisation. Study is specific to pulmonary disease; findings may not apply to other disease conditions or other settings such as UAE.
Traverso <i>et al.</i> , (2007)[42]	Patients receiving pharmaceutical care or traditional pharmacy services at 41 community pharmacies of the province of Santa Fe. Argentina.	Performance evaluation A self-completed questionnaire developed, validated in Spanish and administered to a convenience sample. Back and forth translation of instrument by bilingual experts. Validity and reliability testing of items undertaken.	Factor analysis resulted in three factors: Managing therapy, Interpersonal relationship and General satisfaction. Statistical tests did not show significant differences between pharmacies providing pharmaceutical care and those that did not. Questionnaire could be used reliably (in Spanish) to assess patient satisfaction with pharmaceutical care.	Focusing on pharmaceutical care practice limits applicability to traditional services. Participating pharmacies non-randomised, patients were chosen by pharmacists (convenience) possibly leading to favourable results. Response rate of 81.3 % was a strength.

Author(s), date	Participants/Setting	Conceptualisation of satisfaction/Method	Main findings/Outcomes	Limitations/Comments
Tinelli <i>et al.</i> , (2007)[11]	A sample of 1232 (pre-test) and 1085 (post-test) intervention and control patients with coronary heart disease (CHD) at 60 community pharmacies were recruited from general practice registers in nine primary care organisations in England.	Performance evaluation & disconfirmation of expectations A self-developed, mail questionnaire at baseline and 12 months after intervention administered to a random sample, assessing patient satisfaction, attitudes, expectations and experiences of patients of a pharmacy-based medication management service. Others included assessment of patient therapy, compliance, lifestyle and social support.	High levels of satisfaction with pharmacy services were reported. Mean satisfaction scores were significantly higher for intervention patients than controls. Intervention patients were likely to recommend the service to others (51%) and found it easier to discuss medications with their pharmacists (32%). Majority of both intervention and control patients preferred to discuss medications with their physicians.	The study utilised <i>ad hoc</i> questionnaire (no validation utilised). Study is specific for CHD patients and findings may not apply to other diseases or different populations. Follow-up was distributed 12 months after intervention, recall bias may have influenced responses. Good response rates both pre and post intervention (88.4% & 80.1 %)
Armando <i>et al.</i> , (2008)[15]	27 community pharmacies participated, 561 questionnaires were obtained after a period of 2 months in Spain	Performance evaluation & disconfirmation of expectation component A validated, self-administered, semi-structured questionnaire administered to a convenience sample of Spanish-speaking patients, measuring satisfaction scores with dispensing services. A qualitative component on the questionnaire was included to capture expectations of patients.	Questionnaire showed evidence of validity and reliability for evaluating patient satisfaction with the dispensing service as a single dimension. 15.5% of patients made positive comments about the quality of attention received and availability and friendliness of the pharmacy staff.	Treating satisfaction as a unidimensional construct has been criticised in the literature; volunteer pharmacies hand-picked patients may have led to biased results.
Franic <i>et al.</i> , (2008)[8]	175 adult patients receiving services at community independent, grocery store, community chain, and discount store pharmacies in Georgia, USA	Disconfirmation of expectations Cross sectional survey measuring patient preferences in community pharmacies administered to a convenience sample. Preferences were measured on 26 attributes of general pharmacy site features, pharmacist characteristics, and pharmacy staff characteristics.	The attributes of pharmacists and staff at all four pharmacy settings were shown to affect pharmacy patronage motives. Other factors included convenience e.g., hours of operation, and prescription coverage. Pharmacy personnel affect pharmacy selection; optimal staff training is an important investment for ensuring pharmacy success.	The study utilised <i>ad hoc</i> questionnaire (no validation utilised). Convenience sampling and small sample size may limit generalisation to the wider population.
Kassam <i>et al.</i> , (2012)[10]	628 patients from 55 community pharmacies serving as training sites for British Columbia University, Canada.	Performance evaluation & disconfirmation of expectations A survey of patient expectations of pharmaceutical care-related activities while shopping in 'any pharmacy' and in 'this particular pharmacy' were assessed. Validity of previously published satisfaction scale to be established in larger and more diversified patient population and community pharmacies.	The three-factor satisfaction structure was confirmed. Satisfaction measures were not affected by patient demographics or medical condition. Strong and significant differences in satisfaction between different pharmacies and when there were consultations by pharmacists or pharmacists-plus-students. Introduction of pharmaceutical care in pharmacies improves patient satisfaction.	Community pharmacies were non-traditional sites involved in training students and so may not be representative of all community pharmacies. No response rate was given in the study limiting assessment of non-response.

5.5 Studies about patient satisfaction and expectations of community pharmacy services

Studies investigating patient attitudes towards community pharmacy services have mostly used convenience sampling to access patients at pharmacies.[15,26,31,42,47] In some cases, patients were recruited from independent clinics,[13,22] hospital outpatient clinics,[48] public places such as shopping malls [49,50] or through telephone directories.[46] Published studies have used different means of administering questionnaires, including mail,[13,31,32,51] telephone,[12,30] self-completion on site,[15,42] or on site face-to-face interviews.[44,52,53]

Different modalities for participant recruitment and survey administration have advantages and disadvantages. Recruiting participants at pharmacies,[54-56] or at outpatient medical clinics [57,58] allows easy access to a large number of potential participants, but researchers mostly utilise the help of the pharmacy/clinic staff to distribute questionnaires. Unfortunately, in these situations, the researchers do not have full control of the conduct of the study and adherence to study protocols, which may affect study results. Specifically, pharmacy/clinic staff may be biased in their selection of study participants leading to oversampling of individuals who are more likely to participate, or those who are recruited at quieter times.[59] Participants on the other hand, may feel they need to rate the services more positively than they truly believe, knowing that the questionnaires may be viewed by pharmacy/clinic staff with whom they have a relationship.[59] Inpatient recruitment has its own challenges; ward activity or patient unavailability due to examinations and procedures or sleep may hinder access to patients.[60] Recruitment of participants in public places allows access to a greater number of participants but risks oversampling frequent shoppers.[59] Mechanisms to increase representativeness in this setting are to utilise shopping malls that are used by a wide cross section of the population, to

recruit participants at different times of the day and on different days of the week, and possibly to add some randomisation to participant selection by including a systematic sample, for example, of every 10th shopper during busy times and every 5th shopper during quieter times.[49] Telephone directories have been used to recruit potential participants in patient satisfaction research and offer a useful means to access the overall general population as well as special group populations.[61-64] For example, one study used random digit dialling technique in order to ensure randomisation in sample selection [62] while another used lists containing members of certain population groups.[61] Using telephone directories risks neglecting households without landlines and oversampling those with multiple telephone lines. Other potential drawbacks to telephone sampling include the difficulty in including participants with hearing disabilities or those who do not speak the language of the researcher.[59]

5.5.1 General findings of patient satisfaction and expectations studies

Please see Table 5.1 for the summary of studies.

A high level of patient satisfaction with community pharmacy services has generally been reported.[7,12,29,42] Specifically, patients perceived pharmacists' attitudes, medication availability, convenience, pharmacy facilities, and location as strong positive influences on satisfaction,[44,51] while the long waiting time for prescriptions to be dispensed was perceived as a negative influence.[44] Patients were more satisfied when higher levels of medication counselling and drug monitoring were provided through community pharmacies.[13,47] In studies evaluating interventional programs by pharmacists, patients were very highly satisfied with the interventions delivered in almost all studies.[13,15,30,31,46,47] An interesting

observation was that high levels of satisfaction with services were often reported even prior to the intervention,[12,29,31] which may reflect low existing expectations and lack of awareness of possible services that could be provided through community pharmacy.[53] This has also been observed in studies of patient satisfaction with other health services,[65,66] making comparisons of satisfaction levels before and after interventional programs difficult.

Some studies have reported the development and validation of the instruments used to evaluate the services [10,15,22,24-26,42,45,67] but many failed to provide adequate discussion of their tool development, which limited the reliability of their findings, especially given that high scores for patient satisfaction were observed in most studies.

5.5.1.1 Patient satisfaction findings in the Arabic context

Whilst patient satisfaction studies in the Arabic context have explored satisfaction with medical services at government-run primary health clinics in Kuwait, Qatar, Saudi Arabia and the UAE,[68-70] as mentioned in section 5.1, only a handful have explored patients' perspectives of community pharmacy services in Arab countries.[1-3] These studies were conducted in Saudi Arabia,[1] Qatar,[2] and Palestine.[3] All studies used survey methodology based on an instrument established in Western culture that was translated to the Arabic language.

From Saudi Arabia,[1] a self-completed questionnaire was developed to assess patients' choice of pharmacy, their interactions with community pharmacists, and advice from pharmacists about general health and prescribed medicines. Participants were asked for their views about five possible new services. The questionnaire was administered to a random sample of patients

patronising a random sample of community pharmacies. A high response rate (79.6%) was obtained. One-quarter of respondents perceived community pharmacists as having a good balance between health and business matters, with 56.1% viewed pharmacists as being more business oriented. Most respondents (69.7%) felt comfortable asking the pharmacist for advice, while 44.8% felt that pharmacists spent sufficient time to discuss their needs. Patients' priorities for suggested new services were monitoring blood pressure; measuring weight, height and temperature; and monitoring blood sugar and cholesterol levels. The study used a questionnaire based on one developed in the UK, but no information was provided about adapting the questionnaire to the Arabic context. There was no discussion of validity, but Cronbach's alpha was 0.6, which is lower than the usually accepted value of 0.7. It was not clear in this study, how the questionnaires were distributed or collected. In addition, the data collection occurred in 1992 but the study was not published until 2003, raising the question of whether the findings were still valid.

In the pilot study from Qatar,[2] three community pharmacies were randomly selected as study sites. Fifty-eight patients (60% response rate) were randomly interviewed using a structured survey instrument. Forty-five per cent of respondents perceived community pharmacists as having a good balance between health and business matters. Most patients agreed that community pharmacists should provide them with directions for medication use (93%) and advice about the treatment of minor ailments (79%). More than 70% did not expect the community pharmacist to monitor their health progress or perform health screening. Patients' choice of pharmacy was mostly affected by location (90%). Only 37% agreed that the pharmacist gave them sufficient time to discuss their problems and was knowledgeable enough to answer

their questions. The study did not discuss survey development procedures, establishment of validity or reliability, or how randomisation of participating pharmacies occurred. It was not clear who undertook the face-to-face interviews. With only three pharmacies involved, selection bias could have occurred. The sample size of 58 patients is too small to generalise results to the population of Qatar, let alone any other country in the region.

In the study from Palestine,[3] patients patronising 39 randomly selected community pharmacies were surveyed using structured interviews. The study was modelled after the study from Saudi Arabia [1] and explored patients' views on pharmacists' professionalism, how pharmacist dealt with patients' personal health issues and how they handled private consultations. A response rate of 77.7 % was achieved. Only 17% of respondents considered pharmacists as health professionals. Physicians were identified as the preferred source of advice by 57.2% and pharmacists by 23.8%. About one-third reported that the pharmacist used a private area for consultation within the pharmacy. Although it was stated that the pharmacies were randomised, it was not clear how the number of participating pharmacies was decided upon. Pharmacy students conducted the interviews, but it was not clear how well-trained they were and how the researchers assured proper study procedures were followed. In addition, no discussion of questionnaire item development or validation procedures was provided.

5.5.1.2 Expectations of future primary care pharmacy in Arab countries

Chapter 1 discussed how a new type of pharmacy practice evolved in the UK focusing on primary care provision by pharmacists,[71-73] and in the US, a new specialty was introduced in 2011 to certify pharmacists providing ambulatory care services, primarily primary care services

in the community.[74] As stated in Chapter 1, pharmacists have a pivotal role in providing primary care services, especially in developing countries due to insufficient primary care workforce and the convenience of accessing community pharmacies. In these countries, however, evidence shows that most community pharmacists are not involved in the provision of these services,[75] leading to patients' lack of awareness of, and consequently low expectation of, and demand for these services.[76] In the Arab countries, the desire to receive primary care services appears to be high.[2,3,77] Patients in Qatar were interested in screening services and more drug information being provided through community pharmacies, and also in better collaboration between community pharmacists and physicians.[2] In Palestine, patients requested that measurement of weight, height and temperature (72.9%); and monitoring of blood glucose (87.5%), blood pressure (66.8%) and cholesterol levels (59.1%) be available in community pharmacies.[3] In Jordan, most patients (76%) showed an interest in receiving primary care services such as advice on minor ailments and screening services from their community pharmacists and in pharmacists communicating with the physician on their behalf. Two-thirds (67%) indicated willingness to pay for at least some of these services.[77]

5.6 A tool to measure satisfaction and expectations of community pharmacy services in the Arabic context

Considering the dearth of evidence about patient satisfaction with community pharmacy services and patient expectations of primary care services in the UAE, it was vital to investigate patient satisfaction with current community pharmacy services in the UAE and what services patients would be likely to use in the future. This knowledge would be pivotal to aid recognition of areas of community pharmacy service requiring improvement or needing to be introduced. In turn, this

will guide training or interventional programs to enhance the type and quality of the services provided.

In order to undertake this study, a tool for the assessment of patient satisfaction with community pharmacy services in the Arabic language and context needed to be developed. The methodology used in developing such tools is described below. The development and validation of the tool itself is reported in Chapter 6.

5.6.1 Methodology

In the measurement of attitudes, perspectives and behavioural constructs, such as patient satisfaction, and in order to assure that the instrument is assessing what it is intended to measure and that respondents are giving the satisfaction construct the same attributes as the researcher, there is a need to establish the psychometric properties of the tool before it is used. This is important to enhance validity (accuracy) and reliability (precision) of the tool.[78]

5.6.1.1 Validity

The three basic approaches to establishing validity in survey research design (i.e. subjective validation, criterion-related validation and construct validation) have been discussed in detail in Chapter 2. When assessing attitudes, construct validity needs to be established. There are several methods that can be used, including multi-trait-multi-method matrix, direct product model, and factor analysis.[6] As factor analysis was used in this study (Chapter 6), it is discussed in more detail, below.

5.6.1.1.1 Factor analysis

Factor analysis is a statistical technique usually employed to reduce the number of items measured and used for analysis, by combining the related items to make one variable (factor or construct).[79] It is used to help determine the number of latent variables, factors or constructs that underlie a set of items.[80] Another function of factor analysis is to define the substantive content or meaning of the factors. This is often accomplished by grouping of items that co-vary with each other (correlate highly with each other), and seem to contribute to the meaning of the latent variable, but have very little, if any, correlation with the other variables.[81] For example, if three factors emerged from the analysis of 20 items, the content of individual items in these three factors will give meaning and definition to a latent variable represented by that specific factor; individual items on the scale are grouped into separate categories which explain the maximum amount of variance in the data. Factor analysis also gives an indication of how items are performing (i.e. better or worse). For example, If an item does not fit into any of the emerged factors or fits into more than one factor, this item should be evaluated and may be eliminated.[80] Prior to conducting factor analysis, the suitability of the data for factor analysis should be assessed with respect to adequate sample size, and the strength of inter-correlation among all items on the scale.[82]

Sample size adequacy

Two approaches to determine sample size adequacy for factor analysis have been suggested.[81] Some statisticians prefer to use the absolute size of the sample; others use the ratio of sample size to the number of items, requiring a ratio of five to ten participants per item to be analysed, up to a total of 300 participants.[81] Other statistical procedures that have been used include the

Keiser-Meyer-Olkin (KMO) measure for sampling adequacy, which is a test that indicates the degree to which the variables are related (measures the relationship between variables) as a precondition for their suitability for factor analysis. KMO values range between 0 and 1 with values closer to 1 being better suited for factor analysis, with the lowest acceptable value being 0.5.[83]

Extraction of components (factors)

There are several approaches to determine the number of components to be kept in a scale. The Kaiser criterion recommends keeping components with eigenvalues of 1 and higher, while Cattell's scree plot, which plots a graph of eigenvalues against extracted components, recommends keeping only the components whose eigenvalues are above the point of inflexion on the graph (Figure 5.1).[84] The eigenvalues are indicative of the amount of information captured by the component and the relative contribution of a component in explaining a portion of the variance (a measure of the spread of the data); the bigger the eigenvalue the greater the contribution of the component.

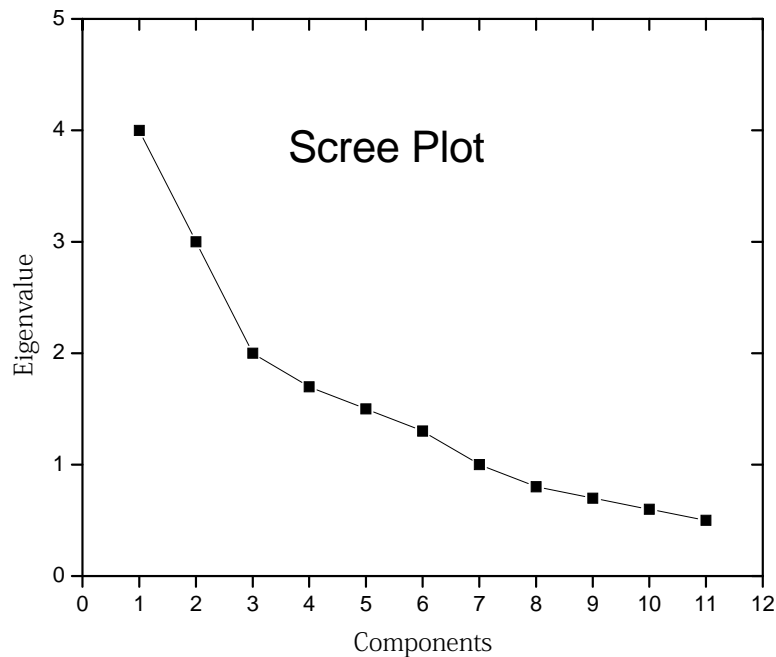


Figure 5.1 Scree Plot

Rotation of variables (items)

Once the number of components (factors) has been established, all items within the scale are allowed to rotate and load freely on the extracted factors. There are two commonly used rotational methods viz. orthogonal and oblique.[81] Orthogonal rotations are preferred because they produce components that are not correlated to each other and are easier to interpret.[81] Examples of orthogonal methods of rotation are: varimax, quartimax or equamax, which differ depending on how they spread the loading for each variable (item) on the extracted components (factors).[81] Varimax rotation is frequently used to maximise the variance of items in a specific factor by making high loading items higher, and low loading items lower for each factor, which means that each item on the scale loads mostly on one component.[85]

5.6.1.2 Reliability

Extracted items that group together on a factor are subjected to reliability tests to assess the appropriateness of loading each group of items into its component/factor. As previously discussed in Chapter 2, reliability refers to the measure's freedom from random error which also refers to the consistency or stability of the measure from use to use.[78]

A common method of testing a measure's reliability is the internal consistency of its items.[86] Internal consistency means that individual items on the scale are measuring the same thing; a Cronbach's alpha value of ≥ 0.70 is preferred for items in a grouping in order to form a construct.[79,87]

A low Cronbach's alpha (<0.7) indicates that the sample items do not capture the meaning of the construct in an adequate manner, requiring some "problem" items to be dropped from the measure so that the correlation between the items is increased; in turn, the value of Cronbach's alpha is increased.[87] To identify "problem" items, one could review item-to-total (item-scale) correlations, item variances and item means.[80] Item-to-total correlations (by means of a correlation coefficient) need to be high and refer to the degree of correlation between an item and all other items in a measure. Corrected item-to-total correlation is usually preferred over uncorrected item-to-total correlation because the former correlates the item being measured with all other scale items excluding itself, while uncorrected correlation correlates an item with all other items including the item itself, which could inflate the correlation coefficient.[80] The reliability of the internal consistency coefficient also increases as the item-to-total score increases.[82] Thus, when the item-to-total statistics reveal that if the item were deleted, the

alpha (internal consistency) score would be higher, then the item is deleted.[82] The corrected item-to-total correlation criterion for retention of the item is best if > 0.30 .[80]

Item variance across respondents also needs to be relatively high, as this indicates that the response to an item changes according to different levels of satisfaction between respondents.[80] Item means are best if they are close to a scale's midpoint because skewed item means indicate that the item's responses did not vary, but clustered around an extreme value and will usually have low variances (i.e. participants mostly agree or disagree with the item and so the responses do not vary).[80]

5.6.1.3 Interpretation of components

The last step in tool development is the interpretation and labelling of components. The resultant final group of items under each specific component are inspected for interpretation of the meaning they give and then an appropriate label for the component is given.

5.7 References

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Chapter 6

Assessing patient satisfaction with community pharmacy in the UAE using a newly-validated tool

This chapter consists of the following publication:

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Institutional ethics committee approvals for this work are given in **Appendix 6 and 7**, and a copy of the questionnaire can be found in **Appendix 8 and 9**. Explanatory statement for the survey participants is provided in **Appendix 11 and 12**.

Monash University

6.1 Declaration for Chapter 6

Declaration by candidate

The nature and extent of my contribution to the work was:

Nature of contribution	Extent of contribution (%)
Conducted literature review; established survey methodology; participated in questionnaire design and validation; secured ethics approval to conduct study; participated in data collection; analysed and interpreted data; fully managed study; produced first draft of manuscript; and made revisions according to suggestions from other authors.	75%

The contributions of co-authors to the work were:

Name	Nature of contribution
A/Prof Hana Sulieman	Participated in: validation of questionnaire; statistical analysis of data; and interpretation of results.
A/Prof Kay Stewart	Participated in: survey design and methodology; ethics application; interpretation of results; and manuscript review.
Prof Colin Chapman	Participated in: survey design and methodology; ethics application; interpretation of results; and manuscript review.
Prof Mohammed Yousif Hasan	Participated in: survey design and methodology; and ethics application.
Dr David Kong	Participated in: survey design and methodology; ethics application; interpretation of results; and manuscript review.

**Candidate's
Signature**

	Date 15 / 4 / 2013
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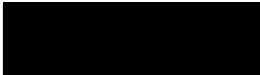

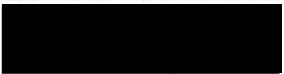


Declaration by co-authors

The undersigned hereby certify that:

- (1) the above declaration correctly reflects the nature and extent of the candidate's contribution to this work, and the nature of the contribution of each of the co-authors.
- (2) they meet the criteria for authorship in that they have participated in the conception, execution, or interpretation, of at least that part of the publication in their field of expertise;
- (3) they take public responsibility for their part of the publication, except for the responsible author who accepts overall responsibility for the publication;
- (4) there are no other authors of the publication according to these criteria;
- (5) potential conflicts of interest have been disclosed to (a) granting bodies, (b) the editor or publisher of journals or other publications, and (c) the head of the responsible academic unit; and
- (6) the original data are stored at the following location(s) and will be held for at least five years from the date indicated below:

Location(s)

Department of Pharmacy Practice and Pharmacotherapeutics, College of Pharmacy, Sharjah University, Sharjah, United Arab Emirates.

Signature 1	 A/prof Hana Suleiman	Date 15 / 4 / 2013
Signature 2	 A/Prof Kay Stewart	15 / 4 / 2013
Signature 3	 Prof Colin Chapman	15 / 4 / 2013
Signature 4	 Prof Mohammed Yousif Hasan	15 / 4 / 2013
Signature 5	 Dr David Kong	15 / 4 / 2013

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Original Research

Assessing patient satisfaction with community
pharmacy in the UAE using a newly-validated tool

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Abstract

Background: Patient satisfaction has become an integral component of the quality of healthcare services. It has been used for the purpose of performance assessment, reimbursement, and quality management of health service delivery. It has been suggested that patient satisfaction could be a predictor of health-related behavior. **Objectives:** To develop and validate a tool for use within the Arabic context to assess patient satisfaction. To assess patient satisfaction with current community pharmacy services in the UAE using the validated tool.

Methods: A systematic process was used to develop an assessment tool that could be used within the Arabic context and establish its validity and reliability. Survey participants assessed their satisfaction with the services based on a 5-point Likert-type scale: Poor = 1, Fair = 2, Good = 3, Very good = 4, Excellent = 5. The anonymous questionnaire was distributed over a 5-month period to eligible participants in public places such as malls and shopping markets, in various emirates across the UAE. Those who were 21 years or older, taking at least one scheduled (regular) medication and having adequate Arabic or English language proficiency were included.

Results: The instrument comprised four dimensions: Information, Relationship, Accessibility and Availability. Participants required more information about medications and self-management (Mean = 2.49 ± 1.19). Measures of competence, i.e., care, interest, time, confidence and trust, could also be improved (Mean = 3.05 ± 1.07). Accessibility scores measuring physical, geographical and financial items were lowest (Mean = 2.80 ± 1.33). Overall scores on availability of medications indicated relative satisfaction with this dimension (Mean = 3.51 ± 0.7).

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Conclusions: This study is the first to use a patient satisfaction tool specifically developed for the Arabic context. Patient satisfaction scores in all dimensions were significantly lower than published data, suggesting patients have unmet expectations of community pharmacy services in the UAE. Stakeholders could utilize this information to help in the design and delivery of improved services that could lead to increased demand.

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Keywords: Patient satisfaction; Pharmacy services; United Arab Emirates; Community pharmacy

Introduction

Patient satisfaction is considered “a personal evaluation or appraisal of a service or product received.”¹ Assessment of patients’ satisfaction can help improve the delivery of healthcare services and optimize resource utilisation.² As such, patient satisfaction is an integral component of the quality assurance of healthcare services³ and has gained much attention for the purposes of performance assessment, reimbursement, and quality management of health service delivery.¹ In a review of healthcare literature, Pascoe concluded that information about patient satisfaction can be a predictor of health-related behavior.⁴ Some studies suggest that satisfied patients are more likely to continue using healthcare services compared to unsatisfied ones,^{4–7} while other studies have linked satisfaction with medication compliance^{4,8} and continuity with care providers.^{5,8,9} It is no wonder, then, that patient satisfaction is an important humanistic outcome to achieve along with clinical and economic outcomes.

In assessing satisfaction with pharmacy services, Schommer and Kucukarslan reviewed four conceptualizations of satisfaction and recommended that one must choose a conceptualization that pertains to the question or the purpose of the evaluation.¹⁰ The four conceptualizations are: performance evaluation, disconfirmation of expectation, affect-based assessment and equity-based assessment. Most studies assessing satisfaction in healthcare have used the conceptualization of performance evaluation as defined by Ware *et al.*¹¹ In their Patient Satisfaction Questionnaire (PSQ), patient satisfaction was viewed as a multi-dimensional construct, which means that it is affected by various factors such as the art of care, the technical quality of the care, accessibility and finances.¹¹ In 1989, based on the PSQ, MacKeigan and Larson developed a pharmacy-specific survey of patient satisfaction that included 44 items measuring eight dimensions of pharmacy services.¹²

Larson and MacKeigan further validated their original measure to assess patient satisfaction with “traditional” pharmacy services using 33 items measuring seven dimensions.¹³ In more recent years, measures focusing on patient satisfaction with pharmaceutical care services have been developed,^{14–16} while others have focused on measurement of satisfaction with specific disease state management by pharmacists.^{16–23}

Currently, data generated from most studies out of developed countries have tended to focus on patient satisfaction with pharmaceutical care-type services or with specific disease management services, which are often not generalizable to developing countries such as the Middle East, where the primary focus is still on traditional pharmacy practice. As patient satisfaction has become pivotal in quality assessment of healthcare systems in developed countries, interest in patient satisfaction assessment is growing in developing countries.²⁴ Whilst there are studies of patient satisfaction with primary care services in Arab countries, only a handful have explored patients’ perspectives of pharmacy services in Palestine,²⁵ Saudi Arabia²⁶ and Qatar,²⁷ while in the UAE, this remains unexplored. Notably, these studies did not use a systematic process to develop validated reliable tools for their assessments, nor did they use existing tools with established validity and reliability. In fact, there are no validated tools to reliably assess patient satisfaction with pharmacy services in the Arabic context.

In the UAE, patient satisfaction with pharmacy services remains unknown. Reportedly, lack of patient demand for community pharmacy services has been identified as a major barrier to delivering enhanced pharmacy services in the UAE.²⁸ Clearly, there is a need to investigate patient satisfaction with pharmacy services in the UAE as this knowledge will aid in developing intervention and training programs designed to enhance pharmacy services that meet patients’

expectations. Consequently, the aims of this project were to develop and validate a tool for use within the Arabic context and use the tool to assess patient satisfaction with current community pharmacy services in the UAE.

Methods

Development of the questionnaire

This study was based on the performance evaluation conceptualization of patient satisfaction. Dimensions of patient satisfaction based on the work of Larson & MacKeigan¹³ were adopted, as community pharmacy services in the UAE are considered “traditional” in nature (i.e. product-focused services with minimal or negligible pharmaceutical care provided).²⁹ The dimensions include: Explanation/Counseling, Consideration/Caring, Technical competence, Product availability, Accessibility, Financial aspects and General satisfaction.¹³ The initial items under each dimension were drawn from literature review of studies that evaluated general non-pharmaceutical care pharmacy services under similar dimensions,^{12,13,30,31} but re-worded to be congruent with the answer options of the measurement scale (i.e., Excellent to Poor).

The questionnaire was initially developed in the English language and was circulated to community pharmacists ($n = 10$) in the UAE for comment and subsequent modification. A forward translation of the questionnaire to Arabic was completed by a bilingual faculty member in the Arabic Studies Department at Zayed University (UAE) who also contributed to refining the English version of the questionnaire. Backward translation to English was independently performed by another bilingual faculty member at the American University of Sharjah (UAE). Any discrepancies were discussed and resolved.

Both the English and Arabic versions of the questionnaire were then distributed to lay persons ($n = 30$) in the community for input into the selection of items under each dimension, wording of items and feedback about suitability and completeness of the items. The questionnaire (both English and Arabic versions) was revised and pilot-tested using another group of 15 lay persons, following which further fine adjustments were made to produce the final version.

The questionnaire comprised three sections; the first contained items related to participant demographics, number of visits to a community pharmacy in the past two months, whether

normally obtaining medications from one community pharmacy, availability of health insurance coverage for medications and the type of community pharmacy patronized (private versus chain). The second section contained items assessing aspects of satisfaction with pharmacy services. A five-point Likert-type scale was used to assess satisfaction with the services with answers ranging from excellent to poor: excellent = 5, very good = 4, good = 3, fair = 2, poor = 1. This scale (as opposed to a ‘very satisfied’ to ‘very dissatisfied scale’) has been found to produce mean scores closer to the midpoint of the scale, higher response variability and higher correlation with behavioral intentions.¹¹ The third section, not discussed here, explored the potential for future services.

Participants and data collection

Institutional ethics committee approval was obtained from the Monash University Human Research and Ethics Committee, and the Sharjah University Research & Ethics Committee.

To ensure that the sample proportions would be within $\pm 5\%$ of the ‘true’ population prevalences with a 95% level of confidence, 380 responses were required.³² To allow for incomplete or unusable responses, 500 questionnaires in both Arabic and English were distributed.

Between November 2010 and March 2011, research assistants approached potential participants in public places, such as shopping malls and markets, located in various emirates across the UAE to assess their eligibility for inclusion in the study. Those who were ≥ 21 years old, taking at least one scheduled, regular medication and having adequate Arabic or English language proficiency was included. Eligible participants were provided with a copy of the Explanatory Statement and Invitation letter. Individuals agreeing to participate completed the anonymous questionnaire on the spot. Participants were then asked to place their completed questionnaires in a collection box. Alternatively, participants provided a telephone number on which to be contacted at a mutually agreed-upon time to complete the questionnaire. This approach was considered necessary in the absence of a reliable and effective postal system in the UAE.

Data analysis

Data were entered into Microsoft Excel, cross-checked for accuracy and analyzed using SPSS version 19 (SPSS, Inc., Chicago IL). Descriptive

statistics were calculated for participant demographic information, patronage information and satisfaction scores.

Factor analysis was undertaken as part of questionnaire validation so as to define constructs (factors) and related items. Prior to conducting factor analysis, the suitability of the data for factor analysis was assessed in terms of adequacy of the sample size, and the strength of inter-correlation among the 17 items on the scale. Factor analysis was performed using principal components and Varimax rotation of factors that had eigenvalues >1 . Items with factor loadings ≥ 0.40 were considered “significant” and loadings of 0.50 or greater were considered “very significant”. To retain an item on a scale, the factor loading of the item should be higher than 0.30 and no higher loading on another factor.³³

Internal consistency reliability was assessed using Cronbach's alpha to measure the internal consistency of the scale, with preferred values between 0.70 and 0.90.³⁴

Scale scores were computed by adding the scores for the individual items constituting the scale and dividing by the number of items (retaining a score range of 1–5). One-way repeated-measures ANOVA was performed to compare the respondents' scores on the four scales.

Results

Of the five hundred questionnaires distributed, 466 (385 in Arabic, 81 in English) were returned (response rate 93%). Participants' demographics and other pharmacy patronage information are shown in Table 1.

Patient satisfaction with items representing current pharmacy services is reported using descriptive statistics (Table 2).

Listwise deletion of missing values was used prior to factor analysis, resulting in 322 cases retained for the analysis. The Kaiser–Meyer–Olkin measure of sampling adequacy for the factor analysis was 0.89.

Factor analysis extracted four factors with cumulative explained variance of 65%. Rotation of all items showed strong loadings (>0.50 = ‘very significant’) of each item on one factor (Table 3), except for item 12, ‘the location of my pharmacy’, which was marginal (0.488) but still ‘significant’ (>0.40). Accordingly, the 17 items on current services were regrouped into four new factors: Information, Relationship,

Table 1

Respondents' demographics and other information

Variables	Values	N (%)
Gender ($n = 466$) ^a	Male	183 (39)
	Female	283 (61)
Age in years ($n = 462$) ^a Mean \pm SD 34.04 \pm 12.57	21–30	240 (52)
	31–40	89 (19)
	41–50	72 (16)
	51 or more	61 (13)
Highest education level ($n = 461$) ^a	Pre-high school	8 (2)
	High-school	59 (13)
	Post-high school diploma	55 (12)
	Undergraduate degree	263 (57)
	Postgraduate degree	76 (16)
How long you have been living in the UAE ($n = 451$) ^a	Mean \pm SD 16.76 \pm 10.23	
Country of origin ($n = 460$) ^a	UAE	69 (15)
	Egypt	55 (12)
	Jordan	70 (15)
	Palestine	63 (14)
	Syria	63 (14)
	Asian	45 (10)
	Iraq	30 (7)
	Others	95 (13)
Medications from the same pharmacy ($n = 462$) ^a	No	311 (67)
	Yes	151 (33)
Type of pharmacy ($n = 336$) ^a	Chain	101 (22)
	Private	109 (24)
	Both	247 (54)
Number of pharmacies visited in last two months ($n = 431$) ^a	Mean \pm SD 2.26 \pm 1.50	
Health insurance coverage ($n = 461$) ^a	No	180 (39)
	Yes	281 (61)

^a Not all respondents completed every item, n = number of respondents completing the item.

Accessibility, and Availability (rather than the initially proposed seven factors). Items associated with each of the four factors are shown in Table 4.

The corrected item-scale correlations for all items were 0.51 or higher (criterion for retention was >0.30) and all were significant ($P < 0.0001$).

Cronbach's alpha was >0.7 for factors 1, 2 and 3, and for factor 4 (Availability) (0.695). Investigation of the corrected item-scale correlation for this factor indicated a significant correlation 0.53 ($P < 0.001$).

The results of the one-way repeated-measure ANOVA showed significant differences between the scales ($P < 0.01$).

Table 2

Satisfaction scores for current services Poor = 1, Fair = 2, Good = 3, Very good = 4, Excellent = 5

Service	Poor N (%)	Fair N (%)	Good N (%)	Very good N (%)	Excellent N (%)	Total ^a	Mean ± SD
1. The explanation I receive from the pharmacy staff about my medications is	34 (7)	72 (16)	168 (36)	127 (27)	63 (14)	464	3.24 ± 1.10
2. The information provided by the pharmacy staff about possible side effects of medications	181 (39)	106 (23)	101 (22)	60 (13)	16 (3)	464	2.19 ± 1.18
3. The advice provided on how to manage common ailments (e.g. colds & flu, fever, diarrhea) is	64 (14)	87 (19)	158 (35)	103 (22)	46 (10)	458	2.96 ± 1.17
4. The advice provided on how to maintain a healthy lifestyle	183 (40)	107 (24)	97 (21)	47 (10)	20 (5)	454	2.19 ± 1.48
5. My overall satisfaction with the quality of information I receive at my usual pharmacy is	69 (15)	130 (29)	161 (35)	74 (16)	24 (5)	458	2.68 ± 1.07
6. The interest shown by the pharmacy staff to help me make the best use of my medications is	60 (13)	117 (25)	146 (32)	97 (21)	42 (9)	462	2.88 ± 1.16
7. The time that the pharmacy staff dedicates for attending to my needs is	48 (11)	106 (23)	151 (33)	107 (23)	46 (10)	458	3.03 ± 1.44
8. My confidence in the expertise of the pharmacy staff is	32 (7)	90 (19)	178 (39)	123 (27)	36 (8)	459	3.08 ± 1.02
9. My trust in the information provided by the pharmacy staff is	30 (7)	93 (20)	171 (38)	116 (26)	44 (9)	454	3.11 ± 1.05
10. The availability of prescription medications in my pharmacy is	12 (3)	59 (13)	153 (33)	151 (33)	85 (18)	460	3.52 ± 1.01
11. The availability of medications that I buy without a prescription in my pharmacy is	11 (2)	48 (11)	144 (32)	159 (35)	90 (20)	452	3.60 ± 1.00
12. The location of my pharmacy is	7 (1)	30 (6)	99 (22)	140 (31)	183 (40)	459	4.00 ± 1.00
13. The availability of a waiting area in my pharmacy is	96 (21)	93 (20)	120 (27)	87 (19)	59 (13)	455	2.83 ± 1.31
14. The availability of private consultation (explanation) area in my pharmacy is	223 (50)	87 (19)	76 (17)	46 (10)	16 (4)	448	2.00 ± 1.20
15. My satisfaction with medication prices is	108 (23)	135 (29)	155 (34)	50 (11)	13 (3)	461	2.40 ± 1.05
16. My satisfaction with the overall insurance medication coverage (if available) is	70 (19)	71 (19)	115 (31)	79 (21)	40 (10)	375	2.87 ± 1.24
17. My satisfaction with the overall pharmacy services is	21 (5)	90 (20)	195 (42)	127 (27)	29 (6)	462	3.11 ± 0.94

^a Not all respondents completed every item, total = number of respondents completing the item.

Discussion

This is the first study to establish a validated questionnaire that could be used to assess patient satisfaction with community pharmacy services in the Arabic context. In the literature, there are varying opinions on the appropriate sample size for factor analysis; some researchers argue that 300 cases are appropriate while others prefer to use a minimum ratio of five to ten participants per questionnaire item to be analyzed, up to a total of 300.³⁵ The 322 cases retained for analysis in this

study met both these sample size criteria, as the participant/item ratio was 19:1 (322 cases:17 items). While the questionnaire was developed primarily for use in the UAE, it could also be used in other Arab countries; studies have shown that the practice of pharmacy does not differ greatly across countries in the region.^{36–39} At the front line, community pharmacists in UAE and surrounding region could benefit from the findings of this study by identifying areas for improvement in their service provision, which could eventually lead to

Table 3
Rotated factor loadings for current services' items

Item	Factor ^a			
	1	2	3	4
1. The explanation I receive from the pharmacy staff about my medications is	.604	.459	*	*
2. The information provided by the pharmacy staff about possible side effects of medications	*	.821	*	*
3. The advice provided on how to manage common ailments (e.g. colds & flu, fever, diarrhea) is	.497	.576	*	*
4. The advice provided on how to maintain a healthy lifestyle	*	.753	*	*
5. My overall satisfaction with the quality of information I receive at my usual pharmacy is	.481	.705	*	*
6. The interest shown by the pharmacy staff to help me make the best use of my medications is	.683	.411	*	*
7. The time that the pharmacy staff dedicates for attending to my needs is	.650	*	*	*
8. My confidence in the expertise of the pharmacy staff is	.796	*	*	*
9. My trust in the information provided by the pharmacy staff is	.775	*	*	*
10. The availability of prescription medications in my pharmacy is	.328	*	*	.732
11. The availability of medications that I buy without a prescription in my pharmacy is	*	*	*	.895
12. The location of my pharmacy is	.308	*	.488	.305
13. The availability of a waiting area in my pharmacy is	*	*	.646	*
14. The availability of private consultation (explanation) area in my pharmacy is	*	.453	.662	*
15. My satisfaction with medication prices is	*	*	.710	*
16. My satisfaction with the overall insurance medication coverage (if available) is	.302	*	.649	*
17. My satisfaction with the overall pharmacy services is	.640	*	.404	*

*Loadings < 0.30.

^a 1 = Relationship, 2 = Information, 3 = Accessibility, 4 = Availability.

increased patient satisfaction and demand for the services.

The validation process resulted in four significant factors instead of the seven factors proposed by Larson & MacKeigan.¹³ These four factors were: the information and counseling patients receive, the relationship between the patient and care giver, accessibility of the service (whether related to financial or physical characteristics) and product availability (whether prescription or over-the-counter). The results of factor analysis and item rotation showed that the use of previously validated items proved to be successful as all proposed items were retained. All items loaded very strongly on one factor (except for factor 12 which still loaded "significantly" on one factor) indicating items were validly re-grouped into their corresponding factors. Other validity tests include the corrected item-scale correlations and these were all significant, indicating homogeneity of the items within scales. The results of ANOVA test comparing each respondent's scores on the four scales which indicated the difference between these scores was statistically significant, assuring that the respondents rated the four scales differently. In measuring the reliability of the scale, the calculated Cronbach's alpha for each of the extracted factors was high, indicating that the

items within each of the factors were internally consistent.

This suggested re-grouping of items was useful in two ways: data reduction to four factors (dimensions) leading to a more focused analysis of the findings, and more stable results in future use of the instrument since the items have been psychometrically grouped.³³

Information

Participants rated the specific counseling they received about side effects of medications, lifestyle and management of common ailments with low scores. The fact that specific counseling is not a routine occurrence in community pharmacies in the UAE could have contributed to participants rating these items similarly (grouped under the same dimension). It is clear that patients are dissatisfied with the type and quality of information they are receiving from community pharmacies. Community pharmacists should therefore take this into consideration in improving their services. Other studies assessing patient satisfaction with general pharmacy services have also reported lower scores for specific counseling such as those dealing with side effects of medications.⁴⁰

Table 4
Extracted four factors with corresponding items ($N = 322$)

Factors & items	Item mean	Factor mean	SD	Alpha
Information		2.49	1.19	0.86
<i>The information provided by the pharmacy staff about possible side effects of medications</i>	2.19 ± 1.16			
<i>The advice provided on how to manage common ailments (e.g. colds & flu, fever, diarrhea)</i>	2.96 ± 1.16			
<i>The advice provided on how to maintain a healthy lifestyle</i>	2.12 ± 1.17			
<i>My overall satisfaction with the quality of information I receive at my usual pharmacy</i>	2.70 ± 1.07			
Relationship		3.05	1.07	0.88
<i>The explanation I receive from the pharmacy staff about my medications</i>	3.24 ± 1.07			
<i>The interest shown by the pharmacy staff to help me make the best use of my medications</i>	2.90 ± 1.14			
<i>The time that the pharmacy staff dedicates for attending to my needs</i>	2.96 ± 1.14			
<i>My confidence in the expertise of the pharmacy staff</i>	3.05 ± 1.01			
<i>My trust in the information provided by the pharmacy staff</i>	3.06 ± 1.07			
<i>My satisfaction with the overall pharmacy services</i>	3.09 ± 0.92			
Accessibility		2.80	1.33	0.73
<i>The location of my pharmacy</i>	4.00 ± 1.00			
<i>The availability of a waiting area in my pharmacy</i>	2.78 ± 1.30			
<i>The availability of private consultation (explanation) area in my pharmacy</i>	1.98 ± 1.17			
<i>My satisfaction with medication prices</i>	2.43 ± 1.05			
<i>My satisfaction with the overall insurance medication coverage (if available)</i>	2.80 ± 1.24			
Availability		3.51	1.02	0.70
<i>The availability of prescription medications in my pharmacy</i>	3.47 ± 1.01			
<i>The availability of medications that I buy without a prescription in my pharmacy</i>	3.55 ± 1.03			

Relationship

Participants rated their satisfaction with the relationship with the pharmacy staff as 'good'. The 'confidence in expertise' and 'trust in information' patients receive were also interpreted by participants as a measure of the relationship, indicating that, from a patient's perspective, a competent individual is a caring one. A consistent finding in patient satisfaction studies is that the greater the amount of personal care, the greater is the patient satisfaction, with some studies reporting that personal care results in better communication and more patient involvement, leading to better quality of care.³ Importantly, the item '*satisfaction with the overall pharmacy services*' loaded strongly to the Relationship factor, implying that patients place the highest value on their relationship with the provider, making it the most important measure of their overall satisfaction with pharmacy services. This observation is consistent with other studies demonstrating that a pharmacist's personality, competence and ability to reach to a patient could influence a patient's decision to patronize a particular pharmacy.³⁹

Accessibility

Items initially under the Financial dimension and those related to Accessibility to pharmacy services showed similar rotated loadings, and thus were grouped together. This was appropriate as patients' finances have an important role in defining accessibility to the pharmacy services, as do the geographic location of the pharmacy and the physical aspects within the pharmacy, such as the presence of a private counseling area. It was clear that participants were satisfied with the geographic location of their pharmacies, but it was not surprising, however, that they rated their overall satisfaction with the Accessibility factor as 'less than good'. Firstly, the participants did not seem to be satisfied with the prices of the medications or the level of insurance coverage for their medications, and secondly, pharmacies in the UAE do not usually have waiting areas for patients or private areas/rooms for counseling.²⁹ Clearly, it is of great importance to address these issues since they are posing considerable impact on patients' perception of their access to pharmacy services. Similarly, a study of patients' attitudes toward community pharmacy in

neighboring Qatar reported that the primary factor (90% of respondents) for choosing to patronize a community pharmacy was its location and proximity to home and work.²⁷ The same study reported that only 35% of respondents agreed that privacy was maintained in the pharmacy and 50% stated that lack of privacy in the pharmacy was a barrier to seeking the community pharmacist's help.²⁷

Availability

Despite drug shortages (i.e., supply issues) that occur quite frequently in the UAE,⁴¹ participants seemed to be satisfied with Availability, as this factor achieved the highest rating. This is encouraging as it suggests that pharmacists are able, to some extent, to cope with such drug shortages and perhaps recommend alternatives to both doctors and patients.

This group of newly generated dimensions is similar to four dimensions used by Briesacher (the Pharmacy encounter survey 'PES') to measure patient satisfaction after a pharmacy service encounter for patients who have just had a pharmacy visit including: interpersonal manner, technical quality, accessibility and convenience.³⁰ The PES dimensions and items were modeled after the Visit-specific Satisfaction Questionnaire (VSQ) which in turn was validated for patient ratings of physicians' encounters as part of the Medical Outcomes Study.⁴² The PES showed high ratings for pharmacy encounters by patients across all dimensions. The patients in this study, however, had relatively low patient satisfaction for most dimensions, which could be an evidence of unmet expectations that need to be explored. One thing in common though was the importance of personal care in defining patient satisfaction. Consistent with findings from other studies,^{12,13,43} the greater personal care a patient gets, the higher the satisfaction.

The satisfaction scores observed in the current study were lower than those usually reported in the literature,^{10,15,40} indicating patients may have unmet expectations, which possibly contribute to their low demand for the services,²⁸ and the lack of loyalty to any specific pharmacy. The lack of loyalty will impact on the ability of the pharmacy to 'grow its clientele' and more importantly, the ability of the pharmacist to provide continuity of care to patients. Low satisfaction with health-care services has been linked to lack of loyalty.^{5,8,9} Studies have reported associations between

pharmacy loyalty, and patients' relationship with the service provider, previous experience at the pharmacy, atmosphere of the pharmacy, competency of personnel, and unique services provided by the community pharmacy.⁴⁴ Pharmacists in the UAE should note the impact of these associations and apply this knowledge in order to increase patient loyalty.

This study has provided an insight into areas for possible improvement that could lead to better patient satisfaction and consequent demand for pharmacy services in the UAE.

Limitations

Although labor-intensive, the manual questionnaire distribution was deemed the optimal approach for data collection due to the absence of a reliable postal system in the UAE. The questionnaire depended on participant self-report, consequently, data inaccuracies may result from poor memory or misunderstanding of the questions. The potential influence, however, has been minimized through face and content validation of the questionnaire. Social desirability usually reported in satisfaction studies was not seen as a major problem; in contrast, the satisfaction scores were lower than those reported in the literature. Further validation of the questionnaire is needed especially to establish convergent validity where a comparison with an established or validated questionnaire assessing community pharmacy experience is needed.

Since the sample was not random (convenience sampling), generalization should be approached cautiously, noting that the calculated sample size was achieved.

Conclusion

This study saw the development and successful deployment of a tool to assess patient satisfaction with traditional pharmacy services in the Arabic context. This tool has identified areas of patient dissatisfaction with community pharmacy services that need improvement in the UAE. Low patient satisfaction scores with most services were observed. Patients wanted more information about their medications, self-management and advice on healthy lifestyle. They also requested more personal care and considered this as part of the trust they would put in the competence of the service provider. Physical characteristics of the pharmacy such as

waiting and private areas were lacking, consequently affecting patient satisfaction. Stakeholders could utilize this information to help them in the design and delivery of improved services that could lead to increased patient demand of the services, and hence, improved quality of care. The findings could also potentially be used to help advance community pharmacy services within the Middle East or other regions with a similar type of pharmacy practice.

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Chapter 7

Patient expectations of primary care pharmacy services in the UAE

This chapter consists of the following publication:

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Patient Education and Counseling.

Submitted, February 19, 2013

Institutional ethics committee approvals for this work are given in **Appendix 6 and 7**, and a copy of the questionnaire can be found in **Appendix 8 and 9**. Explanatory statement for the survey participants is provided in **Appendix 11 and 12**.

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Monash University

7.1 Declaration for Chapter 7

Declaration by candidate

The nature and extent of my contribution to the work was:

Nature of contribution	Extent of contribution (%)
Conducted literature review; established survey methodology; participated in questionnaire design and validation; secured ethics approval to conduct study; participated in data collection; analysed and interpreted data; fully managed study; produced first draft of manuscript; and made revisions according to suggestions from other authors.	75%

The contributions of co-authors to the work were:

Name	Nature of contribution
A/Prof Hana Sulieman	Participated in: validation of questionnaire; statistical analysis of data; and interpretation of results.
A/Prof Kay Stewart	Participated in: survey design and methodology; ethics application; interpretation of results; and manuscript review.
Prof Colin Chapman	Participated in: survey design and methodology; ethics application; interpretation of results; and manuscript review.
Prof Mohammed Yousif Hasan	Participated in: survey design and methodology; and ethics application.
Dr David Kong	Participated in: survey design and methodology; ethics application; interpretation of results; and manuscript review.

**Candidate's
Signature**

Date
15 / 4 / 2013






Declaration by co-authors

The undersigned hereby certify that:

- (1) the above declaration correctly reflects the nature and extent of the candidate's contribution to this work, and the nature of the contribution of each of the co-authors.
- (2) they meet the criteria for authorship in that they have participated in the conception, execution, or interpretation, of at least that part of the publication in their field of expertise;
- (3) they take public responsibility for their part of the publication, except for the responsible author who accepts overall responsibility for the publication;
- (4) there are no other authors of the publication according to these criteria;
- (5) potential conflicts of interest have been disclosed to (a) granting bodies, (b) the editor or publisher of journals or other publications, and (c) the head of the responsible academic unit; and
- (6) the original data are stored at the following location(s) and will be held for at least five years from the date indicated below:

Location(s)

Department of Pharmacy Practice and Pharmacotherapeutics, College of Pharmacy, Sharjah University, Sharjah, United Arab Emirates.

Signature 1		Date
	 A/Prof Hana Sulieman	15 / 4 / 2013
Signature 2	 A/Prof Kay Stewart	15 / 4 / 2013
Signature 3	 Prof Colin Chapman	15 / 4 / 2013
Signature 4	 Prof Mohammed Yousif Hasan	15 / 4 / 2013
Signature 5	 Dr David Kong	15 / 4 / 2013

7.2 Research Paper

Patient expectations of primary care pharmacy services in the UAE

Abstract

Objective. To determine primary care services patients in the UAE would be likely to use if they were provided through community pharmacies.

Methods. A questionnaire was developed for use in the Arabic context. Participants were asked to rate their likelihood of using future services on a three-point Likert-type scale (very likely-unlikely). The questionnaire was distributed by hand in public places to eligible participants: ≥ 21 years, taking at least one scheduled medication and having adequate Arabic or English proficiency.

Results. Areas of most interest were: receiving advice on how to use devices (Mean=2.42 \pm 0.65), receiving printed information about medications (Mean=2.39 \pm 0.68), the *pharmacist* explaining how to use medications (Mean=2.63 \pm 0.53), the *pharmacist* advising on side-effects of medications (Mean=2.46 \pm 0.68). Participants were least supportive of pharmacists keeping medication records (Mean=2.19 \pm 0.78) and intervening in chronic disease management (Mean=2.24 \pm 0.78).

Conclusions. Participants were interested in accessing enhanced primary care services by community pharmacists. The questionnaire can readily be used in other Arab countries with similar community pharmacy services to those in the UAE.

Practice Implications. This was the first study to investigate patients' interest in using primary care pharmacy services in the UAE. Data from this study will facilitate informed decision-making by stakeholders when planning and implementing future primary care services.

Patient expectations of primary care pharmacy services in the UAE

1. Introduction

Patient satisfaction is an important element in evaluating the quality of healthcare services.[1] It has been suggested that information about patient satisfaction can be a predictor of health-related behavior [2] and has been linked with better medication compliance.[3-6] Some studies have suggested that satisfied patients are more likely to continue using healthcare services compared to unsatisfied ones,[3,7-8] while others linked satisfaction with patient loyalty and continuity with care providers.[9-10] Accordingly, in the design of new services, providers should be sensitive to their customers' needs as customers will base their decision to use the service on their perception of the quality, value, and convenience of the service.[11]

Several conceptualizations of patient satisfaction have been suggested, including performance evaluation, disconfirmation of expectation, affect-based assessment and equity-based assessment.[12] Studies that applied the 'disconfirmation of expectation' concept based their survey designs on evaluating whether the services patients received met their expectations or not; however, none have evaluated the likelihood of patients' actual intention or need to use the services. The model of assessing patient expectations of a service based on the needs of patients may prevent confusion occurring when patients are asked to evaluate services they do not use or

are unaware of. Lack of awareness of pharmacy services has been reported to lead to low patient expectations, despite higher reported levels of satisfaction, highlighting the importance of increasing public awareness of pharmacy services.[13-14]

Pharmacists have a pivotal role in providing primary care services to patients, due to their location within communities. To many, they are the only health professional affordable and readily accessible to patients. Acknowledging this role, in 2011 the Board of Pharmacy Specialties (BPS) in the USA began certification of pharmacists working in the area of ambulatory care. This specialty focuses on direct patient care and medication management for ambulatory patients, long-term patient-provider relationships, wellness and health promotion, triage and referral, and patient education and self-management.[15] The benefits to patients receiving these primary care services are valuable access to medication information, the prevention and resolution of medication-related problems, improved outcomes, and increased satisfaction.[16-17] Beney *et al.* reported that pharmacists' involvement in primary care decreased the number of non-scheduled health visits, the number of specialty physician visits, and the number and cost of drugs.[18] As such, assessment of patients' readiness to utilize primary care services in community pharmacy will help stakeholders, including pharmacists, to plan the provision of enhanced pharmacy services and to design services that would better serve the needs of their communities.

Despite published studies about patient satisfaction and expectations of pharmacy services in different practice settings, to date, explorations of patient expectation of primary care services provided through community pharmacies remain scant. Whilst there are a small number of studies exploring patients' perspectives of pharmacy services in Middle Eastern countries such as

the UAE,[13,19-20] none of these has investigated patients' needs and intent to use primary care services provided through community pharmacy. Accordingly, the aim of this work was to determine the primary care services which patients in the UAE would be likely to use if they were provided through community pharmacies in the future. Such data can be used to strategically develop primary care services that will meet patient needs and expectations.

2. Methods

This study was part of a larger research project exploring patient satisfaction and expectations of community pharmacy services in the UAE. This study was approved by the Monash University Human Research and Ethics Committee, and the Sharjah University Research & Ethics Committee.

A questionnaire was developed for use in the Arabic context and was translated to the Arabic language. The procedures used in establishing the reliability and validity of the instrument have been discussed elsewhere.[21] Briefly, the questionnaire comprised three sections. The first contained items related to participant demographics, number of visits to a community pharmacy in the past two months, if normally obtaining medications from one community pharmacy, availability of health insurance coverage for medications, and the type of community pharmacy patronised (private vs. chain). The second section contained items assessing satisfaction with existing community pharmacy services).[21] The third section contained items to assess the likelihood participants would use primary care services if they were provided through community pharmacies in the future. Participants were asked to rate their likelihood of using these services on a three-point Likert-type scale: very likely=3, likely=2, unlikely=1. Items

included were those considered internationally by various pharmacy organizations [15,22-23] to be primary care pharmacy services but currently provided only to a negligible extent in the UAE, as reported in our previous study.[24] These services were: screening for disease, monitoring of disease control, referral roles, health advice, lifestyle and preventive care, supply of printed information, counselling on medication use and side effects, patient record keeping, pharmacist intervention in chronic disease management. Lastly, respondents were given the opportunity to suggest (in a free-text format) any other services that they would like community pharmacies to provide.

2.1 Participants and data collection

To ensure that the sample proportions would be within $\pm 5\%$ of the ‘true’ population prevalences with a 95% level of confidence, 380 responses were required.[25] To allow for incomplete or unusable responses, 500 questionnaires were distributed. In the absence of a reliable and effective postal system in the UAE, the process of survey distribution and collection was completed in person. The sampling frame was a convenience sample of people in public places (such as shopping malls and markets) located in various emirates across the UAE. Potential participants were initially approached by research assistants to assess their inclusion status. Those who were ≥ 21 years old, taking at least one regular medication and fluent in Arabic or English were eligible to participate. Eligible participants were given the Explanatory Statement and Invitation Letter. Participants who agreed to be involved either completed the anonymous questionnaire on the spot and placed it in a closed election-style collection box, or provided a telephone number to be contacted at a mutually agreed time to complete the questionnaire by telephone.

2.2 Data analysis

Data were entered into Microsoft Excel and were analysed using SPSS version 19 (SPSS, Inc., Chicago IL). Descriptive statistics for participant demographics, patronage information and for likely use of future services scores were calculated. Repeated measures Analysis of Variance was used to find significant difference in the mean values of the 11 service items (p-value <0.001) by examining the 95% confidence intervals for all 11 items. Cross-tabulations were undertaken between participant characteristics (age, gender, level of education and nationality) and key categories in primary care (i.e. screening for disease, self-monitoring, preventative advice such as smoking cessation and weight control, receiving print information about medications, receiving counselling on how to use medications and pharmacist intervention for optimum pharmacotherapy. The chi-square test of independence was used to test for inter-relationships among the cross-tabulated data.

The open ended comments were openly coded for major themes and tabulated accordingly.

3. Results

Five hundred questionnaires were distributed and 466 usable questionnaires were obtained (93% response rate).

Participant demographics are shown in Table 1. About half of the study participants were aged 30 years or less. Most of the study participants had post-high school education with more than half having an undergraduate degree. A good representation of Arab nationality is evident. The majority of participants did not patronise one specific or one type of community pharmacy (private vs. chain) and most had insurance coverage for medications.

Table 1: Respondents' demographics and other information

Variables	Values	N (%)
Gender (n=466)*	Male Female	183 (39) 283 (61)
Age in years (n=462)*	30 or less 31-40 41-50 51 or more	240 (52) 89 (19) 72 (16) 61 (13)
Mean \pm SD 34.04 \pm 12.57		
Highest education level(n=461)*	Pre-High School High-School Post-High school diploma Undergraduate degree Postgraduate degree	8 (2) 59 (13) 55 (12) 263 (57) 76 (16)
How long you have been living in the UAE (in years) (n=451)*	Mean \pm SD 16.76 \pm 10.23	
Country of origin (n=460)*	UAE Egypt Jordan Palestine Syria Asian Iraq Others	69 (15) 55 (12) 70 (15) 63 (14) 63 (14) 45 (10) 30 (7) 95 (13)
Medications from the same pharmacy (n=462)*	No Yes	311 (67) 151 (33)
Type of pharmacy (n=336)*	Chain Private Both	101 (22) 109 (24) 247 (54)
Number of pharmacies visited in last two months(n=431)*	Mean \pm SD 2.26 \pm 1.50	
Health Insurance coverage (n=461)*	No Yes	180 (39) 281 (61)

*Not all respondents completed every item, n=number of respondents completing the item

Table 2 shows descriptive statistics for future services participants said they would be likely to use. They showed an interest in all suggested services. The area of most interest (significantly larger mean value than other items) was the *pharmacist* explaining how to use the medications. Participants were less supportive of pharmacists keeping medication records and intervention in chronic disease medication management. (significantly smaller mean value than most other items).

Table 2: likelihood of using future services

Unlikely=1, Likely=2, Very likely=3

Service	Unlikely N (%)	Likely N (%)	V. likely N (%)	Total ^a	Mean \pm SD
10. <i>Screening</i> for conditions such as blood pressure, diabetes and high cholesterol.	74 (16)	165 (36)	223 (48)	462	2.32 \pm 0.73
11. <i>Monitoring</i> of your blood pressure, blood sugar or blood cholesterol (after you receive treatments from your doctor).	68 (15)	170 (37)	222 (48)	460	2.33 \pm 0.72
12. Receiving advice on how to self-monitor your condition, such as the use of blood sugar machines.	52 (11)	194 (43)	207 (46)	453	2.34 \pm 0.67
13. Receiving advice on how to use devices like inhalers or insulin injections.	40 (9)	180 (40)	230 (51)	450	2.42 \pm 0.65
14. The <i>pharmacist</i> giving help in preventing disease, as in smoking cessation and weight control.	68 (15)	194 (43)	191 (42)	453	2.27 \pm 0.70
15. The <i>pharmacist</i> giving you advice about your health including referral to a doctor if needed.	62 (14)	189 (41)	205 (45)	456	2.31 \pm 0.70
16. Receiving printed information about your medications.	54 (12)	173 (37)	235 (51)	462	2.39 \pm 0.68
17. The <i>pharmacist</i> explaining to you how to use your medications.	11 (2)	149 (33)	300 (65)	460	2.63 \pm 0.53
18. The <i>pharmacist</i> advising you on possible side-effects of your medications.	48 (11)	147 (32)	260 (57)	455	2.46 \pm 0.68
19. The <i>pharmacist</i> keeping a file of all the medications you are taking and monitoring them, especially when a new medication is added.	104 (23)	160 (35)	194 (42)	458	2.19 \pm 0.78
20. The <i>pharmacist</i> reviewing your medications and advising your doctor, if needed, about possible changes to your medications.	97 (21)	152 (33)	206 (46)	458	2.24 \pm 0.78

^a Not all respondents completed every item, Total= number of respondents completing the item

Comparisons of likelihood of using services with various demographic characteristics are shown in Table 3. Higher proportions of women, those aged 50 years and older, and of Arab nationality stated they were “very likely” to use services compared to other groups, however only the nationality results were statistically significant ($P < 0.05$).

Table 3: Effect of participant demographics on future services

<i>Service</i>	<i>Rating^a</i>	<i>Gender</i>		<i>Age^b</i>				<i>Education^c</i>				<i>Nationality^d</i>	
		<i>M</i>	<i>F</i>	<i>1</i>	<i>2</i>	<i>3</i>	<i>4</i>	<i>1</i>	<i>2</i>	<i>3</i>	<i>4</i>	<i>A</i>	<i>NA</i>
		<i>N(%)</i>		<i>N(%)</i>				<i>N(%)</i>				<i>N(%)</i>	
Screening for conditions such as blood pressure, diabetes and high cholesterol	3	79(43)	144(52)	110(46)	40(46)	38(53)	33(54)	31(47)	31(57)	128(49)	31(41)	195(51)	25(36)
	2	69(38)	96(34)	89(37)	35(40)	21(30)	19(31)	23(35)	17(32)	92(35)	31(41)	129(33)	34(49)
	1	35(19)	39(14)	39(17)	13(14)	12(17)	9(15)	12(18)	6(11)	41(16)	14(18)	63(16)	10(15)
Receiving advice on how to self-monitor your condition, such as the use of blood sugar machines.	3	77(43)	130(48)	109(46)	34(40)	32(47)	30(50)	28(44)	25(47)	122(47)	31(41)	183(48)	22(33)
	2	77(43)	117(43)	95(41)	44(51)	29(43)	24(40)	28(44)	25(47)	105(41)	33(44)	157(41)	34(51)
	1	26(14)	26(9)	31(13)	8(9)	7(10)	6(10)	8(12)	3(6)	30(12)	11(15)	41(11)	11(16)
The <i>pharmacist</i> giving help in preventing disease, as in smoking cessation and weight control	3	70(40)	121(44)	91(39)	40(45)	29(44)	29(48)	28(45)	26(48)	102(40)	32(43)	168(44)	23(34)
	2	77(43)	117(42)	108(46)	34(39)	26(39)	24(40)	24(38)	21(39)	117(45)	31(42)	161(43)	28(41)
	1	30(17)	38(14)	36(15)	14(16)	11(17)	7(12)	11(17)	7(13)	38(15)	11(15)	50(13)	17(25)
Receiving printed information about your medications	3	91(50)	144(52)	114(48)	45(51)	38(54)	37(61)	41(62)	27(50)	125(48)	38(50)	207(54)	27(39)
	2	71(39)	102(37)	89(38)	35(39)	26(37)	20(33)	19(29)	22(41)	102(39)	29(38)	133(34)	35(50)
	1	21(11)	33(11)	34(14)	9(10)	7(9)	4(6)	6(9)	5(9)	34(13)	9(12)	46(12)	8(11)
The <i>pharmacist</i> explaining to you how to use your medications	3	121(67)	179(65)	146(62)	60(68)	46(66)	45(74)	49(74)	35(66)	163(62)	49(65)	253(66)	44(63)
	2	59(32)	90(32)	85(36)	27(30)	20(29)	16(26)	15(23)	17(32)	91(35)	25(33)	120(31)	26(37)
	1	2(1)	9(3)	5(2)	2(2)	4(5)	0(0)	2(3)	1(2)	7(3)	1(1)	11(3)	0(0)
The <i>pharmacist</i> reviewing your medications and advising your doctor.	3	76(43)	133(48)	111(47)	39(44)	27(39)	31(52)	32(49)	29(54)	111(43)	34(46)	183(48)	23(33)
	2	61(34)	91(32)	79(33)	33(37)	24(35)	15(25)	22(33)	11(20)	94(36)	23(31)	120(31)	30(44)
	1	42(23)	55(20)	46(20)	17(19)	18(26)	14(23)	12(18)	14(26)	54(21)	17(23)	80(21)	16(23)

^a:Response: 3=V. Likely, 2=Likely, 1=Unlikely^b: Age: 1=30 or less yrs; 2=31-40; 3=41-50; 4=51 or more^cEducation: 1= High School or less; 2=Post-High school diploma; 3=Undergraduate degree; 4=Postgraduate degree^dNationality: A=Arab, NA=Non-Arab

Major themes generated from the open-ended comments are included in Table 4. The top three concerns were the information about medications especially the side effects, followed by the care shown by the pharmacy staff, and improved accessibility and physical layout of the pharmacy.

Table 4: Themes generated from free-text

No.	Theme	Percentage frequency ^a
1	Increase medication use and side effect counselling	15%
2	More care/compassion for patient vs. business	13.7%
3	Increase accessibility, waiting areas, private room	12.3%
4	Reduce cost of medications	9.6%
5	Make available Arabic speaking personnel-increase understanding	9%
6	Competent staff/experts-pharmacists vs. assistants	9%
7	Make available alternative, herbal, nutrition, weight loss treatments	7.5%
8	Increase communication with doctor& hospitals	7.5%
9	Providing initial patient assessment & monitoring, first aid	7.5%
10	Sustain availability of medications, resource from variety of vendors	4.8%
11	Medication safety and appropriateness	3.4%

^a Percentage frequency is based on the total frequencies of all items =146

4. Discussion and Conclusion

4.1 Discussion

This is one of very few studies to explore the types of primary care services that patients would use if provided through community pharmacies and was the first of its kind in the UAE. Importantly, data from this study will facilitate informed decision making by health authorities and community pharmacists with respect to planning and implementing future primary care services. The questionnaire developed specifically for the Arabic context can readily be used in other Arab countries with similar community pharmacy services such as those in the UAE.

It was clear that participants were loyal to neither one specific community pharmacy nor to one type of pharmacy (i.e., chain or private). They appeared to be welcome of all of the suggested primary care services that could be provided through community pharmacies. It could be that patients had unmet expectations of the services provided in community pharmacy which explains their readiness to use the suggested services, their lack of loyalty and low satisfaction with existing services.[21]

Most participants were very likely to use more information about their medications; how to use the medications, and their side effects and to receive print information about the medications from the pharmacist. We previously reported that these services were not provided to a large extent in community pharmacies in the UAE, a problem compounded by the limited information resources accessible in these pharmacies.[26] The importance of this observation is two-fold; firstly, patients do desire to obtain more about their medications, and secondly, they would like to receive the information from a pharmacist specifically rather than from other pharmacy personnel. The competence of the personnel working in community pharmacies is of concern to patients; it is common practice in many developing countries, including the UAE, for pharmacists to assume managerial duties in community pharmacies, leaving dispensing and patient contact to pharmacy assistants, who may not have the proper training or education to deliver such services.[27] Given our finding, it is imperative that community pharmacists assume a greater role in the provision of patient counselling; thus, there needs to be an organizational change supported by legislation regarding who could provide patient-centred responsibilities within the UAE's community pharmacy.

Participants were likely to use screening services and monitoring of disease control, education about self-monitoring of disease, and lifestyle such as weight management. Community pharmacies are particularly well placed to provide diagnostic testing and screening services, disease prevention and health promotion programs; and other components supporting self-care to the public.[28] Community pharmacy is a viable partner in helping to detect individuals with undiagnosed diseases or individuals who are likely to develop them in the near future. This is particularly valuable given that screening services are not well developed in the UAE and the prevalence and burden of diseases such as diabetes and cardiovascular disease are considerably high.[29-30]

Although participants welcomed all the suggested primary care services, they were least supportive of pharmacists keeping records of their medication profiles and intervening as new medications were added. Similar findings were reported from other countries where lay people were less supportive of what they considered pharmacists exchanging roles with doctors.[31] It is also possible that our participants needed the assurance of a doctor in the management of their conditions, especially that they were not accustomed [24] and so unaware of pharmacists possible role in chronic disease management. Importantly, chronic disease medication management is a core function of pharmacist-provided primary care services in countries adopting this model of practice,[31-33] highlighting the necessity of increasing public awareness of pharmacists' contribution in these services.

Probably, the Arab population has the most stable and long-term residency in the UAE compared to other nationalities, which may explain, in part, their higher readiness to use services explored

in this study. Other nationalities, on the other hand, such as the Indians, other Asians, and Europeans, may elect to seek medical care in their home countries due to the high cost of medical care in the UAE [36] or to the availability of better medical care outside the UAE, such as those in European countries.

The data from this study also suggest that patients desire a more caring attitude from their pharmacists. This observation is similar to those reported from neighbouring countries, where patients gave higher priority scores to information and communication, as well as caring attitudes by their health professionals, compared to the treatment itself.[37]

It is interesting to note that whilst the majority of participants in this study have access to insurance coverage for their medications, the cost of medications remains a major concern for many. This observation suggests either insurance coverage of medication costs was suboptimal, or that patients were paying out of pocket for the medications. Out of pocket payments occur when patients prefer to primarily go to a community pharmacy for evaluation (and the subsequent purchase of medications recommended at the pharmacy), as a means of avoiding co-payments on doctors' office visits imposed by their health insurance. By purchasing medications without a prescription at the community pharmacy, patients are often required to pay the full price of the medications given that insurance systems in UAE will only pay (usually partially) for medications ordered by prescription. Patient preference to visit community pharmacy for their primary care needs puts even more responsibility on these pharmacies to provide safe, effective and less-costly therapy.

Significantly, this study has indicated that there is a need for Arabic-speaking personnel in community pharmacies in the UAE, which is of great importance given the impact language barriers have on delivering effective communication in healthcare.[38] This finding is consistent with earlier studies exploring patient satisfaction in the UAE and Saudi Arabia.[37,39]

This study has shown that patients have unmet expectations of primary care pharmacy services in the UAE, pleasingly, the majority of participants indicated that they are likely to use the suggested services. However, for community pharmacists to be effective primary care providers in the UAE, several issues need to be addressed. Community pharmacists will need to re-design their service model and ensure adequate resources to support such change. Furthermore, the pharmacists themselves will need to embrace the healthcare provider role that is characterized by caring attitude, adequate competency and effective communication given these characteristics will enhance the public's confidence in the profession.

4.2 Conclusion

This is the first study to explore patients' expectations of primary care pharmacy services in the UAE. The findings show that patients were ready to use primary care services if they were provided through community pharmacies. Participants were more supportive of receiving information, help in self-management and monitoring, and in preventive roles from pharmacists, but less supportive of intervention roles by pharmacists in medication management of their chronic disease conditions. Pharmacists need to accept the role of a primary care provider and make resources available to initiate and maintain the provision of primary care services in the UAE.

4.3 Practice Implications

Considering the dearth of evidence about patient expectations of primary care services in the UAE, it was vital to investigate the type of primary care services patients would be likely to use in the future. This knowledge would be pivotal to aid recognition of areas of community pharmacy service needing to be improved or introduced leading to improved patient satisfaction and demand for the services. In turn, this will guide training and interventional programs for pharmacists to enhance the type and quality of the services they provide. The questionnaire developed in this study may be utilized in other countries with similar pharmacy practice and context.

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Chapter 8: Physicians' perspectives on pharmacists' roles in community pharmacy and on collaboration with pharmacists in the UAE

8.1 Introduction

As discussed in Chapter 1, another stakeholder group whose views needed to be considered is the physicians. An understanding of how physicians perceive the pharmacist's role could provide insight into areas that need improvement and how collaboration between pharmacists and physicians could be enhanced. Consequently, this chapter provides background to the research presented in Chapters 9 and 10, which describes physicians' attitudes towards pharmacists' roles in community pharmacy, and physicians' views and attitudes towards collaboration with community pharmacists in the UAE. The terms 'physicians' and 'general practitioners (GPs)' are used interchangeably in this thesis depending on the terminology used in various international studies.

8.2 Literature review

Pharmacists' roles have traditionally been focused on drug acquisition, compounding, and on provision of drug information to patients and physicians.[1] Physicians base their expectations of pharmacists' roles on their experience with these activities.[1] With the advent of pharmaceutical care and the extended roles that pharmacists are playing in providing care for patients, physicians' opinions of the newer roles assumed by pharmacists, such as prescribing and modifying medication therapy are inconsistent.[2,3] Physicians' understanding of the contribution of pharmacists to patients' therapy is vital, since prescribing remains primarily the

physicians' responsibility; thus, physicians' support of pharmacists' interventions to optimise therapy is critical for the successful implementation of these interventions.[3]

The literature recognises the contribution of pharmacists to patient therapy and that this contribution is enhanced by collaboration with physicians.[4] Collaboration has been described as “a relationship of interdependence requiring incorporation of complimentary roles”,[5] which are set by the expectations each professional has of the other based on previous experiences, stereotypes and after working with each other.[6] Improving the relationship between physicians and pharmacists serves both professions; it allows efficient communication of patient information, prompt resolution of drug therapy problems and provides for a positive work setting.[7] The beneficiary of pharmacist-physician collaboration is ultimately the patient, with positive outcomes including safe, effective and less costly therapy.[8-13]

8.2.1 Physicians' perspectives of pharmacists' roles in providing primary care services

Table 8.1 provides a review of studies investigating physicians' perspectives of pharmacists' roles and collaboration with pharmacists.

Table 8.1: Summary of studies reviewing physicians' perspectives of pharmacists' roles and collaboration with pharmacists

Author(s), date	Participants/Setting	Method	Main findings/Outcomes	Limitations/Comment
Ritchey <i>et al.</i> , (1981)[15]	295 physicians (members of the Medical Society) in Birmingham, Alabama, USA.	A questionnaire mailed to assess favourability of physicians toward clinical pharmacy by asking if pharmacists should do certain tasks and whether they were qualified to perform them.	Majority of physicians believed they needed advice on medications from pharmacists. Pharmacists were not the most-used information resource for physicians. More than two-thirds disagreed that physicians should indicate diagnosis on prescriptions for pharmacists to check appropriateness of prescribed drugs. Difference in opinion as to whether expanding the role of pharmacists would pose a threat to physicians.	Findings resonate with those from more recent studies assessing physicians' perspectives, indicating these have not changed greatly over the years.
Harding <i>et al.</i> , (1990)[24]	A group of 13 GPs and 10 pharmacists working in health centres with integrated pharmacy and another group of 9 GPs working in health centres (without pharmacies) and 10 community pharmacists, England.	Qualitative study using individual interviews to explore contribution of pharmacists to health care in an integrated setting and regular community pharmacy setting.	GPs' satisfaction originated from their accessibility to a pharmacist for consultation. The pharmacist's role as a 'safety net' for potential errors made by prescribers was acknowledged. GPs in health centres with integrated pharmacies collaborated more with pharmacists. Health centre pharmacists consulted general practitioners on a wider range of drug related questions than did community pharmacists.	Results not necessarily representative of all GPs or pharmacists working in health centres or in the community as they come from qualitative explorations of small convenient samples.
Bailie <i>et al.</i> , (1996)[20]	1400 board-certified internists and family practitioners chosen from New York State counties with populations of less than 251,000.	A questionnaire mailed to a randomly selected sample of family practitioners to determine their attitudes towards community pharmacists as providers of primary care services.	Physicians agreed pharmacists should report adverse drug reactions and advise them on cost-effective prescribing. Most physicians agreed pharmacists should provide patients with information concerning the drug's dose and administration, possible adverse drug reactions and possible food and drug interactions. Few believed that pharmacists should provide screening services.	One of first studies on the subject published in a well-known medical journal, leading to widespread discussion. 47.4% response is considered good in this type of survey and participants. Exploration of reasons behind physicians' attitudes would have been valuable.
Lilley <i>et al.</i> , (1998)[11]	A fee-for-service family practice pharmacotherapy clinic (pharmacist-run) in a university setting, USA.	Description of two-year experience with incorporating a pharmacist-run clinic in a university-based family practice. Physicians' referral to pharmacists and acceptance rate of recommendations were used to assess integration into clinic.	High referral rate and high acceptance of pharmacist recommendations marks the success of integration of clinics into patient care.	Despite being confined to a university setting, which could limit generalisability to general practice, gives a view of office-based practice.

Author(s), date	Participants/Setting	Method	Main findings/Outcomes	Limitations/Comment
Ranelli <i>et al.</i> , (2000)[29]	Six physicians in phase one and 313 primary care physicians (members of the Wyoming Medical Society) in phase two, USA.	Structured interviews with a convenience sample of physicians in phase 1; written survey mailed to another convenience sample in phase 2. Physicians' attitudes and experiences related to their interactions with pharmacists and perceptions about pharmacists' responsibilities were assessed.	Respondents were most comfortable with pharmacists catching prescription errors, providing patient education, suggesting nonprescription medications to patients, and suggesting prescription medications to physicians. The most common negative experiences involved pharmacists scaring patients, dispensing unauthorised refills, and making inappropriate comments in the presence of patients.	Convenience sampling in the quantitative phase limits generalisation to the wider population. A two-phase design involving triangulation adds credibility to findings.
Edmunds <i>et al.</i> , (2001)[27]	Department of Health-sponsored pilot projects in the UK. Two schemes (different numbers of GPs and pharmacists) were assessed; one on dispensing and prevention of drug wastage, and one on helping patients adhere to medications.	Qualitative telephone interviews to explore attitudes to extended roles of community pharmacists amongst a purposive sample of pharmacists and general practitioners.	Physicians seemed to have accommodated routine roles for pharmacists but objected to roles perceived as crossing the boundary with their profession. Divisions and disagreement between hospital and community pharmacists on one side and within the community pharmacy on the other, weakened efforts for re-professionalisation of pharmacists.	This study explored attitudes of both GPs and pharmacists towards community pharmacists' role and reports perspectives from both. Limited to participants involved in pilot projects, which may have affected views.
Smith <i>et al.</i> , (2002)[1]	2600 physicians (from the American Medical Association database). Physicians were from office background, hospital background and medical residents.	A 3-part questionnaire mailed to a random sample, covering current expectations of pharmacists, actual experience with pharmacists, and future expectations.	Physicians did not have very strong expectations nor did they have negative expectations of pharmacists, indicating possible lack of awareness. Differences in expectations of hospital and community pharmacists existed in relation to designing drug therapy and monitoring plans, and offering patient medication education. Type of practice setting did not affect physicians' views. Younger doctors had higher expectations. Overall, physicians had greater expectation of pharmacists than pharmacists were actually providing.	Low response rate (19.3%) limits ability to draw general population conclusions. Among the first to study physicians' expectations of pharmacists, but did not explore reasons why physicians held their views.

Author(s), date	Participants/Setting	Method	Main findings/Outcomes	Limitations/Comment
Muijters <i>et al.</i> (2003)[4]	1574 GPs and 399 pharmacists who were active in the operating areas of two health insurers in the south of the Netherlands.	A mail questionnaire to assess participants' opinions about the role, expertise, and responsibilities of pharmacists in primary care. Factors affecting participant perceptions of the roles were identified.	GPs and pharmacists generally had a good relationship with each other, which positively affected GPs' attitudes to pharmacists. GPs generally accepted an advisory role from pharmacists through provision of information on inappropriate prescribing. "Co-determining" roles were not viewed positively. This was explained by the lack of GPs' confidence. GPs also did not approve of pharmacists dispensing repeat prescriptions without prior authorisation.	Sample selection is limited and may not represent the wider population, despite a 71% response rate. The study compared respondent to non-respondent answers (15% telephoned) and found no differences. Issues such as territory encroachment and pharmacist competence surfaced as major barriers. These themes have also surfaced in other studies from both developed and developing countries.
Hughes <i>et al.</i> , (2003)[28]	22 GPs distributed over five focus groups and 31 community pharmacists distributed over six focus groups in three locality areas of a health and social services board in Northern Ireland.	Qualitative study using focus groups to explore barriers between the two professions in relation to collaborative working and the extension of prescribing rights to pharmacists.	Themes: 'Shopkeeper' image, Access, Hierarchy and Awareness. Shopkeeper image and conflict between business and health care were a concern for GPs regarding extension of prescribing rights to community pharmacists. GPs reported that patients had difficulties accessing pharmacists because of limited pharmacy opening hours. Pharmacists reported difficulty in accessing GPs, as communication was through receptionists. GPs reported being unaware of training and activities of community pharmacists, while pharmacists felt that GPs had no appreciation of their role in health care.	A defined sample within a specific geographical region limiting, findings to the local setting.
Zillich <i>et al.</i> (2004)[21]	1000 primary care physicians drawn from a database of >5000 registered physicians in Iowa, USA.	A mail survey of random sample of physicians studied three types of collaborative relationship drivers.	Three groups of relationship characteristics: participant, context, and exchange were described. Whilst participant and context factors influenced pharmacist-physician collaborative relationships, exchange characteristics were the most significant driver for collaborative relationships including: relationship initiation, trustworthiness and role specification.	34% response rate may represent response bias. As the study asked physicians to relate their answers to a pharmacist they mostly deal with, physicians who deal with multiple pharmacists may not have responded. First study to test which drivers had most influence on pharmacist-physician collaboration.

Author(s), date	Participants/Setting	Method	Main findings/Outcomes	Limitations/Comment
Matowe <i>et al.</i> , (2005)[19]	200 physicians working in two general government and two specialised (Ibn Sina and psychiatry) hospitals in Kuwait.	Questionnaire hand delivered to a convenience sample to assess physicians' perceptions, expectations, and experience with pharmacists. Questionnaire was adapted from one used in California, USA.	Majority were comfortable with pharmacists detecting and preventing prescription errors, and educating patients about safe and appropriate use of medications. About half were uncomfortable with pharmacists suggesting prescription drugs to patients or treating minor illness. Most physicians thought pharmacists were a reliable source of drug information but only one-third thought pharmacists were actually providing it.	The sample was from government hospitals, limiting the generalisability of findings to the majority private sector in Kuwait. It is, nevertheless, one of the few studies from Arab countries.
Awad <i>et al.</i> , (2007)[17]	300 physicians practising in four teaching hospitals in Khartoum, Sudan.	Self-administered, hand-distributed (to a random sample) questionnaire adapted from one used in California, USA and modified for the context of Sudanese health system. Physicians' comfort level with clinical pharmacy services, their expectations, and current experience in dealing with pharmacists.	More than half of physicians reported less than once/week interaction with pharmacists, affecting physicians' awareness of pharmacist services. Physicians were most comfortable with pharmacists detecting and reporting medication errors and monitoring therapeutic drug regimens. Physicians were uncomfortable with pharmacists recommending prescription medications to patients (viewed as intrusion into physicians' territory).	Study was from hospital setting and views of physicians may not reflect those of family physicians or GPs dealing with community pharmacists. Another of the few studies from Arab countries.
Lau <i>et al.</i> , (2007)[23]	Family physician's office where 9 pharmacists rotated through a series of 13 OSCE stations in Ontario, Canada.	The Family Practice Simulator evaluation used 5-point Global Rating Scales of primary care skills of pharmacists, who received evaluations by pharmacists, physicians and simulated patients.	Physicians emphasised the need for inter-professional collaboration. Evaluations highlighted areas such as communication skills where pharmacists scored lower than other items on the scale.	Despite depending on simulated environment, the Family Practice Simulator is a good evaluation tool to assess pharmacists' inter-professional skills and measure expectations of pharmacists' professional roles.
AlKhateeb <i>et al.</i> (2008)[22]	500 physicians. The newly created 'Medicare Part D' program allowed at-risk patients to receive benefits of advanced pharmaceutical care through medication therapy management (MTM), West Virginia, USA.	A mail survey sent to a random sample to test physicians' attitudes toward pharmacist-provided MTM services. Variables tested: prescription volume, specialty type, years of practice, gender, academic affiliation, practice size, physicians' attitudes toward collaborative agreement, and physician-pharmacist communication frequency.	The mean for physicians' attitude to supporting provision of MTM by pharmacists was 2.84 out of 5. Physicians' attitudes toward collaborative agreement, specialty, gender, years of practice and pharmacist-physician communication frequency, had significant influences on physicians' attitudes toward provision of MTM by pharmacists.	Low response rate (22%) is common in survey research involving physicians. Study is specific for the USA (and maybe just for West Virginia) as it explored MTM and the complex health system it comes from.

Author(s), date	Participants/Setting	Method	Main findings/Outcomes	Limitations/Comment
Bradley <i>et al.</i> , (2008)[31]	GPs and pharmacists within local pharmaceutical services (LPS) contract (13 sites) aiming to enable pharmacists to work collaboratively with other professionals. England	A mixed-method evaluation, which included a two-stage questionnaire of all sites and case study pilots at six of 13 sites. Data were triangulated. Aim was to investigate inter-professional collaboration between GPs and pharmacists involved in delivery of enhanced pharmacy services.	"Co-location" facilitated integration of pharmacists. New relationships were formed with GPs. Good existing working relationships with GPs were important for operation of the pilots as many were dependent on GPs for patient referrals. Findings suggest establishing inter-professional collaboration between GPs and pharmacists is a stepwise process, with reliance on trust.	Some views were from physicians who have relationships with pharmacists, which was found to predetermine success. Strengths: a 90% response rate, triangulation and inclusion of both pharmacists and physicians in the study. Findings resonate with those from other countries such as the USA.
Pottie <i>et al.</i> , (2008)[30]	12 physicians in seven physician-led group family practices in urban, suburban, and semirural Ontario, Canada.	Qualitative research design using focus groups followed by semi-structured interviews with purposively-selected physicians. Interviews occurred after 12 months integration of pharmacists into physicians' practices.	Physicians had concerns over operational efficiency, legal limitations, effect on patient-physician relationships and work satisfaction issues. Follow-up interviews revealed resolution of most concerns and documentation of clear clinical benefits, including having a colleague to provide immediate drug information and feeling more secure in prescribing, inter-team education and facilitating community pharmacy dealings.	Physicians in this study may be considered pioneers in the integration process and so their views may not be representative of the general population. Findings are consistent with studies from other countries with more diverse groups of physicians.
Tahaineh <i>et al.</i> , (2009)[18]	284 physicians in four main hospitals in northern Jordan.	A self-administered questionnaire distributed by hand to a random sample. Physicians were asked about their comfort level with certain clinical pharmacy services, expectations, and current experience of dealing with pharmacists.	Physicians believed pharmacists were drug therapy experts. One-third did not interact with pharmacists and, when they did, it was about drug availability, alternate drug therapy and about appropriate dosages. Most physicians expected pharmacists to educate patients, one-third expected pharmacists to help in designing drug therapy plans, and another third would like to consult a pharmacist about proper pharmacotherapy.	Study highlighted physicians' perspectives of pharmacists in a hospital setting, which is normally a more advanced practice than community practice. One of the few studies from Arab countries.
Bryant <i>et al.</i> , (2009)[14]	900 community pharmacists and 1000 GPs in New Zealand.	A mail self-completed survey sent to a random sample to assess perceived role of community pharmacists, new medicines-management roles and potential barriers. Roles assessed technical, appropriateness of prescriptions, monitoring, advice to medical practitioners and prescribing.	Services supported by practitioners: counselling, medication reviews and monitoring of noncompliance. Services not well supported: monitoring of adverse drug reactions or effectiveness of medications and proactive roles. Prescribing roles were rejected by physicians. Potential barriers: lack of mandate to provide intervention, legitimacy of role, pharmacist adequacy and whether service would be effective.	Strength of the study was that it took the views of both pharmacists and physicians. Good response rates of 69.6% (pharmacists) and 59% (physicians). Qualitative approaches could supplement the findings about barriers to collaboration.

Author(s), date	Participants/Setting	Method	Main findings/Outcomes	Limitations/Comment
Farrell <i>et al.</i> , (2010)[16]	The IMPACT program was a project to optimise drug therapy through collaborative care integrating non-dispensing pharmacists into seven family practices in urban, suburban and semi-rural communities (total 21 physicians) in Ontario, Canada	Family Medicine Use Processes Matrix, a self-completed questionnaire, was mailed to participating physicians in the seven sites at the 3rd, 12th and 19th month of pharmacist integration. Aim was to measure how primary care family physicians perceived their own and pharmacists' contributions to medication processes as pharmacists became integrated into the practices.	Physicians perceived increases in pharmacists' contribution to Diagnosis & Prescribing, Monitoring and Medication Review subscales and decreases in their own contribution to Diagnosis & Prescribing and Education subscales. Shifting of perceptions of physicians may be an indication of increased value put on pharmacists' clinical competency and possibly their comfort level in sharing medication use processes with pharmacists.	Physicians belonged to practice sites that were adopting inter-professional team-based care This could have affected their receptivity to pharmacists' contribution. Small study sample, hence, no statistical tests could be used to compare responses. Pharmacists' activities within the project were different from most community pharmacists' activities; thus limiting generalisability.
Snyder <i>et al.</i> , (2010)[32]	Community pharmacy experts were asked to identify 1-2 community pharmacists who were involved in effective professional collaboration with a physician, leading to identification of five pairs. USA	Semi-structured individual interviews, and completion of the Pharmacist-Physician Collaborative Index (PPCI). Qualitative information about three domains of professional exchanges between pharmacists and physicians and quantitative scores on the PPCI were triangulated.	Collaborative working relationships evolve around: the pharmacist as the relationship initiator, good communication, high-quality contributions by pharmacists leading to trust building and establishment of professional roles.	Sampling method included only participants with high levels of collaboration – views may not represent the population of community pharmacists and physicians at large. Strong research design; triangulation approach involving both physicians and pharmacists.
Legault <i>et al.</i> , (2012)[33]	Anticipatory and Preventative Team Care (APTCare) members: family physicians (FPs), nurse practitioners (NPs) and pharmacists, providing care to medically complex patients who had been identified at-risk for negative health outcomes in a rural family practice in Ontario, Canada.	A qualitative approach with individual interviews with FPs, "intervention" NPs and pharmacists at the beginning of study, focus groups and a survey at the end of study. Pharmacists worked mainly onsite and on a full-time basis.	It took six months for the team to recognise each other's competency and how to work together. FPs with little prior collaborative experience had difficulty understanding the role, competence and capabilities of other members. FPs' satisfaction with extent of collaboration with NPs and pharmacists grew over time. The pharmacist was found to be "invaluable" by both NPs and physicians.	Participants may be more open to collaboration. Triangulation is a strength. Valuable realistic finding: practitioners should understand that engaging in collaborative relationships will have difficulties that will take time to resolve and that it does not happen automatically.

Author(s), date	Participants/Setting	Method	Main findings/Outcomes	Limitations/Comment
Hata <i>et al.</i> , (2012)[25]	18 GP practices in two localities in New Zealand	Qualitative, face to face, semi-structured interviews were utilised. GPs who had experience working in localities providing Medicines Use Review (MUR) by community pharmacists were asked about their perceptions of pharmacists providing new services. Themes were analysed using a SWOT approach based on services' potential Strengths, Weaknesses, Opportunities and Threats.	GPs were more supportive of pharmacists' role in medication review and less supportive of pharmacists practising screening, monitoring and prescribing. Potential strengths: pharmacists' skills in medication use and benefits of services to patients. Potential weaknesses: patient confusion and harm, conflict and irritation to GPs' practice, and fragmented patient-care. Potential opportunities: improving communication, and having close collaboration and integration with GPs' practice. Potential threats: GPs' perceptions of increase in their workloads, and limited benefit to patients.	Participants already had a close working relationship with local community pharmacists that could have influenced their perceptions. GPs only had a few patients who participated in MUR, so their perceptions may not represent those of GPs with longer-term exposure to MUR. Possibility of recall bias of GPs as their patients experienced an MUR as much as 5 years previously.
Bradley <i>et al.</i> , (2012)[26]	18 pharmacists and 13 GPs involved in provision of local pharmaceutical service pilots under a primary care trust and 13 community pharmacists and 14 GPs involved in provision of repeat dispensing. The UK,	Qualitative interviews were conducted with purposive samples of GPs and community pharmacists who were involved in provision of services like medication reviews, and treatment of minor ailments; and others who collaborated in the provision of repeat dispensing.	Key components of collaboration: importance of trust, communication, professional respect, and "knowing" each other. There were differences in perception of GPs and pharmacists toward importance assigned to trust and communication. GPs were found to have differing views; independent pharmacies were favoured over chains pharmacies and regular pharmacists favoured over locum (part-time) pharmacists. This differentiation affected willingness of GPs to collaborate.	GPs in this study may have been more open to collaboration than GPs in general. This assessment was more focused on GPs' than pharmacists' views even though it was aimed to cover both. A new model of collaboration intended to improve collaborative relationships between community pharmacy and general family practice.

Published studies have used surveys (mainly locally-devised, self-completed questionnaires),[1,4,14-22,23] qualitative approaches such as individual interviews [24-27] or focus groups,[28] or a mixture of methods.[29-33] Many survey-based studies utilised random sampling techniques,[1,14,15,20-22] while some used convenience sampling [17-19,29] which may have introduced participant selection bias limiting the generalisability of the findings to the general population of physicians. Some studies involved physicians who were part of collaborative relationships with pharmacists or schemes to enhance community pharmacy services.[11,16,24-28,30-33] These studies are valuable in elucidating the perspectives of physicians working closely with pharmacists, but may produce biased findings as the views of such participants could be favourable towards pharmacists' provision of enhanced services. The sample sizes in some studies were too small [17-19,34] to draw statistically significant conclusions.

In a study by Bryant *et al.*[14] involving community pharmacists and general practitioners (GPs) in New Zealand, using a self-administered questionnaire, five areas of pharmacists' interventions were assessed for support by GPs, including technical activities, checking appropriateness of prescriptions, counselling and monitoring the patient, advice to medical practitioners and prescribing roles. The GPs were supportive of pharmacists being responsible for technical aspects such as supply and distribution of medications, and monitoring of noncompliance and adverse drug reactions, but showed only marginal support for pharmacists counselling patients about the benefits of medications. They did not support pharmacists giving advice to general practitioners about the design of drug therapy regimens. Other pharmacists' roles that were perceived less favourably included prescribing by pharmacists (e.g., supervised repeat

prescriptions), adjusting patients' medications under protocol, and recommending medications for patients after the GP had provided a diagnosis.[14] Another survey found physicians to be generally receptive of pharmacists maintaining patient profiles and monitoring prescribing patterns of physicians.[15] Tasks performed by pharmacists that were gaining acceptance by physicians included counselling patients on the use of prescribed drugs and aiding physicians in selecting drugs for patient therapy. Conversely, tasks which were generally rejected by physicians were pharmacists deciding on the dosage of prescribed medications, and pharmacists independently prescribing drugs based on physicians' diagnoses.[15] Other studies have documented similar findings with activities perceived as an intrusion to the physicians' roles not being well accepted.[1,29,35-37]

Despite differences of opinions, most physicians were receptive of pharmacists' involvement in a supportive consultative fashion.[24,38-41] Another study from New Zealand investigated GPs' perceptions of pharmacists' roles in providing new services using a business strategic planning approach to analyse and interpret themes generated from face-to-face interviews.[25] The potential Strengths, Weaknesses, Opportunities and Threats (SWOTs) of the services were elucidated. The GPs were generally supportive of pharmacists providing medication reviews and less supportive of pharmacists providing screening, monitoring or prescribing services. Potential strengths identified were focused on pharmacists' knowledge and skills in medication use and the positive effect on patients' outcomes. Potential weaknesses included confusing the patient, conflict with the GPs' scope of practice, and fragmentation of patient-care. Opportunities were increased chances for improved communication and pharmacists' integration with the GPs' practice. Threats were the GPs' concerns over lack of remuneration for services (GPs were

required to supervise the pharmacists' services), concerns over possible increase in GPs' workloads, and perceived lack of benefits to patients.[25]

Results from a Canadian study (IMPACT) comparing physicians' attitudes towards pharmacists' provision of primary care services in the community before and after entering into a collaborative relationship with pharmacists, demonstrated important changes in physicians' perceptions of pharmacists' roles over time.[16] At the beginning of the project, family physicians rated pharmacists' contributions much lower than their own on the Family Medicine Medication Use Processes Matrix (a self-completed questionnaire) in areas that have traditionally been within their scope of responsibilities: Diagnosis & Prescribing, Monitoring, and Administrative/Documentation activities. At the same time, they rated the pharmacist's contribution to Education activities as higher than their own, while the contribution of both professionals to Medication Reviews was rated similarly. After the integration of pharmacists into physicians' practices, physicians saw a greater role for pharmacists in contributing to medication use, specifically: Diagnosis & Prescribing, Monitoring and Medication Review. This suggests that, as the physicians worked more closely with the pharmacists, their awareness of the pharmacists' contribution increased, and thus they were more receptive to pharmacists providing the services.

Studies of physicians' expectations of pharmacists' roles from developing countries are limited. A pilot study from Malaysia, using a self-completed questionnaire distributed to a selected sample of GPs, explored GPs' level of agreement towards roles of community pharmacists.[34] Many respondents (46.3%) agreed that GPs should consider the community pharmacists'

recommendations whenever there were problems with the GP's prescriptions; community pharmacists were the best practitioner to educate patients about safe and appropriate use of medications (52.5%); and GPs should work closely with the community pharmacists in monitoring patients' pharmacotherapeutic outcomes (77.5%).[34] A study from India used a self-completed questionnaire and convenience sampling of GPs to investigate GPs' perceptions and expectations of practising community pharmacists in four district headquarters of Karnataka.[42] Fifty-four per cent of GPs indicated that pharmacists should check legality and drug interactions in prescriptions, provide necessary drug information and counsel patients. Many GPs (76%) believed pharmacists should concentrate on dispensing activities; they were against pharmacist-run diabetic and anticoagulant clinics, pharmacists advising on cost-effective therapy, engaging in referral services to GP practices, and offering health screening services.[42]

A literature search of studies on physicians' expectations of pharmacists in Arab countries produced only three studies, all of which were from the hospital setting.[17-19] All studies hand delivered a self-administered questionnaire to physicians working in government and privately-owned or teaching hospitals. The studies suggested that physicians may not be aware of the pharmacists' roles. In the study from Jordan, more than one-third of the physicians reported that they never or rarely interacted with pharmacists, while 23% reported interacting with pharmacists only about drug availability and dose-related questions.[18] Physicians in Kuwait appeared to be comfortable with pharmacists providing a broad range of services but were less comfortable with pharmacists providing patient-centred activities.[19] In the study from Sudan, physicians appeared receptive to most statements regarding expectations of pharmacists' roles,

including patient-centred activities, suggesting that patient-centred care could be introduced in the Sudan's hospitals with the cooperation of the physicians.[17]

8.2.2 Collaborative working relationships between pharmacists and physicians

Pharmacist-physician collaboration has been encouraged in recent years to promote the appropriate use of medications, reduce adverse drug problems,[43] and improve patients' outcomes.[9,44-56] Better outcomes have been documented for patients with hypertension,[12,52-55] diabetes,[44,49] elevated cholesterol,[46,51] and depression.[47] In acknowledging the value of collaboration, a number of health organisations have called for increased collaboration between health professionals to improve patient care.[57-59] Factors identified for successful collaboration amongst health professionals include effective communication, considering other practitioners' responsibilities as complementary to their own, and sharing patient care responsibility.[60]

8.2.2.1 Physicians' characteristics that may affect receptivity to collaboration with pharmacists

Factors affecting physicians' acceptance of pharmacists' interventions, and possibly their collaboration with pharmacists, include the age of the physician, years spent in practice, type of specialty, the percentage of time spent in a hospital compared to other practice settings, and the number of prescriptions typically written per day.[15] A higher level of acceptance of pharmacists' interventions was related to the extent of exposure that physicians have to pharmacists.[15,17,61-64] Older physicians, those who worked in high malpractice specialties or those who wrote a large number of prescriptions, were less receptive of pharmacists'

interventions, while younger physicians, those who spent considerable time practising in hospitals and those who had been exposed to clinical pharmacy services were more receptive to pharmacists' interventions.[15] Pharmacists may need to consider these factors in future collaboration with physicians.

8.2.2.2 Models for collaborative relationships

Pharmacists need to establish strong working relationships with physicians in order for the relationships to be successful, and possibly develop into agreements. Over the past several years, pharmacists in the USA have entered into Collaborative Working Agreements (CWAs) with physicians, which are considered a late stage in the 'pharmacist-physician' relationship.[65] There are several models describing collaborative relationships between health professionals;[57,66] for pharmacist-physician collaborations, the most developed is the model by McDonough and Doucette, which was based on collaborative care models between nurses and physicians.[45] The McDonough and Doucette model is a 5-stage progressive model that categorised the relationship: 0 = Professional awareness, 1 = Professional recognition, 2 = Exploration and trial, 3 = Professional relationship expansion and 4 = Commitment to collaborative working relationship.[45] At the early stages, the exchange between pharmacists and physicians is usually minimal and may be driven by only one party, while in the later stages, the exchange is bilateral. The model proposes a set of characteristics that influence collaboration, divided into three main categories: participant characteristics, context characteristics and exchange characteristics. Participant characteristics include the level of education, training, experience, and age of the individuals involved. The context characteristics include the practice environment, type, and size, while exchange characteristics encompass issues like relationship

initiation, trustworthiness, and role specification. From the physicians' perspective, the exchange characteristics of relationship initiation, trustworthiness and role specification were found to be the most significant factors influencing collaborative relationships between pharmacists and physicians.[21] From the pharmacists' perspective, factors found to be the most significant drivers for collaborative relationships included: the context variable professional interactions, and the exchange characteristics: trustworthiness and role specification.[67] Relationship initiation is about beginning the relationship between pharmacists and physicians. Pharmacists are usually the ones to let physicians know that they are interested in the physicians' practice and what they could offer in the management of drug therapy.[67] When pharmacists have demonstrated that they are competent to offer meaningful recommendations to patients' therapy, over time, they will be able to gain the physician's trust. As this develops, the communication becomes a two - way process.[21] Collaboration appears to be fostered when both professionals jointly define their specific roles.[6]

A more recent model describing collaborative relationships between pharmacists and GPs in the UK identified three main stages of collaboration: level 1 = Isolation, level 2 = Communication, and level 3 = Collaboration.[26] This model explained the stages of collaboration using six themes whose presence or absence impacted collaboration. These themes were Proximity and location, Trust, "Knowing" each other, Communication, Roles and responsibilities and Professional respect. The model emphasised the identification of asymmetry in the perceptions of pharmacist-physician relationships; namely, the perceptions of power in the relationship and the perceptions of the components of collaborative relationships, and the importance assigned to them. This indicates that pharmacists not only need to focus on what they think has priority in

their collaboration with physicians, but also on what physicians consider has priority, as these may be different from the pharmacists'. Collaboration between pharmacists and physicians has been covered in many more studies, all of which come from developed countries. They are summarised in Table 8.1.

8.2.2.3 Barriers to collaboration between pharmacists and physicians

Barriers to good collaboration between pharmacists and physicians have been studied from the perspectives of both pharmacists and physicians. Understanding the nature of these barriers could help identify mechanisms to overcome them, and facilitate successful collaboration between the pharmacists and physicians.

From the pharmacists' perspective, environmental issues such as the lack of time, lack of space, lack of privacy, insufficient staff, inadequate pharmacist knowledge, and reimbursement issues have been reported as barriers.[43,68,69] In addition, lack of control of the practice environment,[70] such as the relationships with physicians,[68,69,71] patients' receptivity and awareness of the pharmacists' roles,[68-71] employer approval or disapproval [71] have been reported. Some pharmacists do not believe there is sufficient evidence to demonstrate the benefit of increased collaboration.[68,69] The lack of clear legal regulations to define pharmacists' responsibilities has also been reported as a major barrier.[72] Despite these barriers, pharmacists reported that collaborative relationships with physicians benefitted them strategically by improving physicians' acceptance of pharmacists' extended roles, and strengthening their position, thus enabling them to positively influence other key decision makers within their institutions.[43]

From the physicians' perspective, concerns related to operational efficiency of the collaborative team, legal implications,[30] the effect of such collaborations on patient-physician relationships [73] and issues with work satisfaction of physicians when other members of the team were carrying out what presumably was their "job".[30,73] Another reported barrier was the legitimacy of the interaction; both pharmacists and physicians reported lack of time for interaction, which deemed the collaboration of lesser priority.[74] In a UK study exploring GPs' and pharmacists' views of barriers to collaboration, the authors identified four themes including the "Shopkeeper" image, Access, Hierarchy and Awareness.[28] GPs saw community pharmacists as shopkeepers and felt this represented a conflict of interest in health care. The GPs did not have difficulty accessing pharmacy services but they thought the patients did, since they did not have access to after-hours pharmacy services. Pharmacists, on the other hand, reported great difficulty accessing medical practitioners especially as communication often happened through receptionists and technical staff. Hierarchy referred to professional standing; GPs expressed concerns about pharmacists assuming roles they considered to be their own. As to Awareness, overall, GPs had some awareness of the community pharmacist's role, but many had little knowledge of pharmacists' training and their continuing professional development requirements.

Another study from the UK which investigated inter-professional collaboration between GPs and pharmacists in the delivery of enhanced pharmacy services under the Local Pharmaceutical Services (LPS) contract [31] emphasised that pharmacists who had trusted relationships with GPs before LPS held a much more positive role than those who did not, as many of the services were dependent on GPs for patient referrals. The study highlighted the need to manage GPs'

stronghold on the referral process and access to records to help the development of new pharmacy services. “Co-location” of pharmacists into GPs’ practice facilitated integration of the pharmacist into the healthcare team.[31]

In some studies, the competence of the pharmacist seemed to be a major barrier, as reported by both pharmacists [35,39,39,69] and physicians.[14,20,75] Pharmacists’ lack of vision about their profession was highlighted.[4] It was recognised that pharmacists needed to have a better attitude, and be prepared to move out of their comfort zone and work cooperatively with physicians for a positive change to occur.[4] The idea of pharmacists themselves being a barrier to change has been documented;[27,76] many pharmacists accept the concept of giving all authority to doctors and are not ready to take on the challenge and accept new roles. With this attitude, pharmacists minimise conflict with physicians, but unfortunately, this is at the expense of their professional development.[76] Overcoming the reluctance to engage with physicians is challenging, especially when the pharmacists are unsure of their own capabilities and when neither the physician nor the patient is seeking the pharmacist’s service.[14]

To date, physicians’ perspectives of pharmacists’ roles and their views of possible collaboration with pharmacists in the UAE remain unknown. The findings from our assessment of barriers that community pharmacists perceive to delivering enhanced pharmacy services (Chapter 3) revealed that more than two-thirds of the participating pharmacists considered physicians’ lack of appreciation of their role as a barrier. Additionally, patients in UAE have recognised the value of collaboration between community pharmacists and physicians and indicated they would like more collaboration to occur, as this would lead to optimisation of their care (Chapter 7). In

conjunction with these observations, it is critical to understand physicians' views about pharmacists' roles in providing primary care services, and pharmacist-physician collaborative relationships and the barriers to such collaborations in the UAE. This will help to identify areas in need of improvement and in designing interventional strategies that will aid in improving community pharmacy services and providing better care for patients in the UAE. The methodology used to help conduct these investigations is discussed below.

8.3 Methodology: Qualitative research

This section discusses qualitative research methods, with emphasis on the approaches used for the research presented in Chapters 9 and 10, including data collection strategies, triangulation, sampling strategies, data analysis and establishing reliability and validity in qualitative data.

Qualitative research strives to explain how people understand concepts and the way they apply these concepts in their daily experiences.[77] It is usually driven by unstructured discussion of concepts in their natural contexts; in contrast, quantitative research depends on structured questionnaires to collect data in a controlled setting.[77] Qualitative studies rely on observations, individual interviews or focus group discussions that, in turn, rely on textual material rather than numbers to explore concepts.[77] Categories and themes emerge from analysis using deep inductive approaches that lead to hypotheses.[78] Qualitative methods are therefore appropriate to explore sensitive issues or subjects that have been investigated on a limited basis, where deep knowledge and understanding is yet to be established.[77]

In qualitative research, the process of data generation and analysis is labour intensive and time consuming.[79] Qualitative research produces large amounts of data in the form of textual field notes by the researcher and transcripts from recordings of interviews or focus groups. Data analysis usually occurs at the same time as data collection to accommodate new ideas and questions arising from incoming data in order for these to be explored further. [79]

8.3.1. Data collection strategies

There are three main data collection methods used in qualitative research: observation, interviews, and focus group discussions.[78] These methods generate data by interaction with the research participants. Other less commonly used methods involve the examination of documents such as diaries, the use of key informants and case studies.[78]

Observational research requires the researcher to directly observe people's behaviour in the natural setting and so is able to capture more than words and verbal language.[78]

In contrast, one-to-one interview, the most commonly used qualitative data collection method, is an interactive two-way discussion between the researcher and the participant.[80] Qualitative interviews can be loosely categorised as: structured, semi - structured, or unstructured[81] In structured interviews, the interviewer administers a fixed structured questionnaire; thus, structured interviews often produce quantitative data.[80,81] In semi-structured interviews, a less stringent interview guide is used, generally organised around a set of predetermined open-ended questions, with follow-up questions (probes) emerging from the dialogue between the interviewer and interviewees.[80,81] Unstructured interviews are guided conversations in which

a basic broad research question serves as the first interview question. A broad topic guide is usually used to make sure areas of interest are covered. Other more specific questions that delve more deeply into different aspects of the research topic are developed during the interviews. [80,81]

Interviews are conducted either face-to-face or by telephone.[80] Despite being time-consuming and expensive to conduct, face-to-face interviews have the advantage of including non-verbal cues from participants and gaining a deeper insight into the participant's response. Face-to-face interviews are more common than telephone interviews because the latter have lower response rates and interpretation is limited by the absence of non-verbal cues. Also, access to telephones may not be available to everyone.[82] The advantages of telephone interviews are that they may be cheaper than face-to-face interviews, they can be used with participants in distant geographical areas and may be considered less intrusive by participants.[82] Reportedly, the quality of data provided by telephone does not differ significantly from that of face-to-face interviews.[82]

Focus group discussions depend on interactions between participants to generate data. Some consider a focus group discussion to be different from "group interviews", which involve asking group participants the same question in turn,[83] others consider any group discussion as a focus group as long as the researcher directing the discussion is actively encouraging group interaction.[83] Focus groups are an excellent method for generating a variety of ideas relating to the topic in question.[84] A reason that focus group discussions are preferred by many researchers is because they are an efficient way of collecting data from a group of participants,

and that the group interaction allows participants to feel less threatened than in one-to-one interviews, and thus, participants are likely to express their thoughts more freely.[83] In contrast, some participants may have concerns over the confidentiality of information they give in the presence of other participants, while others may not feel comfortable with disclosing sensitive issues.[85]

8.3.2 Triangulation

The benefits of triangulation include increasing confidence in the data, reaching unique findings, challenging and/or providing clearer understanding of the problem.[86] These benefits result from the diversity and quantity of data that are available for analysis when triangulation is employed.

There are different types of triangulation:[87]

- Data triangulation: The use of different sources of information in order to increase the validity of a study;
- Investigator triangulation: using several investigators in the analysis of data, such as different individuals in the research team;
- Theory triangulation: using professionals outside a particular field of study in the analysis of data in order to decrease researcher background bias;
- Methodological triangulation: using multiple methods to study the phenomenon; and
- Environmental triangulation: using different locations, settings, and other key factors related to the environment in which the study takes place.

Data triangulation involves combining different types of approach, methods and/or data within the same study in order to increase its validity.[84] It is used to provide different perspectives on a specific issue, provide data on a wide range of issues affecting a research topic and to evaluate the validity of research findings; the argument being that using more than one research methodology helps overcome the shortcoming of each.[84] For example, focus groups have been found better in generating a wide range of ideas while individual interviews were better at generating deeper explorations of specific issues with individuals.[88,89]

8.3.3 Sampling approaches

As qualitative research is concerned with the understanding of the complexity behind a phenomenon through detailed investigation of a few participants, and because the aim of qualitative research is not to test hypotheses or generalise findings to the wider population, samples do not need to be representative of the general population; therefore, random sampling is not employed.[80] Qualitative research has a variety of sampling procedures in the selection of study participants, The four most common of which are: convenience, snowballing, theoretical and purposive sampling.[78]

Convenience (opportunistic) sampling recruits participants based on their availability.[78] Despite its advantages of saving time, effort and money, it is criticised for the possibility of generating data of low quality.[90] Snowball sampling recruits initial participants who would then suggest other insightful participants for the research, which makes this approach a viable option in situations where it is initially difficult to reach the study population.[90] Theoretical sampling is used especially in grounded theory research where emerging concepts and theories

determine which participants would next be most helpful in developing and refining these new concepts or theories.[91] Purposive sampling recruits participants based on specific characteristics that are important in enlightening the topic being studied; the participants are selected to provide as diverse and deep perspectives as possible.[91]

Participant selection and recruitment for qualitative studies usually continues until no new data are forthcoming. This is termed theme saturation.[90-92] The recommendation given by researchers about sample size that would theoretically achieve theme saturation is variable, and will depend on domains of inquiry (broader domains require a larger sample size), types of participant groups, or forms of data collection methods.[93] A study aiming to determine the number of interviews needed to achieve data saturation and variability, suggested that if the aim was to understand common perceptions and experiences among a group of relatively homogeneous individuals, twelve interviews should suffice.[93] For the most part, in qualitative interviews, sample size ranged between 5 and 50 interviews.[92]

8.3.4 Qualitative data analysis

Several methods exist for analysing qualitative data including content analysis, narrative analysis, grounded theory and framework analysis.[94,95] In general, researchers describe qualitative data analysis as three simultaneous types of activity: data reduction, data display, and conclusion drawing.[94] Fundamentally, qualitative analysis depends on developing a coding procedure involving the identification of themes, which are compared and organised into categories.[92] The coding procedure follows three steps:[96]

- open coding: first conceptualising of the data through line-by-line coding of concepts in the data;
- axial coding: relating the categories (codes) to each other and making them more abstract; and
- selective coding: the final stage of data analysis to be completed after core concepts have been identified; here, categories are further refined until they tell a coherent story.

Amongst the different types of qualitative analysis, one that has gained popularity in recent years is framework analysis.[95] Framework analysis is described as 'an analytical process which involves a number of distinct though highly interconnected stages'.[95] The real advantage of framework analysis is that it allows themes to develop both from the research questions and from the opinions of research participants.[97] The framework approach to analysis has gained popularity recently in healthcare research because it has a systematic approach to analysing qualitative data that keeps a transparent audit trail,[97] a vital step in establishing a path of evidence to the clarity of the procedures utilised in data analysis and interpretation. This step makes it possible for another researcher to verify the findings. Framework analysis protects against bias and increases the rigour of the study.[98]

Ritchie & Spencer proposed five key stages for conducting framework analysis: familiarisation; identifying a thematic framework; indexing; charting; mapping and interpretation.[95] Familiarisation occurs when listening to recordings, reading transcripts and field notes taken during the interviews. This leads to immersion in the details of the data and getting a sense of the transcript in its entirety before breaking it into parts. At this point, major themes begin to

emerge. The next stage involves identifying a thematic framework by writing memos, ideas or concepts arising from the text. The third stage, indexing, involves highlighting and sorting out quotes, sifting the data and making comparisons. At this stage, sub-categories begin to form. The fourth stage, charting, involves lifting the quotes from their original place and moving them under the new themes. Most of the data reduction (comparing and contrasting data and cutting and pasting similar quotes together) occurs in indexing and charting, which together are termed managing the data.[15] The final stage is mapping and interpretation of data. What is needed at this stage is not only to understand the individual quotes, but also to be analytical and make connections between the quotes, and the relationships between the data as a whole. This is normally achieved by investigating the wording and the context participants used, how frequent, strong, specific, intense, consistent ideas and opinions are expressed and then, reflecting on how all this leads to the “big picture” behind the data.[85]

8.3.5 Establishing reliability and validity in the data

In qualitative research, the quality and integrity of the research procedures and their outcomes need to be demonstrated; issues of reliability and validity are conceptualised as “trustworthiness”.[99] Research is “trustworthy” if it represents the experiences and perspectives of the participants. Trustworthiness provides an audit trail which traces evidence of the events and decisions that evolved during data collection, analysis and interpretation.[100]

Lincoln & Guba suggested that to establish “trustworthiness” the focus should be on four key issues: “Credibility”, “Transferability”, “Dependability”, and “Confirmability”.[101]

- “Credibility” refers to how research findings represent the “truth” about the phenomenon being studied.[102] There are a number of ways by which the credibility of the data could be established including: familiarity of the study environment, triangulation of data from different sources, peer review of data processing, member (participant) checks and the thick, rich descriptions of data findings from participant quotes.[102]
- “Transferability” is a measure of how other researchers can apply or extrapolate the findings to their own situations (similar to external validity or generalisability).[102] This is usually achieved by providing in-depth description and discussion of the study data and findings in order to help researchers judge if the findings are transferable to their own context.[102]
- “Dependability” measures how stable the results are over time (similar to reliability).[99] It covers judgement of quality over the research process of data generation and analysis. This requires that the research process is described in sufficient detail to provide a basis for judging the extent to which good research practices were followed, and the steps taken in order to reach to the results and conclusions. Peer review and external audits of the research process are also means to establishing dependability in qualitative research.[99]
- “Confirmability” makes a link between the data and the results, indicating how well research findings are supported by participants’ feedback (similar to objectivity).[103] This is usually established through “reflexivity” by the researcher, their acknowledgement of possible biases that they have introduced into the research process.[103]

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Chapter 9

Physicians' attitudes towards provision of primary care services in community pharmacy in the UAE

This chapter consists of the following publication:

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Research in Social and Administrative Pharmacy.

Submitted, March 3, 2013

Institutional ethics committee and authorities approvals for this work are given in **Appendix 13, 14 and 15**, and a copy of the interview guide headings can be found in **Appendix 16**.

Explanatory statement for the survey participants is provided in **Appendix 17** and Participant consent form is available in **Appendix 18**.

Monash University

9.1 Declaration for Chapter 9

Declaration by candidate

The nature and extent of my contribution to the work was:

Nature of contribution	Extent of contribution (%)
Conducted literature review; developed interview guide; secured approvals from relevant ethics committees, hospitals and clinics to conduct study; recruited participants; conducted interviews and focus groups; sought external investigator collaboration; analysed and managed data; produced first draft of manuscript; and modified manuscript according to feedback from other authors.	80%

The contributions of co-authors to the work were:

Name	Nature of contribution
A/Prof Kay Stewart	Participated in: study methodology design & development of interview guide; ethics application; interpretation of results; and manuscript review.
Prof Colin Chapman	Participated in: study methodology design; and ethics application.
Prof Mohammed Yousif Hasan	Participated in: study methodology design; and ethics application.
Dr David Kong	Participated in: study methodology design & development of interview guide; ethics application; interpretation of results; and manuscript review.

**Candidate's
Signature**

Date
Sanah Hasan
15 / 4 / 2013


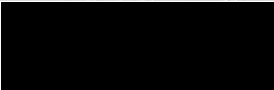
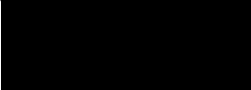
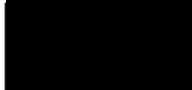
Declaration by co-authors

The undersigned hereby certify that:

- (1) the above declaration correctly reflects the nature and extent of the candidate's contribution to this work, and the nature of the contribution of each of the co-authors.
- (2) they meet the criteria for authorship in that they have participated in the conception, execution, or interpretation, of at least that part of the publication in their field of expertise;
- (3) they take public responsibility for their part of the publication, except for the responsible author who accepts overall responsibility for the publication;
- (4) there are no other authors of the publication according to these criteria;
- (5) potential conflicts of interest have been disclosed to (a) granting bodies, (b) the editor or publisher of journals or other publications, and (c) the head of the responsible academic unit; and
- (6) the original data are stored at the following location(s) and will be held for at least five years from the date indicated below:

Location(s)

Department of Pharmacy Practice and Pharmacotherapeutics, College of Pharmacy, Sharjah University, Sharjah, United Arab Emirates.

Signature 1	 A/Prof Kay Stewart	Date 15 / 4 / 2013
Signature 2	 Prof Colin Chapman	 15 / 4 / 2013
Signature 3	 Prof Mohammed Yousif Hasan	 15 / 4 / 2013
Signature 4	 Dr David Kong	 15 / 4 / 2013

**Physicians' attitudes towards provision of primary care services in community
pharmacy in the UAE**

ABSTRACT

Background: Pharmacists play a pivotal role in providing primary care services leading to improved patient health outcomes. In the UAE, there is increasing prevalence and poor control of many chronic diseases. Pharmacists could aid in the screening, early diagnosis and appropriate management of such conditions. Physicians' views of these primary care roles for pharmacists are not consistent.

Objectives: To explore physicians' views on pharmacists' roles in providing primary care services through community pharmacies in the UAE.

Methods: A qualitative approach involving semi-structured interviews conducted one-to-one or in focus group discussions was employed. The interviews explored participants' views of pharmacists' primary care services including screening for disease, monitoring of disease control, referral roles, health advice, lifestyle and preventive care, supply of printed information, counselling on medication use and side effects, record keeping about patient care, and pharmacist intervention in chronic disease management. Data were analysed using the Framework approach.

Results: Fifty-three physicians participated; 27 were interviewed individually and 26 participated in five focus groups. Four major themes were identified: competency, business orientation, territorial control and service delivery/patient care. Participants were supportive of verbal counselling about medications, checking for drug dosing, interactions, duplications and

errors, and keeping patient medication profiles. Physicians generally did not favour pharmacists' involvement in screening or monitoring of disease, providing information about diseases, diagnosis or long-term management of disease, or intervention directly with patients, mainly due to perceived lack of competence, territorial encroachment and business orientation of community pharmacy.

Conclusions: Despite some reservations, participants showed support for pharmacist involvement in providing primary care services, provided certain quality and territorial issues were addressed. Understanding physicians' attitudes will facilitate interventions to enhance the contribution of community pharmacists to primary care in the UAE, and possibly in other regions with similar healthcare systems.

Physicians' attitudes towards provision of primary care services in community pharmacy in the UAE

INTRODUCTION

Over the past few decades, pharmacy practice has undergone changes that have redefined the professional role of the pharmacist. Traditionally, the pharmacist's role has been associated with drug acquisition and control, and providing drug information to patients and physicians. Such activities are well accepted by physicians and form the basis of what physicians expect from pharmacists.¹ However, as a result of increasing drug-related morbidities, better utilisation of pharmacists' skills and knowledge in the use of medicines became warranted,² resulting in pharmacists' roles shifting from product-oriented to patient-oriented. Reported physicians' opinions of these patient-oriented activities, such as recommending and modifying medication therapy, have not been consistent.³⁻⁴

It is important that physicians understand and appreciate how pharmacists can contribute to patient care as their acceptance and receptivity is vital for pharmacists to deliver high level care to patients. Since prescribing remains primarily the physicians' responsibility, physicians' support of pharmacists' interventions is critical for successful implementation of these interventions.⁴ It is also equally important that pharmacists know what physicians think of their roles and their expectations of pharmacists, as this will help in identifying appropriate areas of pharmacy service to introduce or improve.

Pharmacist involvement in the provision of primary care services to patients in the community is generally initiated by pharmacists,⁵ and supported by professional pharmacy organisations and health authorities in some countries.^{6,7} The outcomes of such activities include access to wellness and health promotion services, referral to specialty practitioners, patient education and self-management,⁶ access to medication information, prevention and resolution of medication-related problems,⁸ improved health outcomes, and increased patient satisfaction.^{5,9} Benefits to the healthcare system include reduction in the number of non-scheduled health visits, number of specialty physician visits, and number and cost of drugs.⁸

Several studies from the United Arab Emirates (UAE) have reported increasing prevalence, poor control and complications associated with many chronic diseases such as diabetes,¹⁰ hypertension¹¹ and dyslipidemias,¹² suggesting the need to address these important public health issues. Interventional strategies have been suggested, including patient educational programs, interdisciplinary approaches to management and prevention of chronic disease, and provision of better screening services to identify early cases for referral to appropriate management.¹⁰ Considering the burden of chronic disease and the associated morbidity of these conditions in the UAE, and as part of the strategies needed to address these primary care needs, pharmacists could serve as effective healthcare providers who aid in the screening, early diagnosis and appropriate management of the conditions.

Unfortunately, physicians in Arab countries appear to be unaware of the roles of pharmacists in providing primary care services to the community. Only three studies from the region were identified exploring physicians' views of pharmacists' roles,¹³⁻¹⁵ all undertaken in hospital

settings. One study reported that only 23% of physicians interacted with pharmacists, usually about drug availability and dose-related questions.¹⁴ In the UAE, physicians' perceptions of pharmacists' roles remain unknown. Anecdotally, there is a perception amongst pharmacists that physicians do not appreciate the services they could provide to the community. We previously reported that more than two-thirds of pharmacists considered physicians' lack of appreciation of their roles as a barrier to delivering enhanced community pharmacy services in the UAE.¹⁶

Understanding physicians' attitudes towards the role of the community pharmacists in providing primary care in Arab countries such as the UAE is pivotal to the development of education, training and interventions to enable community pharmacists to undertake these roles. Thus, the aim of this study was to elucidate physicians' attitudes towards pharmacists' roles in providing primary care services through community pharmacies in the UAE.

METHOD

Ethics approval was obtained from the Monash University Human Research and Ethics Committee, and the Sharjah University Research & Ethics Committee prior to commencement of the study.

A qualitative approach involving semi-structured interviews conducted one-to-one or in focus group discussions was employed. The interviews explored participants' views of pharmacists' roles in providing primary care services as documented in the literature, including screening for disease, monitoring of disease control, referral roles, health advice, lifestyle and preventive care, supply of printed information, counselling on medication use and side effects, record keeping

about patient care, and pharmacist intervention in chronic disease management.^{6,17,18} Other data collected included length of practice, practice specialty, type of practice (private or government), type and frequency of current contact with community pharmacists, and any experience of professional collaboration with pharmacists.

Physicians having direct contact with community pharmacists in the UAE were invited to participate. A purposive sample was recruited to provide a broad range of views.¹⁹ Permission to approach potential participants was obtained from management of several government and private clinics in the community and outpatient government and private hospital clinics. Physicians were contacted individually, given a copy of the Explanatory Statement and invited to participate. Those who agreed to participate provided consent before being interviewed. Depending on preference, geographical constraints, and availability, consenting participants were allocated to either a one-to-one interview or a focus group. Recruitment and data collection continued until saturation was reached.

The interviews and focus group sessions were conducted at the participants' workplace between October 2011 and February 2012. All interviews were conducted by the same investigator (SH). Field notes were taken and feedback about any potential misinterpretations and clarification were sought from participants as needed during the interview process. Interviews and focus groups were recorded and transcribed verbatim (subject to participant consent). Transcription validity was double checked for accuracy and completeness. Notes were taken during interviews with those participants who did not consent to have the conversation recorded.

Data were analysed using a framework approach, involving five key stages to analyse and sort the data according to emergent themes: familiarisation, identifying a thematic framework, indexing, charting, mapping, and interpretation.²⁰⁻²¹ The coding framework was based on the interview guide. Coding was initially undertaken by the interviewer and then discussed with the other investigators. To minimise investigator bias, a researcher from a non-pharmacy background, with expertise in qualitative studies, reviewed the coding framework independently.

RESULTS

Fifty-three physicians participated; 27 were interviewed individually and 26 participated in five focus groups. The one-to-one interviews lasted 20-70 minutes and the focus groups for 1-1.5 hours. Demographic data are shown in Table 1 for individual interviews and Table 2 for focus groups.

Table 1: Individual interview participant information (n=27)

Characteristic		Number
Gender	Male	13
	Female	14
Type of practice	Govt hospital	7
	Govt clinic	9
	Private clinic	9
	Private hospital	2
Specialty	General Practice	10
	Family Medicine	2
	Pediatrics	4
	Cardiology	2
	Rheumatology	1
	Endocrinology	1
	Dermatology	1
	Urology	3
	Venereology	1
	Infectious disease	1
	EENT	1
Years in practice	≤5	3
	6-10	9
	11-20	6
	21-30	6
	>30	3
No. of contacts/week with pharmacists	1-5	14
	6-10	7
	>10	6

Table 2: Focus group participant information (n=26)

Group	No. of participants	Gender (n)	Type of practice	Specialty (n)	Years in practice (n)	No. of contacts /wk (n)
Group 1	7	M 3	Private hospital	Internal Medicine 4	≤ 5 1	6-10 6
		F 4		General medicine 2	>30 6	>10 1
				Psychiatry 1		
Group 2	4	M 1	Govt clinic	General Practice 2	6-10 1	6-10 4
		F 3		Family Medicine 1	11-20 2	
				Pediatrics 1	21-30 1	
Group 3	4	M 1	Govt clinic	General Practice 4	6-10 1	1-5 1
		F 3			20-30 1	6-10 2
					>30 2	>10 1
Group 4	4	M 1	Private clinic	General Practice 2	6-10 2	1-5 2
		F 3		Internal Medicine 1	11-20 2	6-10 2
				Pediatrics 1		
Group 5	7	F 7	Govt clinic	Family Medicine 7	≤ 5 5	6-10 7
					6-10 2	

Four major themes were identified: competency, business orientation, territorial control and service delivery/patient care. Pharmacist competency was a common thread across all other themes.

Competency

The competency of the personnel working in community pharmacies was a concern for many physicians; some suggesting that pharmacists do not keep up with new information, even about medications:

“The problem is that pharmacists don’t keep their knowledge after a while. They also don’t have the same background of a doctor even in medicines. Doctors know the medicines, the patient, the side effects.” BR-I # 5

“After some time, a pharmacist will forget about medication information...and you can’t force him to read new information, while doctors have to update to improve their knowledge for their own benefit and for the benefit of the patient...” BR-I # 3

For others, clinical pharmacy training surfaced as an important requirement that they would like to see occur before pharmacists are allowed to provide information, as they perceived that this would ensure the competence of the pharmacist to assess the relevance of the information for the individual patient:

“Oral counselling is not accepted by regular [dispensing] pharmacists. Printed information is alright to be given, especially by a clinical pharmacist...the use of computerised information customised with a patient name is very good, but the level of the language needs to be appropriate for the patient and a clinical pharmacist could help assure that.” SH-I # 1

Others raised the need for specialised pharmacists to care for patients with specific disease states:

“[A pharmacist] should be specialised also, psychiatric clinical pharmacology, why? Because...sometimes...bad consequences happen; we write a mood stabiliser for a patient,

or an antiepileptic, and then they go to the pharmacy and the pharmacist will say ‘This is for epilepsy, you don’t have epilepsy!...Why do you take this?’ So he/she should be qualified in the specialty.” AM-F # 5

Concerns were raised that many of the personnel working in community pharmacies were assistants, not pharmacists, who lack the proper education and training to deliver appropriate patient care.

“I don’t know if pharmacists are here mainly... usually [a pharmacy] assistant is sitting there and [they have] direct contact with the patient. Sometimes...they get it right and give the right medication, but sometimes, if the diagnosis is something different, they just give something which is not correct...” MC-F # 1

Language barriers to communication were raised by some physicians e.g. the need for Arabic-speaking pharmacists to assure proper two way communication when counselling patients:

“And sometimes...[staff are] non-Arabic speakers, but the patient is, so [it would be better] if there’s more Arabic speakers, especially ladies, in PHC (primary health care), because they [non-Arabic speakers] can’t communicate well...” QR-I # 2

Some physicians questioned pharmacists’ skill in helping patients with self-management of simple ailments and expressed their fear of mismanagement of patients or exacerbation of chronic conditions when inappropriate medications are recommended in the pharmacy.

Physicians attributed this fear to pharmacists' lack of skills in differential diagnosis; pharmacists do not do physical assessments and do not take medical histories before they recommend medications. Several examples where patients were treated inappropriately were cited including widespread, indiscriminate and inappropriate sale of antibiotics in community pharmacies:

“I would worry about that [recommending OTC medications] – what chronic problems the patient has, what medications they're taking, what is their full history? They could be given [something that] could exacerbate their condition like hypertension, diabetes. Some antibiotics cause hypoglycaemia.” TW-I # 1

“Yes, many patients are coming after they try from a pharmacist some medicines...and say 'I've used this, but no use'. So we see the main complaint, examine, check the medicine and then we will make the change to whatever is needed. Sometimes they don't need antibiotics, but they give antibiotics...I have many patients this way.” SH-I # 1

The competency of the personnel in pharmacies to provide screening and monitoring services was also of concern:

“...it seems to me that it is something that should be done by a trained professional like a nurse or a doctor and who can then do something about the data.” MC-F # 3

“It [screening] is good but [needs] to be controlled. A person who can do it, can be licensed. Not all people in the pharmacy are free to do it. Like for mammography, I send my patient, I expect a skilled person to take care of this patient.” TH-I # 1

Physicians mentioned their own internet searches and the British National Formulary (BNF) as their main sources of information about medicines and tended to ask community pharmacists only for information about availability of medications or, less frequently, dosing regimens:

“I use BNF, that’s my first one that I refer [to]... so whatever information is there about a drug, I’m normally satisfied with. If I cannot find a medication in that book, which is not uncommon...because people come from different countries with different drugs...[if] it’s not there then I go and Google it...and then I’ll check it with a pharmacist...” MC-I # 2

“I...call them mainly for the availability of medications...I want to make sure the patient does not have to do the rounds...” MC-I # 1

“About availability of drugs, doses, toxicity of drug if I’m not sure.” TH-I # 1

Business orientation

The business image of community pharmacy prevailed as a strong theme and was viewed as being in conflict with any intentions pharmacists have of delivering patient-centred care. The business orientation of community pharmacies was seen as impairing the credibility of the information provided by the pharmacist. This also applied to requests made by community

pharmacists to substitute branded drugs prescribed by physicians; some participants claimed that the requests were influenced by business interests:

“Pharmacists here are really under-privileged, under-used [for their] professional knowledge, underpaid, and business-oriented” FH-I # 1

“Really, I should decide the medication, and a pharmacist can discuss with me regarding clinical [appropriate use]; if I'm right or wrong, but not to guide me which [medicine] to write. Then I'll enter into market [competition]. For example, if I want to write clarithromycin, there are 6 or 7 different companies, I'll write Clarithromycin meaning for the patient to take clarithromycin, but this Clarithromycin is related to this company or to this company or the generic, or Jordanian or from Julphar....” HT-I # 1

Others criticised the “must sell” approach some pharmacists take in dealing with patients' requests for health advice or managing simple ailments with over-the-counter medications. Physicians were particularly concerned about over-the-counter sale of antibiotics:

“What happens usually, I'm telling you real practice, the pharmacist doesn't only give... suppose Panadol, he gives antibiotics, he gives other medications. So this should be stopped...first of all, most bacteria is resistant to antibiotics because of this practice...I think this practice [over-the-counter medication supply] is OK if he is aware and he is honest and he will give only, suppose...nasal drops...but to prescribe antibiotics and many,

many drugs which are not controlled, they give just like that, just for money...I can't trust such practice.” AM-F # 5

Physicians' approval of the provision of screening services in community pharmacies was conditional on it not being used as an advertisement for a specific product or machine and that it be purely for patient care purposes. Some physicians suggested that screening services should only be available in selected pharmacies to allow better control and less influence of marketing on the delivery and interpretation of the results:

“I'm not in favour of this [screening]. Why? Because if you open this, pharmacy is a business, so this will open the door for massive misuse or abuse...” AM-F # 2

“...if it is through a screening program, it will be OK; if it is only for commercial aim, it will not be good...” QR-F # 4

Many physicians claimed that pharmacists have accepted the product-centred role and questioned whether pharmacists were willing to adopt a patient-centred role in their practice:

“As customer service would be anywhere, you go in and buy a cosmetic and you are served that way. Mostly that is my experience with pharmacists, so them taking that role [patient-centred] or wanting that type of role seems to be remote from what we are doing now.”
MC-F # 4

Others suggested pharmacists could still provide reasonable patient care despite having to run a business, stressing that honesty and patient welfare should always come first:

“....I know it is a business, but we have to take care of the patient, a patient is the priority first and then it's the business.” HZ-I # 2

“As long as they are being honest about it! Let's say I'm a pharmacist and I say 'Look, I've got a contract for this medicine with this factory...and I'm promoting it [this medicine]...because I have a contract with them and I've got a great experience with it; I have no patients coming [complaining]' ... you just be honest...” MC-I # 2

Territorial control

Participants were cautious about the possibility of pharmacists encroaching on what they perceived to be their territory. They declared that, if pharmacists were intervening and contributing to patient care, they should take responsibility and accept any liability associated with their actions:

“I don't think they have that much experience; it's more the doctor's job than the pharmacist's.” IT-F # 1

“If they are giving the medicine on their own to the patient, they should be made responsible if anything happens, so they will be held for the consequences.” QR-I # 1

Most physicians supported pharmacists checking appropriateness of dosing regimens, treatment duplications, interactions or errors in prescriptions, but they asserted that no information about the disease should be provided by the pharmacist to the patient. They felt this was a doctor's responsibility, due to perceptions that patients would not be expecting such information at the pharmacy but at the doctor's office, and the pharmacist might give conflicting information to that of the physician:

“To make sure [the drug] is appropriate for certain patients, pregnant lady, sometimes for children, indications.... should know about contraindications... I think it will be good. We need to review medications before we add a new one.” TH-I # 1

“No, we [doctors] should talk to them, they [pharmacists] may not be able to respond to all questions patients have about their disease, they may not supply all information needed. Also there may be conflicting information that pharmacists provide, and everybody will be upset if the information supplied is different than those of the doctors.” TW-I # 1

“...perhaps it's multiple reasons, one is, a client or a patient goes to a pharmacy primarily to get medications and what's important is the information about medications. If they do need information about their medical problems they can refer to someone else for that...a medical practitioner. So number one, they're not expecting to be informed about it and don't see any relevance about it, and number two, I'm sure pharmacists are far too busy...far more other responsibilities that come first.” MC-I # 2

Many physicians preferred pharmacists to provide print information in coordination with the physician, as lack of coordination was perceived to compromise the physician's control over therapy and the patient's acceptance of the treatment. Some raised the need for approval of medication information by the physician, probably through a pre-arranged agreement whereby a physician discusses the information first then a pharmacist discusses the information in detail i.e. in a supportive role:

“It depends on the pharmacy, but my belief is the pharmacist should complete the message of the doctor” LB-I # 1

“This [print information] could be based on joint work between the pharmacist and the physician. Printed information is not for every patient and for special medicines...If the patient again is given too much information, he/she will be reluctant to take the medication... So not in much detail.” MK-I # 1

Many physicians expressed that pharmacists' interventions with patients' therapy could compromise the physician-patient relationship and could lead to patient mistrust of the physician. As such, they wanted any intervention by the pharmacist to be through the physician as the “captain of the ship” and not directly with the patient:

“They should check, if they are not convinced with something in the prescription, they should inquire with the doctor first, and communicate with him/her before involving the patient. It's important not to challenge the doctor or misuse this with the patient, best is

first to communicate with the doctor and resolve the issue as this will lead to a better outcome with the patient, and that's everyone's goal!" MK-I # 1

Some were concerned that patients' exposure to multiple health professionals could lead to patient confusion and waste of health professional time in addition to redundancy of the information.

"There are diabetes educators for instance, who educate about medications and other conditions. Also the doctor is doing the education, counselling and managing the side effects..." BR-I # 5

"I think there should be one reference for the patient. If the pharmacist is sharing responsibility in an integrated fashion, then it is OK, but separately no. I think it is the responsibility of the doctor, so one source of information only [or else it] can cause confusion for the patient." TH-I # 1

Some questioned whether providing these services was even "part of a pharmacist job or responsibility." Even those who acknowledged the value of providing screening in community pharmacies questioned whether this should be done within an institution or under the umbrella of a supervising body:

"...and maybe this role [screening] is more for the doctor, less for pharmacists." HZ-I # 3

“I think their study is about medication only, not levels. Even for us, each time there are changes in the levels, we should study more to know what is the best...I don't think it's their job.” BR-I # 4

“...so it is better than nothing. Some people would stay until the age of 50 and haven't checked their blood sugar and then they're surprised that their blood sugar is high and diabetes is already in, and they have complications. Because they are poor people and not insured and cannot attend [a doctor], so [a pharmacist] can help, provided that a pharmacist can get the machines and make sure that they are using them in the proper way of checking, and this is from the authorities; they should supervise their work...” IT-F # 4

Many physicians objected to pharmacists' involvement in the management of simple ailments, which still, in their opinion, required doctors' skills. A few, however, acknowledged the role of pharmacists in providing advice on short-term self-care, under the condition that the pharmacist refers the patient when the ailment is questionable or if it does not improve within a reasonable amount of time:

“For common cold...not all patients who present with something mild means that this is something easy. For example you will say common cold, but it requires examination, and you will not be examined by the pharmacist. A patient may have very mild symptoms, but when we examine him, he might have a bacterial infection and he may require antibiotics, or he may just have viral disease and not require antibiotics or it may be allergic rhinitis

and we don't know this...so for me it is better to take good history and good physical examination." FJ-I # 2

"...children for example, even if it is cold and flu symptoms, it is better to go to a doctor; for babies for example, they have to be physically examined." IT-F # 4

"What should happen is that, if the blood pressure is high, the patient shouldn't be prescribed medications, he should be sent to a doctor...for treatment." SH-I # 3

Others, however, had a realistic attitude towards pharmacists advising patients on self-care, recognising that this was happening in community pharmacies worldwide and that if appropriately conducted, should be accepted by physicians:

"It's done worldwide, patients go to pharmacists. Going to doctors does not happen all the time, they go to pharmacists. This is the reality, so why not make it legal and appropriate instead of fighting it. There are medications that are either OTC or prescription, what is the definition of OTC? It means the pharmacist has the right to give the patient some medications without a prescription, so allow it and make it more appropriate." MK-I #1

"It would be a good model to have a referral system for minor acute non-chronic problems. Obviously, where a patient sees a pharmacist, the pharmacist can do a brief history including an allergy check, suggest an OTC where appropriate, but refer to a general practitioner if more assessment is needed." ES-I #1

Service delivery / patient care

Information provision to patients

Many participants agreed that pharmacists should talk to patients about their medications: how to take medications, how to use devices, and to a much lesser degree, about side effects. Concerns were expressed that patients may not take their medications if they were made aware of all the side effects. Some thought counselling on side effects should be done by the doctor as the doctor would know which side effects are likely to occur in specific patients. Others, however, supported the notion that patients should make an informed choice about their medications and the side effects they cause, but that information provided by pharmacists should focus on common side effects:

“I think the pharmacist [is OK] to talk about how to take the drug, dose, before/after sleep, before/after food, which time of day. But about side effects of the medication? Not all of them, only certain drugs like antihypertensives and hypoglycaemics where the patient needs to know. The patient will lose the trust with the doctor if he/she does not tell him about these side effects [but the pharmacist does]. He may think the doctor does not know or is hiding something. Sometimes we don't want to tell the patient about these side effects and if a pharmacist tells them then this could be a problem, because the responsibility of the treatment is the doctor's” TH-I # 1

“I think it's right. The pharmacist should counsel the patient about the medication, how to use it, if they take other medications and they interact, if it has sedative side effects, not to drive, meaning to give specific instructions. The doctor might give it, but he might miss

something...the pharmacist should insist on it. It is his role to counsel the patient. In my opinion, side effects should be mentioned, at least the main ones, because here in our culture it is known not to say the side effects as the patient will not take [the medication]. But once it happens, the patient will come and complain...but if he knows it from the beginning, he will say 'OK, he explained to me, and I took the risk and accepted to take it.' So I think counselling should be done by both, the doctor and reinforced by the pharmacist." HZ-I #1

Many participants questioned the need for extra print information beyond the leaflet or package insert that comes with the medication. Some felt that extra information may cause overload for the patient, while others believed that patients do not read and also that new print information could be duplicating what is in the leaflet.

"People, unfortunately are not interested in reading anything about disease or medications; they don't read. I would very much prefer oral information." TW-I #1

"It may be duplicating, because I'm sure that the manufacturer gives this and they do the information in the leaflet..." MC-I # 2

Some physicians thought simplified, jargon-free, patient-level print material may help prevent medication errors and further educate patients about the appropriate use of medications. They wanted the information to be clear, evidence-based, accurate, standardised and preferably pre-approved by some authoritative body:

“...leaflets for some medicines contain medical jargon in and some things we don't understand, so I think it is better to have common language which is bold, clear and easy to look at...and being approved by authorities will definitely eliminate the legal issues...we can't mention every side effect, at least by giving that... I think legally, we're more protected because the patient had the information...” MC-F # 3

Screening and monitoring services

Physicians who supported screening in community pharmacies felt these services may be cheaper, more convenient and accessible (especially in remote areas) compared to visiting a doctor. This was seen to ultimately increase health awareness and reduce the workload in medical clinics:

“To be available in the pharmacy outside in the private sector, I think it is good, because some patients will not come to the clinic, they feel afraid: ‘If I go there, they will find a disease’. But if he went to the pharmacy and found this facility, he could check once, and if something is high, he could come [to a doctor].” HZ-I #1

“...let's say hypertension, which is not diagnosed until the person goes to a medical facility, or diabetes...[screening in pharmacy] is an easy access for people, it is not intimidating to them, it is not expensive...and that could be a doorway to be guided to getting health care rather than being a point of diagnosis and treatment...” MC-F #4

“If well-trained personnel are doing this, why not, if the patients’ levels are normal, they continue the treatment but if they are not, this person should be referred to a doctor to change their treatment, the pharmacist should not change anything” MK-I #1

Conversely, others had concerns that screening in pharmacies could lead to unnecessary tests, overtreatment, delay in instigating proper treatment of an undiagnosed patient or increased patient anxiety:

“...so screening is OK, but what I'm seeing is that screening is part of an initial step of prescribing medication in the pharmacy. So many patients will come here and say ‘I have checked my blood pressure and I went to the pharmacy and they gave me Norvasc’. It is not one or two, it is so many patients...” HT-I #1

“I don’t have a lot of experience with that, my gut feeling it doesn’t sound as a good picture...but mainly, you might be falsely re-assured if it is not done correctly. So I'm worried about the training, patient care, competency of the person doing it, but then also you might be sent to a frenzy because the reading was abnormal...” MC-F # 3

“Wrong readings, so over treatment of the condition that doesn’t exist, worry for the patient, unnecessary test... so if you do a test you are likely to induce a problem for the patient...” MC-I #1

Monitoring of disease control was perceived by some to be a more valuable service to patients than screening services, although views were mixed.

“For blood pressure, it is mandatory, we have to check regularly. Moreover, the patient is already coming to the doctor, and the doctor explains...so if they are coming and checking in a pharmacy, this is a good thing. Not all patients come [back] to the hospital [doctor]”.

FJ-I #2

Those who had concerns believed providing monitoring services in community pharmacies could lead to false reassurance for the patient or inadequate monitoring for other signs or symptoms. Additionally, patients may be deterred from seeking full follow-up by the doctor, which may lead to a change in therapy based on outcomes of the monitoring:

“A diabetic patient comes to you checking his sugar, and his sugar is 200 and they [pharmacy staff] tell to increase the insulin or change...but they didn't check the HbA1C, they didn't check the blood pressure, they didn't check his postural hypotension, they didn't check the opthalmus. They took one aspect of the disease and gave the patient false impression that his disease is controlled, which is not like that...[if we were to] choose between monitoring and screening? Let us take the screening but [I] will not accept the monitoring.” HR-I #1

All physicians agreed that for the screening and monitoring services to be provided properly in community pharmacies, clear guidelines should be established regarding who within the

pharmacy is competent to deliver the services, who should receive the services and instructions for the proper procedures for measurements. The guidelines should address issues of quality, consistency, maintenance of devices and consequent actions (e.g. educating the patient, referral to a medical doctor):

“..machine [should be] calibrated and also you target your population...you chose...like you know if it is a smoker, fifty years old then you can offer blood pressure check...”

MC-I # 1

“...the medical centres, the DHA, the MOH [health authorities], they have set standards. You can't see a patient walking in the corridor ‘Just stand there, I'll check your blood pressure’. There is a proper method to check the blood pressure and I have seen in the pharmacies, they don't follow that one.” MC-F # 2

“They then need to set up their own guidelines. So it's not just to check it and leave – you know, ‘Yes you've got high blood sugar’...they [should] follow the guideline. Let's say if it's below this you can say it's normal, if it's between this and that you know it's not normal... you need further investigations if it's about that...so the advice would be to see...a medical doctor.” MC-I #2

“...the meters, who is going to calibrate that? ...In the medical centres, the DHA do come and check if your equipment has been calibrated or not. For the pharmacies, who is going to check?” MC-F # 2

Participants noted that, if screening and monitoring services were to be introduced in community pharmacies, procedures would also be required to manage hazards (e.g. body fluids, sharps) and to maintain patient privacy and confidentiality (e.g. private counselling room, secure record storage):

“To check the blood sugar level, the cholesterol, that involves the body fluids. To protect themselves, the pharmacists and the patients, from the hygienic issues and other infectious issues...” MC-F # 2

“Our pharmacies are not built for that, not for patient care..” MC-F # 2

“... we need a special setup for that [privacy for screening and monitoring] ” QR-I # 1

Record keeping

Many physicians supported pharmacists keeping patient medication records as it was perceived as helpful to on-going patient care. Some, however, believed this would increase pharmacists' workload, affecting their main job (dispensing). Some noted that it would be difficult to keep accurate patient profiles because patients patronise different pharmacies and there is no centralised computer system for community pharmacies, thus compromising pharmacists' access to information about the “whole” patient:

“It will not be practical, I don't think a patient will stick to one pharmacy, I don't know, but then it will be a burden for the pharmacist.” IT-F # 3

“I think it is too much work for them [pharmacists], and it will affect some of their other work...If you have enough staff, which is not possible...so that will become too much, then maybe their main job will be affected...If he is trying to contribute in some extra way, then it will be difficult for him, and this will affect his job [dispensing].” HZ-I # 3

“I think it would be great to have...but it has to be centralised. All pharmacies are different, there is Life, Ibn Sina, and somehow they will have to universalise all the pharmacies. They will have to have the same computer system, which would be a fantasy world, matched also with the hospitals and private clinics. If a patient walks in, you will have all the information you will need as a doctor, as a pharmacist, to double check these things...” MC-F # 3

DISCUSSION

This study has provided an important perspective on physicians' views of the current and potential roles of community pharmacists in primary care in the UAE. In combination with our earlier studies encompassing the perspectives of community pharmacists and patients, this body of work provides a comprehensive view of current and future community pharmacy practice in the UAE.²²⁻²³ The results of these studies will contribute to the development of policies to enhance community pharmacy services, potentially leading to improved patient care and safety.

While some physicians welcomed the provision of primary care services in community pharmacies, others had reservations or objections. Thus, there is a need to foster cultural change and increase awareness of the potentially important contributions community pharmacists can

make in this area. In general physicians were supportive of verbal counselling about medications, checking for drug dosing, interactions, duplications and errors, in addition to keeping patient medication profiles. Physicians generally did not favour the provision of screening for or monitoring of disease, provision of information about diseases, diagnosis or long-term management of disease, or intervention directly with patients; however, they welcomed interventions conducted through the physician. Studies conducted in developed countries have documented similar findings; activities that were perceived as intrusion into the physicians' roles were not well accepted.^{1,24-28} Despite differences in attitudes, physicians in general were receptive if pharmacists' involvement was undertaken in a supportive, consultative fashion.²⁹⁻³²

It was clear that physicians in this study were concerned with the competence of community pharmacists to deliver patient-centred services. This perception could be due to physicians unfavourable past experiences in their contact with community pharmacies. Key points that need to be addressed in seeking to improve the contribution of community pharmacies to primary care in countries such as the UAE include raising physicians' awareness of pharmacists' education and training, providing exposure to role models of pharmacist-led patient-centred services and overcoming the perception of community pharmacists being solely business orientated. Many studies have reported that physicians' exposure to pharmacist services could improve their acceptance of new services.³⁹ Bradshaw and Doucette considered that the reactions and attitudes of physicians could either hinder or facilitate an expansion of the community pharmacist's role.²⁷ They also reported that the rarity of regular, face-to-face contact with doctors and other healthcare professionals represented a considerable obstacle to role expansion.²⁷ Almost all of our participants reported that they mostly contact pharmacists to inquire about medication

availability and that face-to-face contact is extremely rare. In order to enhance physicians' acceptance of pharmacist-led services, increasing awareness of and familiarity with pharmacist services through face-to-face contact is required. This usually should be initiated by pharmacists, and is the first step towards establishing collaboration between physicians and pharmacists.¹⁹

Despite the scarcity of clinical pharmacy practice in Arab countries,³³⁻³⁵ many physicians expressed the need for clinical pharmacist training as a condition for community pharmacists to provide primary care. This perception was probably influenced by physicians having either worked with clinical pharmacists or been exposed to clinical pharmacy practice less directly. This also emphasises the need for providing opportunities for pharmacists to enhance their clinical skills and possibly seek specialisation as described in this study.

The perception that community pharmacy is largely focused on business rather than patient care remains a barrier to physicians' acceptance of the provision of primary care services in community pharmacies. Additionally, concerns related to patient privacy and confidentiality were identified, as has been reported in other studies.³⁶ Guidelines should be established to ensure that these concerns are adequately addressed. This may be achieved through a combination of legislative requirements and professional standards to ensure high quality, ethical practice by community pharmacists in addition to changes in pharmacy layout that allow private and confidential patient care.

Even though medications to treat chronic conditions such as hypertension, hyperlipidaemia and diabetes are considered to be prescription medications, the sale of these medications in

community pharmacies without a prescription is common practice in many developing countries, including the UAE.³³⁻³⁵ This appears to have further negatively affected physicians' views of pharmacists providing primary care services as many participants were worried that patient therapy would be initiated or altered inappropriately without consultation with the treating physician. Another area of major concern was the widespread and indiscriminate sale of antibiotics without a prescription in the community, a practice that many physicians cited as a barrier to accepting pharmacist involvement even in helping patients with self-care and in the management of simple ailments. This is consistent with a study from the Sudan, in which physicians did not show support for any form of independent prescribing by pharmacists, including OTC therapies.¹³ Enforcement of regulation regarding prohibition of the sale of prescription medications without a prescription remains the most powerful approach to help control medication dispensing and possibly affecting the views of physicians about the provision of primary care services in community pharmacies.

In addition to seeking territorial control over practice, physicians raised patient-related factors that they take into consideration when caring for patients and expressed concern that pharmacists would not address such factors for a particular patient. Many explained that they do not give detailed information about medications to patients, especially about side effects, as they suspect that patients would then be reluctant to take the medications. A major concern was the physician-patient relationship, which may be impacted by community pharmacists providing primary care services. Participants also wanted to be in control of the quantity and the type of information that patients receive about their conditions, and feared pharmacists' involvement could compromise this. The issue of professional autonomy and professional dominance has been reported in the

literature.³⁷ These observations suggest the need for establishment of a professional pharmacy organisation in the UAE to facilitate communication with physicians and allay their concerns regarding pharmacists providing primary care in the community and to advocate for, and support initiatives taken by pharmacists to provide extended care for their patients. Such an organisation would be important in defining members' competency, setting standards of practice and delivering continuing professional education.³⁸ This key issue needs to be explored by all stakeholders in academia, business and regulation in the UAE.

LIMITATIONS

Although there was no pre-existing relationship between participants and the interviewer, they were aware that she was a lecturer at the local college of pharmacy. While this did not seem to have affected the openness and the frankness of the discussions, there was potential for this to occur. To minimise bias and enhance data validity, interviews occurred at the physician's practice site, providing familiarity and convenience; privacy and confidentiality were maintained; directive and leading questions were avoided to assure the themes were the product of participants' views and not those of the researcher.

CONCLUSION

This is the first study to elucidate the perspectives of physicians on community pharmacists' roles in the provision of primary care services in the UAE. Despite some reticence, there was a degree of support for pharmacist involvement in this area, provided certain quality and territorial issues were addressed. Understanding physicians' attitudes will facilitate strategies to enhance

the contribution of community pharmacists to primary care in the UAE, and possibly in other regions with similar healthcare systems.

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Chapter 10

Pharmacist-physician collaboration in patient care: physicians' perspectives in the United Arab Emirates

This chapter consists of the following publication:

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Submitted, March 5, 2013

Institutional ethics committee and authorities approvals for this work are given in **Appendix 13, 14 and 15**, and a copy of the interview guide headings can be found in **Appendix 16**.

Explanatory statement for the survey participants is provided in **Appendix 17** and Participant consent form is available in **Appendix 18**.

Monash University

10.1 Declaration for Chapter 10

Declaration by candidate

The nature and extent of my contribution to the work was:

Nature of contribution	Extent of contribution (%)
Conducted literature review; developed interview guide; secured approvals from relevant ethics committees, hospitals and clinics to conduct study; recruited participants; conducted interviews and focus groups; sought external investigator collaboration; analysed and managed data; produced first draft of manuscript; and modified manuscript according to feedback from other authors.	80%

The contributions of co-authors to the work were:

Name	Nature of contribution
A/Prof Kay Stewart	Participated in: study methodology design & development of interview guide; ethics application; interpretation of results; and manuscript review.
Prof Colin Chapman	Participated in: study methodology design; and ethics application.
Prof Mohammed Yousif Hasan	Participated in: study methodology design; and ethics application.
Dr David Kong	Participated in: study methodology design & development of interview guide; ethics application; interpretation of results; and manuscript review.

**Candidate's
Signature**

Date
15 / 4 / 2013

Sanah Hasan




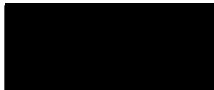
Declaration by co-authors

The undersigned hereby certify that:

- (1) the above declaration correctly reflects the nature and extent of the candidate's contribution to this work, and the nature of the contribution of each of the co-authors.
- (2) they meet the criteria for authorship in that they have participated in the conception, execution, or interpretation, of at least that part of the publication in their field of expertise;
- (3) they take public responsibility for their part of the publication, except for the responsible author who accepts overall responsibility for the publication;
- (4) there are no other authors of the publication according to these criteria;
- (5) potential conflicts of interest have been disclosed to (a) granting bodies, (b) the editor or publisher of journals or other publications, and (c) the head of the responsible academic unit; and
- (6) the original data are stored at the following location(s) and will be held for at least five years from the date indicated below:

Location(s)

Department of Pharmacy Practice and Pharmacotherapeutics, College of Pharmacy, Sharjah University, Sharjah, United Arab Emirates.

Signature 1	 A/Prof Kay Stewart	Date 15 / 4 / 2013
Signature 2	 Prof Colin Chapman	15 / 4 / 2013
Signature 3	 Prof Mohammed Yousif Hasan	15 / 4 / 2013
Signature 4	 Dr David Kong	15 / 4 / 2013

Pharmacist-physician collaboration in patient care: physicians' perspectives in the United Arab Emirates

Abstract

Interdisciplinary care has been shown to improve patient outcomes. Physicians' views on collaboration with pharmacists give an insight into what contributes to a well-functioning team. Little is known about these views from developing countries and none from the UAE. The purpose of this study was to investigate physicians' opinions on collaborative relationships with community pharmacists in the UAE. Semi-structured individual interviews and focus groups were conducted on a purposive sample of physicians who were directly in contact with community pharmacists. Framework analysis was used to generate themes. A total of 53 physicians participated. Most physicians had been exposed to extended roles of community pharmacists but had little awareness of collaborative relationships between pharmacists and physicians. Three themes emerged: benefits, facilitators and barriers to collaboration. Benefits included having the pharmacist as an immediate source of information and as an extra safety check within the system (leading to medication error prevention) and having the pharmacist assist patients to manage their medications e.g. improving adherence, coping with side effects, reduction of drug waste, and cost containment. Facilitators included role definition of professionals, pharmacists' access to patient records, need for communication and trust building. Barriers included pharmacists' competence, territorial boundaries, patient acceptance and administrative and technical matters. This study, for the first time, provides vital information in recognising the potential, facilitators and barriers to collaboration between community

pharmacists and physicians in the UAE. Identifying these factors will help to inform the future development of pharmacist- physician collaboration in the UAE and other countries with similar healthcare systems.

Key words: Pharmacist, physician, collaboration, relationships, interdisciplinary care, teams, United Arab Emirates.

Introduction

Pharmacists have been challenged to become key players in optimising and monitoring medication use and to become advocates for patients in this area of health care (Hepler & Strand, 1990; RPSGP, 1992). Collaborative drug therapy management can promote the appropriate use of medicines, improve patients' health status and quality of life, reduce adverse drug problems and optimise the benefits to society from pharmaceuticals (Thomas et al., 2006). Collaboration has been defined as a 'relationship of interdependence requiring incorporation of complementary roles' (Fagin, 1992). Various studies have suggested that improved coordination of care between pharmacists and physicians results in better patient outcomes (Bond et al., 2000; Leape et al., 1999; Baran et al., 1999; Coast-Senior et al., 1998; Bluml et al., 2000; Bogden et al., 1997; Boudreau et al., 2002). Several studies have documented better outcomes from collaborative care for patients with specific conditions, including hypertension (Carter et al., 2009; Borenstein et al., 2003; McKenney et al., 1973; Erickson et al., 1997; Bogden et al., 1998), diabetes (Baran et al., 1999; Coast-Senior et al., 1998), elevated cholesterol (Bluml et al., 2000; Bogden et al., 1997), and depression (Boudreau et al., 2002). Health professional organisations have called for increased collaboration between health professionals to improve patient care (Clemmer et al., 1998; Hammond et al., 2003). Accordingly, formal integration of pharmacists into the healthcare team is required for success. Collaborative relationships with other professionals, particularly

physicians, need to be developed to enable pharmacists to contribute to effective patient care (Muijrers et al., 2003).

The literature provides a clear understanding of the characteristics of well-functioning healthcare teams, including the necessity of clear definitions of roles (Humbert et al., 2007; San Martin-Rodriguez et al., 2005). Factors that inhibit successful collaboration of teams have been identified, including a lack of understanding of roles, knowledge, and responsibilities (Sargeant et al., 2008; Suter et al., 1999); team relationships have been shown to mature when members jointly define their specific roles (King & Ross, 2003). Interprofessional relationships require skills that pharmacists may need to develop in order to achieve successful integration into healthcare teams (Lau et al., 2007). In seeking to achieve this, physicians can provide insight into what skills and other requirements would be needed for the effective inclusion of pharmacists into healthcare teams. Such insights would help identify existing deficiencies that need to be addressed and training requirements for pharmacists (Lau et al., 2007).

Despite mounting evidence regarding the value of collaborative patient care, little is known about physicians' perspectives on successful collaboration between pharmacists and physicians in the Arab countries. In the UAE, diseases states such as diabetes, hypertension, dyslipidaemia, and asthma are prevalent and, in most patients, are poorly controlled (Saadi et al., 2010; Abdulle et al., 2006; Vela et al., 2008). In these circumstances, there are clearly opportunities for pharmacists to work in interdisciplinary teams to improve the diagnosis and management of these conditions (Saadi et al., 2010).

We have previously reported that more than two-thirds of the community pharmacists in the UAE considered physicians' lack of appreciation of their role as a barrier to pharmacists providing enhanced services i.e. beyond the mere supply of pharmaceutical products (Hasan et al., 2011). Given this observation and the demonstrated need for pharmacists to be included in multidisciplinary teams for optimal patient care, it is important to understand physicians' views of community pharmacists' roles, and of potential collaborative relationships with pharmacists. Findings could help in the design of intervention programs leading to development of collaborative relationships. The objective of this paper was to describe physicians' views and attitudes towards collaborative relationships with community pharmacists.

Method

A qualitative approach was employed, involving semi-structured interviews conducted on one-to-one or in focus groups with physicians who had direct contact with community pharmacists in the UAE. Study participants were asked about their experiences working collaboratively with pharmacists and about their opinions of involving community pharmacists in future collaborations.

Other data collected included: number of years in practice, practice specialty, type of practice setting (private or government), current type and frequency of contact with community pharmacists, and whether they had any experience collaborating with pharmacists.

Permission to contact eligible participants was obtained from senior executives of several government and private clinics, and outpatient government and private hospital clinics in the community. A purposive sample of physicians with different backgrounds and characteristics

was recruited, considering gender, number of years in practice, practice setting and type and extent of contact with pharmacists. All potential participants were given a copy of the Explanatory Statement, invited to participate and provided signed or verbal consent prior to inclusion into the study. Participants were allocated to either a one-to-one interview or a focus group depending on factors like personal preference, geographical constraints, and availability. Recruitment continued until saturation of themes was achieved.

The interviews and focus group sessions were conducted at the participants' workplaces between October 2011 and February 2012. Interviews and focus groups were conducted by the same investigator (SH), who had no previous relationship with the participants; she was introduced to them as a college lecturer and not as a community pharmacist. Interviews were recorded and transcribed verbatim but for those participants who did not consent to have the conversation recorded, detailed notes were taken during interviews.

Data were analysed using the framework approach (Ritchie & Spencer, 1994; Rabiee, 2004), based on the interview guide. Coding was initially conducted by the interviewer; a clinical pharmacist with previous hospital pharmacy experience. The interviewer was conscious of the need to distance herself from influencing participants' views of the current or future status of community pharmacy services. Misconceptions or erroneous information concerning issues surrounding the practice of pharmacy were discussed with the participants after the interviews and the information was excluded from data analysis. No incentives were provided to participants. Coding was independently checked by an academic from a non-pharmacy

background, with extensive experience in qualitative research. Members of the research team reviewed transcripts and generated themes.

Ethics approval was obtained from the relevant institutional review boards.

Findings

Twenty-seven physicians participated in individual interviews and 26 participated in five focus groups (n = 53). Participants' demographic details are shown in Table 1 for individual interviews and Table 2 for focus groups.

Table 1: Individual interview participant information (n=27)

Characteristic		Number
Gender	Male	13
	Female	14
Type of practice	Govt hospital	7
	Govt clinic	9
	Private clinic	9
	Private hospital	2
Specialty	General Practice	10
	Family Medicine	2
	Pediatrics	4
	Cardiology	2
	Rheumatology	1
	Endocrinology	1
	Dermatology	1
	Urology	3
	Venereology	1
	Infectious disease	1
	EENT	1
Years in practice	≤5	3
	6-10	9
	11-20	6
	21-30	6
	>30	3
No. of contacts/week with pharmacists	1-5	14
	6-10	7
	>10	6

Table 2: Focus group participant information (n=26)

Group	No. of participants	Gender (n)	Type of practice	Specialty (n)	Years in practice (n)	No. of contacts /wk (n)
Group 1	7	M 3	Private hospital	Internal Medicine 4	≤ 5 1	6-10 6
		F 4		General medicine 2	>30 6	>10 1
				Psychiatry 1		
Group 2	4	M 1	Govt clinic	General Practice 2	6-10 1	6-10 4
		F 3		Family Medicine 1	11-20 2	
				Pediatrics 1	21-30 1	
Group 3	4	M 1	Govt clinic	General Practice 4	6-10 1	1-5 1
		F 3			20-30 1	6-10 2
					>30 2	>10 1
Group 4	4	M 1	Private clinic	General Practice 2	6-10 2	1-5 2
		F 3		Internal Medicine 1	11-20 2	6-10 2
				Pediatrics 1		
Group 5	7	F 7	Govt clinic	Family Medicine 7	≤ 5 5	6-10 7
					6-10 2	

Many participants had been exposed to the extended roles and contributions of pharmacists, particularly in the hospital setting. Although most had little experience working collaboratively with community pharmacists, many recognised the need for increased awareness of collaborative relationships between physicians and pharmacists:

“The mentality should be changed first, the awareness of such coordination or such process, and second, it should give some benefit. Meaning not only to complicate the process, but to have some benefit out of that, to be sure that it is more beneficial for the patient, (that) the doctor is now having more time for other procedures, other things, to sit with the patient. I mean it should show that it is better than the old system, then why not?”

AM-F# 5

“...it is something new, but later on, when it will be available in more places, they will accept it. The doctor diagnoses and the clinical pharmacist manages the medicines and monitors them.” SH-I # 2

Many commented that physicians should accept collaboration with pharmacists in the same fashion they successfully accepted other health professionals into medical practice:

“...for instance, the midwives, we have a lot of doctors who depend on them because of the experience...” QR-I #2

“I think if the vision is clear, responsibilities are clear, and everybody is willing to help – because not all doctors are open, for example some of our colleagues say "they don't know anything"; it just depends on how they perceive things. They have to accept that you might make a mistake, one should be open. ...I'm sure that pharmacists know better about meds – it is their specialty – so why not welcome them into the team and work in the same direction.” HZ-I # 2

Three major themes about collaborative relationships were identified: benefits, facilitators and barriers.

Benefits of collaboration

Although most physicians did not have experience of formal collaborative relationships with community pharmacists, most welcomed the concept, which they considered would lead to “high

quality work” and “patient-centred teamwork”. Participants felt that the benefits of collaboration would be:

- having the pharmacist as an immediate source of information for them and for other staff members within their clinics:

“Yes, and even for dosing a lot of times, because we have to open our books to find the doses...this is really their area...” MC-I #1

- assuring appropriate therapy:

“He or she goes through the clinic, and goes to check this diagnosis, this treatment, then he says: “No, potassium is high for this patient, I think you should reduce the dose” or “The way of infusion is fast, give it in a slower way”. There are important points that he or she can work on.” MR-I #1

- having the pharmacist as an extra safety check within the system:

“To review after the doctor's prescription...we need it...to prevent medication errors” QR - F # 5

“...share responsibility...extra system of (safety) checks...which is beneficial for the patient, so it would be an extra layer...if you slip somewhere, somebody will pick it up and let you know that this is not right...” MC-F #4

- having the pharmacist assist patients to manage their medications e.g. improving adherence, reducing waste and coping with side effects:

“This should happen. here we have it, especially for chronic diseases we keep records, because sometimes the patient comes in the middle of the month and asks for a repeat prescription, and if I’m in a hurry, I’ll not check the previous prescription, and I’ll write it, so the pharmacist will call and say that the patient has taken this prescription and still has 2-weeks balance.” HZ-I # 1

“...when we have awareness of what the benefit for the patient is...maybe. Why not? At the end it’s the benefit for our patient and minimising the waste of medications and the side effects of the medications.” LB-I #1

- cost containment in drug budgets

“...if there is no need for some medicines and they (medicines) are a cost for the government...they (pharmacists) can help out!” SH-I #2

“In Egypt, in military hospitals...when clinical pharmacists were hired, hospitals saved 3-4 million dollars per year due to good choices (of medications) done by these clinical pharmacists, and excluding unneeded medicines.” SH-F#3

Participants commented that all of these activities by pharmacists would result in workload reduction for the medical practitioners:

“This will definitely lead to less burden on the doctor’s shoulder; a pharmacist could deal with the side effects of medications, they could change the dose based on the patient’s condition, but if (there is) a serious problem it needs to be referred to the doctor – all defined by protocol. It’s an excellent idea, I think.” MK-I #1

Facilitators of collaboration

Role definition and team leadership

The participants expressed that, before implementation of a model involving collaboration, there needs to be a clear definition of all professionals’ roles, responsibilities, limitations and boundaries through established protocols or guidelines:

“The real role of the pharmacist...(must be) clear...he should not be in the shade, he should be present to achieve something, he should have a role, a real role. This is responsibility.” MR-I #1

“A protocol is a very important must! Where each of them knows their job, there are clear boundaries or job descriptions for each of them.” MK-I #1

“The setting and the people who are dealing are well qualified and they are coming to an agreement...a protocol. They follow it precisely, not just according to their own impression or suggestions...if you give good systems or protocol, this limitation will put everybody on a certain track.”AM-I # 2

Most physicians welcomed collaboration under the condition that the physician assumes the leadership and the ultimate responsibility for final decisions within the team:

“I think that is a very good idea and the model is very nice if they are under the supervision of the whole team, the medical director...” MC-F#2

“It is OK I think as long as, if it is one department, and they are working as a team under the supervision of a doctor... Actually pharmacists play a very important role in health care and for patients...” HZ-I # 2

“So, you should not take something or the benefits, if you are not taking risk, you may not be helping the patient to improve. But I will be taking the risk, so I'll decide what we do...where the boundaries are, what the communication is, what areas we should sometimes sit together to treat. So if we reached to a consensus or a protocol, I think this should be the future...” HT-I #1

On the other hand, the possibility was raised of trusting pharmacists with responsibility within the collaboration and therefore their being held accountable/liable:

“...you give more responsibility to the pharmacist...liability, if they know the responsibility, I'm sure they will do more, they will review, they will review properly; hopefully...” HZ-I # 2

“...we are trusting the pharmacists in some cases up to certain levels...dose adjustment may be the job of the doctor or the pharmacist together, not a single person. They are qualified people...and in medicine, especially in surgery, we use this word a lot "the captain of the ship.” MC-F #

Access to patient records

Participants acknowledged that pharmacists needed to have access to patients' medical records, including results of laboratory tests and other investigations, in order to contribute effectively. To ensure patient privacy and confidentiality and the need for continuous, efficient communication between pharmacists and physicians, participants proposed that the collaboration should be in-house or institution-based:

“Clinical pharmacist should also follow the investigations, what increases, what decreases, what changes. They need to be included in everything so they know the effect of medications...” SH-I #2

“They (pharmacists) (should) have access to patient profiles, and need to refer to the doctor when there is an issue. A change in systems is warranted.” FR-I #1

“...part of the team, and we can definitely go ahead with this idea in the case (where) they are in-house pharmacy – not pharmacies like 5, 6 buildings away, then no...(it) can reduce the burden on the doctors and the practice. Definitely these things can be done under the supervision...definitely their level of education and expertise have been assessed before

they go in-house and if the doctors do trust them...” MC-F #2

Need for communication

Physicians expressed the need for regular communication between pharmacists and physicians involved in collaborative relationships and the importance of keeping the physicians informed:

“...they should have good communication, pharmacist-patient and pharmacist-doctor, very good communication between them.” QR-I #2

“...also the communication between a pharmacist and doctor...even if the doctor does not see the patient every month, he can check with the chief pharmacist.” QR-I #2

“OK, it will be nice to do it (collaborate), but still there should be a discussion between the doctor and the pharmacist, because if everyone is working alone, the patient will be in trouble.” FJ I-#2

“It is sharing between the doctor and the pharmacist; the patient will get the benefit, because the doctor is not even aware about the mechanism of action of every drug, what exactly it's doing and everything about the drug. Who is aware? It's the pharmacist.” QR-F #2

Trust building

Many physicians expressed their need to trust the professionals who would contribute to recommendations and decisions involving patient care. Participants claimed that trust building is vital for any successful collaboration given that physicians bear the ultimate responsibility:

“I need to trust the people I’m asking for information...because I’m gonna base a lot of things on that, because in a way I am responsible for what’s gonna happen...if they (medical colleagues) trust someone they will accept it...” MC-I #1

Barriers to collaboration

Pharmacists' competence

Some physicians had reservations with respect to the training pharmacists undergo and their competence to provide holistic care for the patient. They asserted that pharmacists do not possess the necessary clinical nor communication skills:

“It depends...(on) the developed competency of the pharmacist; if there are competent pharmacists, well-qualified pharmacists available, we can start this model. But in this country, maybe twenty years later. Normally pharmacists are not qualified.” QR-I# 1

“Good when a pharmacist is trained – clinical pharmacists mainly – but how many of them do you have?” FR-I #1

“I just would like to ask ‘Where is this (competent) pharmacist?’ I will never under-evaluate anyone or claim to know everything, but I really would like to find this pharmacist. The level of pharmacists I mostly deal with is less than ‘fair’. Believe me all doctors would like to work and collaborate with a pharmacist like that.” ES-I #1

“But there are other points, the patient (care) is not only medications, it is a comprehensive care. There is physical, there is spiritual, there is social also, the pharmacist will not cover all these points.” QR-F # 4

“We need communication skills, pharmacists will need to learn communication skills... with doctors and patients...” QR-F # 5

“Pharmacists here, they are not Arab, (there is a) language barrier...” QR-F # 1

Others were concerned with the availability of pharmacists in UAE:

“...also the number of pharmacists maybe...the man power. We need clinical pharmacists not technicians.” QR-F # 1

“...more clinical pharmacists, there are only a few...I mean pharmacists should be encouraged to go for clinical pharmacology, not only pharmacists who work as a business man....” AM-F # 5

Territorial boundaries

Some physicians felt that collaborative relationships with pharmacists may not be viewed favourably by some of their colleagues, possibly due to issues such as lack of awareness to collaborative practice, incursion into their practice, resistance to change, professional self-sufficiency and community pharmacy's image as a business:

"I'm not used to such practice..." AM-F# 5

"Physicians may not accept that. I wouldn't think they would accept a pharmacist being involved with them. I'm just being realistic, so acceptance of physicians is an issue!" MN-I #1

"There may be touch (a touchy situation) between the doctor and the pharmacist, as the doctor may think that this is an intrusion to his job." SH-I #3

"Maybe because it is a habit we are used to; we cannot adapt to this suddenly; we cannot think of this suddenly happening. So conservative people will be like this actually...because we always try to follow the same – anything new we resist." HZ-I # 3

"...because it (community pharmacy) is business at the end of the day." MC-F#3

Some were worried about the impact on physician-patient relationship of including a pharmacist within the practice, especially in a setting where patients are unaware of the pharmacists' contribution to their care:

“...but I don't want to make any conflict in front of the patient because our patients in the Arab world are different...so if there is a pharmacist in the picture, they might think...this might cause some conflict...” FJ-I #1

Some physicians considered that collaborative relationships with pharmacists could be viewed as business rivalry, or questioned the need for a pharmacist working on the team to manage medications if they themselves could do that:

“...it will depend on the doctor him/herself. If some doctors do not like the idea, it's, I think, mainly because of economic issues; the main reason will be that they want more money and this might be business taken away from them. They want to see the patients themselves, more visits more consultations for themselves, and they are afraid this will affect that.” MK-I #1

“Not sure if it would work here, because the doctor knows the drugs, side effects, not sure if needed or if will work, there are diabetes educators for instance, who educate about medications, other conditions, also the doctor can do the education, counselling and managing the side effects...” BR-I #5

Patient acceptance

Patients' acceptance of pharmacists' input was viewed as a potential barrier; patients usually expect to see a physician for their needs about medications and may not accept visiting a clinic without being evaluated by a physician:

“Maybe the acceptance of the community (would be a barrier). Sometimes patients...we have patients who are coming every week may be for investigations, “I should see a doctor, I should see a doctor”. So it is acceptance – patients may not like pharmacists to play with their levels, with their medications.” QR-I #2

“Maybe the patient,...maybe he will not be satisfied; he expects to see the doctor... “Why you refer me to the pharmacist?” (they might say). Sometimes they have the idea that a pharmacist should only give medications...maybe they didn't have a chance to talk to pharmacists before. At the beginning there could be some hesitation by the patient.” HZ-I #1

Administrative and technical matters

Administrative issues were highlighted as major barriers, ranging from issues of availability of space and time, to issues of workflow management and cost.

“There will be many people working in the clinic. Administratively, this would be hard to implement.” Th-I#1

“The doctor may be very busy in a clinic and may not pay full attention to the pharmacist or may not have time for full information or collaboration with the pharmacist.” TW-I#1

“...logistics, another one is the business. (It) is so expensive. With small setups like a polyclinic with two or three specialties, you can't afford to have a pharmacist...” MC-F #2

“...compensation, adequate financial compensation to do, otherwise you end up with, again, a sales person, so I just don't see it happening here. The idea is to get the cheapest labor to do the job.” MC-F#3

“...so the cost of what you are talking about, you are talking about a Pharm D, there is no way a general pharmacist would be able to provide this type of (service).” MC-F#3

Some inquired about remuneration for pharmacist services, the logistics of billing for such services and patient acceptability of paying for unfamiliar services:

“The patient will pay, he may not like it....so there should be a way that when he sees the pharmacist, it will (be) something else, I don't know how, to pay something less? I don't know how! But not with the same system (in current use).” IT-F#1

“I don't think you have to charge the patient for having this pharmacy consultation but maybe in the future you can, but usually if someone doesn't generate money for a clinic, they are usually asked to leave...” MC-F#3

On the other hand, a minority of physicians did not think that financial remuneration for pharmacists would be a great barrier, as the benefits may outweigh the costs and the institution would need to evaluate that:

“Including a pharmacist in collaborative relationships would be very good for a clinic; under the supervision of a doctor, they will supply drug information. I don’t anticipate many barriers that are major to adopting this model. Not even financial because you have to see the benefit this person brings to your practice and compare to how much you will pay them. Not a problem!” BR-I # 1

Discussion

This study is the first of its kind to be conducted in the UAE. The findings from this and our other studies (Hasan et al., 2011; Hasan et al., 2012a; Hasan et al., 2012b) will facilitate the development of strategies for development and integration of new community pharmacy services to optimise patient care in an environment where healthcare resources are stretched.

It was clear that physicians were largely unaware of potential collaborative relationships with pharmacists in the community setting. Pharmacists interested in initiating collaboration with physicians could start by increasing physicians’ awareness mainly through face-to-face meetings Snyder et al., 2010. Such initial encounters are indispensable to the process of collaboration, as physicians are unlikely to enter into an agreement without meeting the pharmacist and having a genuine discussion about the nature and potential benefits of collaboration.

Participants recognised the potential benefits of collaborative approaches to patient care, in some cases due to their awareness of or previous exposure to clinical pharmacy services in hospitals. The findings from this study are consistent with available evidence regarding influences on collaborative relationships between pharmacists and physicians (Zillich et al., 2004; Doucette et al., 2005). Work by Doucette *et al.* identified factors significantly influencing the development of pharmacist-physician collaboration as trustworthiness, role specification, and professional interactions (Zillich et al., 2004). The main facilitating factor was clear definition of roles through the establishment of clear protocols and guidelines that govern the scope of activities and boundaries. This seemed to stem from physicians' concerns over pharmacists' encroachment over their professional territories and a need to recognise their leadership in the decision-making process. An earlier study reported that it took approximately six months for the team to understand each other's areas of competency and to recognise how the practitioners could work together (Legault et al., 2012) suggesting that moves to improve collaboration between physicians and pharmacists will be a time consuming process that requires patience and perseverance.

All participants in our study preferred collaborations to be co-located (i.e. within the same building/institution), allowing pharmacists to access patient records directly, thus alleviating concerns over patient privacy and confidentiality and allowing better control over the practice environment. A study from the United Kingdom reported that difficulties in pharmacists gaining access to patient records had led to the scaling down of original plans for full clinical medication reviews at some of the study sites (Bradley et al., 2008). Physicians suggested that an in-house set-up or a system with a pharmacist integrated into the practice could improve communication

between pharmacists and physicians and allow immediate resolution of patient drug therapy problems. Many physicians emphasised the importance of continuous feedback between pharmacists and physicians, leaving no room for uncertainty over decisions. There is evidence that the benefits seen with an in-house design could also be achieved through regular face-to-face contact between healthcare professionals who are not co-located (Bradley et al., 2008), suggesting that it would be feasible for pharmacists to maintain their independent community practice while engaging in collaborative relationships with physicians.

As pharmacist-physician contact increases, and as pharmacists are proven able to contribute recommendations leading to better patient outcomes, trust will grow (Doucette et al., 2005). Participants in our study considered trust to be a key facilitator for collaborative relations; in order to accept and make therapy decisions based on recommendations by pharmacists, inter-professional trust is a necessity. A study by Zillich *et al.* in the United States, exploring the characteristics of pharmacist/physician collaborative relationships, showed that communication and trust are necessary to enhance the functioning of healthcare teams (Zillich et al., 2004).

Seemingly, the main barrier to collaboration identified in this study was physicians' concern about the competency of the pharmacists, asserting that clinical pharmacy training would be needed before many of them would consider working collaboratively with community pharmacists. Pharmacists currently practicing in the UAE and the wider region may need to explore extra qualification or certification avenues before attempting to initiate collaborative practice with physicians. Programs are available from various authorities in the UAE that would meet continuing professional education requirements (MCC, 2012).

Participants in our study noted that some physicians were likely to resist collaborative relationships with community pharmacists in the UAE, possibly due to physicians' desire for professional control over patient therapy, lack of awareness of what pharmacists can provide, and concerns over physician-patient relationships when a pharmacist is involved in medication management. Physicians' perceptions of other professionals' encroachment into their territory has been extensively reported in the literature (Edmunds & Calnan, 2001; Hata et al., 2012; Ritchey & Raney, 1981; Hughes & McCann, 2003) and does not indicate a cultural or regional characteristic. The findings suggest a need to educate physicians about what pharmacists can offer and increase their awareness of the benefits of collaborative patient care. A potential strategy to increase awareness is multidisciplinary training of professionals, whether at the undergraduate, postgraduate or continuing professional education levels, where professionals learn about others' education and training, and about interdisciplinary teams and what contributes to their success (Leaviss, 2000; Owens & Gibbs, 2001).

Patients' acceptance of pharmacists' involvement in their therapy was raised as a possible barrier. This could be overcome by increasing patients' awareness through, for example, showcasing enhanced community pharmacy services. Our previous as yet unpublished research has shown that patients would be likely to use primary care services if they were provided through community pharmacies. We have also previously shown that pharmacists need to improve the services they provide in community pharmacy in the UAE (Hasan et al., 2012b), which would be likely to lead to increased satisfaction, acceptance and demand for the services.

The study also identified a number of potential administrative and logistical barriers to collaboration between physicians and pharmacists in the UAE. Similar barriers have been reported elsewhere (Bradley et al., 2008), and these could contribute to the lengthy adjustment period referred to earlier (Legault et al., 2012). Whilst cost is a barrier, it would be influenced by the type of set-up for the collaborative practice (whether based in-house, or via off-site referral), the practice type (whether government or privately-owned clinics), and other contract-specific issues.

Formalisation of collaborative relationships between physicians and pharmacists has been attempted (Eickhoff & Schulz, 2006), including remuneration at the levels of the community pharmacists, physicians, health insurance companies and government. Clearly, a new system for remunerating community pharmacy services in the context of collaborative practice would need to be devised in the UAE. Remuneration should be geared towards providing incentives to the professionals involved and targeted at further developing and enhancing collaborative care models.

Limitations

Most participants in this study had limited experience of collaborative relationships with community pharmacists; consequently, their feedback was not from personal experience, but based on their attitudes and opinions and experience working with other pharmacists in the hospital setting or with health professionals other than pharmacists.

Conclusion

There appears to be potential for the development of physician-pharmacist collaborative practice in the UAE. Benefits of collaborative care were recognised. Facilitators of success were identified as clear role definition, efficient communication and trust building. Barriers to success included lack of acceptance by both physicians and patients, pharmacists' competence, and administrative factors. Understanding these facilitators and barriers will contribute to future development of successful collaborations.

Future work should focus on the perspectives of pharmacists on collaborative relationships with physicians and the initiatives they are ready to take to enhance collaboration with physicians.

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Chapter 11: Conclusions and Recommendations

11.1 Summary of findings

This thesis has generated pivotal information that will inform efforts to enhance community pharmacy practice in the UAE. The findings from this research have, for the first time, shed light on the characteristics of, and services provided through community pharmacies in the UAE. The research has taken into account the perspectives of patients and physicians – the customers of community pharmacy – whose opinions, preferences and expectations are important elements in defining the quality of the services provided. The outcomes of the studies conducted in this thesis are crucial to all stakeholders involved in the planning, design and delivery of training and interventional programs targeted at enhancing community pharmacy practice in this country.

11.1.1 Assessment of community pharmacy practice in the UAE

The aim of the research in phase 1 of this thesis was to determine the characteristics and workforce issues related to community pharmacy practice, and the type and frequency of community pharmacy services in the UAE, as has been reported in Chapters 3 and 4.

The survey of community pharmacists in the UAE generated important data about workforce characteristics and pharmacist workload (Chapter 3) that will be useful to support the development and implementation of strategies to improve the quality of community pharmacy services in the UAE. Future research should focus on workforce factors that contribute to the improvement of community pharmacy services in the UAE, such as the training and retention of pharmacists.

The survey documented, for the first time, the type and frequency of pharmacy services provided through community pharmacies in the UAE (Chapter 4) and highlighted the need to improve the delivery of enhanced professional services.

11.1.2 Patient satisfaction and expectations of primary care

The second phase of the research assessed patient satisfaction with current community pharmacy services in the UAE and determined the primary care services that patients would be likely to use if they were to be provided through community pharmacies. The results have been reported in Chapters 6 and 7.

As there were no validated instruments to assess patient satisfaction with pharmacy services in the Arabic context, a new tool was developed for use in the Arabic context to assess patient satisfaction with traditional community pharmacy services. The tool was successfully validated as fit for purpose (Chapter 6).

A survey of members of the general public in the UAE (Chapter 6) identified areas of patient dissatisfaction with current community pharmacy services in the UAE that needed improvement. Low patient satisfaction scores with most services were observed. Patients wanted more information about their medications, self-management and advice on healthy lifestyle. They also requested more personal care and considered that as part of the trust they would put in the competence of the service provider. Physical characteristics of the pharmacy such as waiting and private areas were lacking, consequently affecting patient satisfaction.

Stakeholders could utilise this information in the design and delivery of improved services that could lead to increased patient demand and, hence, improved quality of care.

The survey also explored the potential for future community pharmacy services and found that patients would be likely to use a wider range of primary care services if they were provided through community pharmacies in the UAE (Chapter 7). Participants were more supportive of pharmacists providing information, helping with self-management and monitoring, and having disease prevention roles than they were of having pharmacist intervene in the medication management of their chronic disease conditions. Pharmacists need to accept the role of a primary care provider and make resources available to initiate and maintain the provision of primary care services in the UAE.

Stakeholders could utilise this information in the design and delivery of improved services that could lead to increased patient demand and, hence, improved quality of care.

11.1.3 Physicians' perspectives on pharmacist's role and collaboration

To complete the exploration of the stakeholders' perspectives, phase 3 described physicians' views on pharmacists' roles in providing community pharmacy services, and their opinions on collaborative relationships with community pharmacists in the UAE (Chapters 9 and 10).

Four themes emerged from the focus groups and interviews with physicians (Chapter 9), which related to Competency, Business orientation, Territorial control and Service delivery/patient care. Despite some reticence, there was a degree of support for pharmacist involvement in

primary care, particularly for roles that related to medications, such as counselling on how to use medications, dosing schedules, drug interactions and to lesser extent the side effects.

There appears to be potential for the development of physician-pharmacist collaborative practice in the UAE (Chapter 10). Benefits of collaborative care were recognised. Facilitators of success were identified as clear role definition, efficient communication and trust building. Barriers to success included lack of acceptance by physicians and patients, pharmacists' competence, and administrative factors.

Understanding physicians' attitudes and, the facilitators and barriers to inter-professional collaboration will facilitate the development and implementation of strategies to enhance the contribution of community pharmacists to primary care in the UAE, and possibly in other regions with similar healthcare systems.

11.2 Recommendations for future development and research

Recommendations for health authorities:

1. Legislation covering working hours, minimum staffing requirements and adequate information resources available in community pharmacies should be introduced.
2. Existing legislation should be enforced to ensure that only registered pharmacists provide patient-centred care, not unqualified assistants.

3. There is a need to establish a new career path for pharmacists that involves provision of enhanced services in community pharmacy. Training and competency requirements for this career path will need to be established.
4. Enforcement of the regulation mandating a prescription before dispensing “prescription” medications is vital so that treatment is not initiated or modified as a result of screening and monitoring services provided in community pharmacy. This is not only vital for optimum patient care, but reaffirms the responsibility of physicians to undertake diagnoses and manage treatment of disease.
5. Community pharmacists should be allowed to charge for non-product services in the UAE; this would serve as an incentive for pharmacists to engage in these services and encourage the development of structure and guidelines for optimum delivery of the services.

Recommendations for pharmacy owners/managers:

1. Community pharmacy management is encouraged to reflect on workforce-related shortcomings and to work with pharmacists on improving existing conditions. This will augment pharmacists’ job satisfaction and loyalty to their employers, leading to a stable workforce; such security will impact on pharmacists’ readiness to adopt enhanced pharmacy services and the sustainability of these services.
2. Only registered pharmacists should provide patient-centred activities, not unqualified assistants.
3. There is a need for Arabic-speaking personnel in community pharmacies.

4. There is a need for pharmacists with extra clinical qualifications to provide the services that patients and physicians expect from pharmacists.

Recommendations for academia:

1. Training programs for pharmacists are needed. These programs should initially be tailored to provide training in primary care provision and communication skills, gradually becoming more specialised to deliver education and training in the skills required to provide higher level pharmaceutical care.

Recommendations for community pharmacists:

1. Patients' and physicians' expectations of pharmacists as health professionals in the community are higher than what is currently being provided. Pharmacists will need to embrace the healthcare provider role that is characterised by a caring attitude, adequate competency and effective communication, given that these characteristics will enhance the public's confidence in their profession. It is recommended that pharmacists enhance their knowledge and skill by engaging in educational and training programs that target both communication and clinical skills. They are encouraged to participate in research projects focusing on pharmacy practice research conducted in collaboration with academia and the authorities. Participation in such activities will demonstrate the pharmacists' skill and value in contributing to patient care, consequently bringing benefits to the practice and profession.

2. Pharmacists interested in providing enhanced services will need to consider re-designing their pharmacy layout to allocate a private area, if not a dedicated room, within the pharmacy structure for consultation and screening services.

Recommendations for academia and community pharmacists:

1. There is a need to investigate pharmacists' perspectives on collaboration with physicians. This would complement the views of physicians identified in this research; it would help identify facilitators and explore solutions for barriers to collaboration from the perspective of pharmacists.
2. Modelling of collaborative practice in pilot studies involving physicians who are willing to collaborate with pharmacists would illustrate the concept to the wider professional community. Introducing collaborative practice at university hospitals or clinics where medical and pharmacy students/residents are being trained should be explored. Publishing the collaborative experience and its findings possibly at local multidisciplinary conferences would help disseminate the information. Furthermore, early exposure of health professionals to collaborative practice philosophy would help overcome some of the barriers embedded in current practice.

Recommendations for all stakeholders:

1. A professional body for pharmacists should be established. Such an organisation would facilitate ongoing development of the pharmacy profession. For example, the organisation could establish competency standards for the practice of pharmacy, lobby

regulatory authorities and other bodies in regard to pharmacist rights and responsibilities, and advocate for and support initiatives taken by pharmacists to provide enhanced services, and to seek remuneration for these services.

2. A multidisciplinary team of stakeholders representing academia, community pharmacists, owners/managers of community pharmacies, physicians and health authorities should be convened to define and, establish expectations and limitations for community pharmacists' roles and services. The findings should be disseminated to the healthcare community at large.
3. A system should be established for pharmacists to keep comprehensive patient medication profiles. This would ensure that pharmacists are able to track changes in patient medication therapy, and encourage physicians' acceptance of collaboration with pharmacists. Patient registration with a specific community pharmacy could be introduced in the UAE, wherein a patient is offered incentives to enrol with the pharmacy, which possibly increases patients' loyalty to the pharmacy. Community pharmacies could join with physician group practices already existing in the community; pharmacy services could be included within the practice just like radiology, dermatology, urology, endocrinology, cardiology, etc. in this fashion, a patient is likely to have his/her prescriptions filled at the institutionalised pharmacy.

11.3 Conclusion

This thesis has explored three key areas that define and influence the nature and quality of community pharmacy services in the UAE. It has explored the perspectives of key stakeholders (pharmacists, patients and physicians) whose views are pivotal in identifying areas of community

pharmacy practice requiring improvement in the UAE. The findings report suboptimal workforce-related conditions and other shortcomings in the quality of community pharmacy services. It is not surprising that patients have low levels of satisfaction with the services provided and would like to receive more services in the future. Physicians are broadly supportive of community pharmacists providing some enhanced services and are ready to collaborate with pharmacists provided that professional boundaries and pharmacists' competency limitations are recognised and respected. The research has generated information that could be utilised by key decision-making stakeholders (policy makers, government authorities, pharmacy ownership/management, academia, etc.) to plan, design and offer interventional programs that could improve community pharmacy practice in the UAE.

Appendix 1

**Approval from Sharjah University Research and Ethics Committee to conduct survey
assessment of community pharmacy practice**



24 December 2008

To: Dr. **Sanah Hasan- Enayah**, Pharmacy

Dear Dr. Sanah,

Greetings!

I would like to let you know that your research project titled “**A Survey Assessment of Community Pharmacy Practice in the UAE**”, which was submitted to the Ethics and Research Committee (ERC) for ethical review has been **approved**.

On behalf of the committee I would like to wish the best of luck in your research project.

Best regards,



Ra'ed Abu Odeh, PhD
ERC Chair

Appendix 2

**Approval from Monash University SCERH to conduct survey assessment of community
pharmacy practice**



Human Ethics Certificate of Approval

Date: 9 February 2009
Project Number: CF09/0392 - 2009000132
Project Title: Assessment of Community Pharmacy Practice in the UAE
Chief Investigator: Dr David Kong
Approved: From: 9 February 2009 to 9 February 2014

Terms of approval

1. The Chief investigator is responsible for ensuring that permission letters are obtained and a copy forwarded to SCERH before any data collection can occur at the specified organisation. **Failure to provide permission letters to SCERH before data collection commences is in breach of the National Statement on Ethical Conduct in Human Research and the Australian Code for the Responsible Conduct of Research.**
2. Approval is only valid whilst you hold a position at Monash University.
3. It is the responsibility of the Chief Investigator to ensure that all investigators are aware of the terms of approval and to ensure the project is conducted as approved by SCERH.
4. You should notify SCERH immediately of any serious or unexpected adverse effects on participants or unforeseen events affecting the ethical acceptability of the project.
5. The Explanatory Statement must be on Monash University letterhead and the Monash University complaints clause must contain your project number.
6. **Amendments to the approved project (including changes in personnel):** Requires the submission of a Request for Amendment form to SCERH and must not begin without written approval from SCERH. Substantial variations may require a new application.
7. **Future correspondence:** Please quote the project number and project title above in any further correspondence.
8. **Annual reports:** Continued approval of this project is dependent on the submission of an Annual Report. This is determined by the date of your letter of approval.
9. **Final report:** A Final Report should be provided at the conclusion of the project. SCERH should be notified if the project is discontinued before the expected date of completion.
10. **Monitoring:** Projects may be subject to an audit or any other form of monitoring by SCERH at any time.
11. **Retention and storage of data:** The Chief Investigator is responsible for the storage and retention of original data pertaining to a project for a minimum period of five years.



Professor Ben Canny
Chair, SCERH

Cc: Assoc Prof Kay Stewart; Prof Colin Chapman, Prof Mohamed Yousif Baniyas; Dr Sanah Hasan;

Appendix 3

Approvals from local UAE authorities to conduct survey assessment of community pharmacy practice

Emirate of Abu Dhabi

Health Authority - Abu Dhabi
Reliable Excellence in Health Care



إمارة أبوظبي
هيئة الصحة - أبوظبي
تميّز في الرعاية الصحية

Date: 20, January 2009
Ref: PHM/ 21 /09

Sanah Hasan, PharmD
College of Pharmacy
Sharjah University

Subject: Permission to complete a survey

Dear Dr. Sanah,

In reference to your letter requesting permission to complete a survey of the pharmacy services offered by community pharmacists in Abu Dhabi Emirate to their customers. We are pleased to inform you that the Health Authority- Abu Dhabi has no objection to complete such survey.

Best Regards,


Dr. Mohammed Abuelkhair
Section Head, Drugs & Medical Products Regulation
abuelkhair@haad.ae

P.O. Box: 5674 - Abu Dhabi - United Arab Emirates
Tel.: +971 2 - 4493333 - Fax: +971 2 4449822

ص.ب. ٥٦٧٤ - أبوظبي - الإمارات العربية المتحدة
هاتف: ٤٤٩٣٣٣٣-٩٧١ ٢ - فاكس: ٤٤٤٩٨٢٢-٩٧١ ٢



Date : 22/12/2008

التاريخ : 2008/12/22

Dr.Mohammad Abdullah Al-Hammoody
Director of Fugairah Medical District

معبدة الدكتور محمد عبدالله الحمودي
مدير منطقة الفجيرة الطبية

We would like to request permission for pharmacists working in Ministry of Health facilities as well as those in private pharmacies to fill out a questionnaire survey that explores the characteristics of the practice of pharmacy and the services they offer to their customers.

حرصاً من كلية الصيدلة في جامعة الشارقة للتعاون مع المؤسسات الصحية المختلفة العاملة في دولة الإمارات ، فإننا نطلب السماح للصيادلة العاملين في الصيدليات التابعة للوزارة ، والصيديات الخاصة بالمشاركة في استبيان عن طبيعة عمل الصيدلة وطبيعة الخدمات التي يقدمونها لمرضاهم.

The purpose of this survey is to identify issues in practice needing improvement through educational and training programs that the College of Pharmacy is planning on developing to be offered to these pharmacists.

وإن الهدف من هذا الاستبيان هو التعرف على النقاط والمواضيع التي يمكن تحسينها من خلال برامج تطورها كلية الصيدلة في الجامعة وتقديمها للصيادلة العاملين سواء في الوزارة أو الصيدليات الخاصة.

Your Cooperation is highly appreciated.

شاكرين لكم حسن تعاونكم وجهودكم الغالية.

وتفضلوا بقبول فائق الاحترام والتقدير

عميد كلية الصيدلة

31.12.08
عبدالله الحمودي
مدير منطقة الفجيرة الطبية

No objection



التاريخ: 2008/10/29

Dubai Medical District

سعادة الدكتور أحمد الهاشمي
مدير منطقة دبي الطبية المحترم

We would like to request permission for pharmacists working in Ministry of Health facilities as well as those in private pharmacies to fill out a questionnaire survey that explores the characteristics of the practice of pharmacy and the services they offer to their customers.

حرمنا من كلية الصيدلة في جامعة الشارقة للتعاون مع المؤسسات الصحية المختلفة العاملة في دولة الإمارات ، ورجاء التكرم والسماح للمساعدة العاملين في الصيدليات التابعة للوزارة ، والصيدليات الخاصة بالمشاركة في استبيان عن طبيعة عمل الصيدلة وطبيعة الخدمات التي يقدمونها لمرضاهم.

The purpose of this survey is to identify issues in practice needing improvement through educational and training programs that the College of Pharmacy is planning on developing to be offered to these pharmacists.

وإن الهدف من هذا الاستبيان هو التعرف على النقاط والمواضيع التي يمكن تحسينها من خلال برامج تطويرها كلية الصيدلة في الجامعة وتقديمها للصيدلة العاملين سواء في المؤسسات الحكومية أو الخاصة.

شاكرين لكم حسن تعاونكم وجهدكم الغالي

Your Cooperation is highly appreciated.

وتفضلوا بقبول فائق الاحترام والتقدير



أ.د. مكيون القطر

عميد كلية الصيدلة

للمراجعة يرجى الاتصال : 057/6323466
د. محمد الهادي

ص.ب. : ٢٧٢٧٢ - الشارقة - الإمارات العربية المتحدة - هاتف: ٥٠٥٧٤٠١ - (٩٧١٦) - فاكس: ٥٥٨ ٥٨١٢ (٩٧١٦)
P.O. Box : 27272 - Sharjah - United Arab Emirates - Tel : (9716) - 505 7401 , Fax : (9716) - 558 5812

E-mail: pharmacy@sharjah.ac.ae البريد الإلكتروني

No objection

د. محمد الهادي
مدير منطقة دبي الطبية

لا مانع من استبيان
No objection

Appendix 4

Assessment of community pharmacy practice questionnaire

Assessment of Community Pharmacy Practice in the UAE

A) Pharmacist-related Information

1. Gender: ☐ Male ☐ Female
2. Age: ☐ 21-30 ☐ 31-40 ☐ 41-50 ☐ 51-60 ☐ >60
3. Pharmacy-related qualifications: Please list All: _____
4. Country of initial pharmacy qualification: _____
5. Years practicing pharmacy: _____
6. On average, how many days per week do you work in this pharmacy?
☐ 1 day ☐ 2 days ☐ 3 days ☐ 4 days ☐ 5 days ☐ 6 days
7. How many years have you been working in this pharmacy?
☐ <5 ☐ 5-10 ☐ 10-15 ☐ >15
8. Are you a member of any professional pharmacy organizations? (local and international)
☐ Yes. Please state: _____ ☐ No.

B) Pharmacy-related information

1. In which emirate is this pharmacy located:
☐ Abu Dhabi ☐ Dubai ☐ Sharjah ☐ Ajman
☐ Ras Alkhaima ☐ Um Al-Quwain ☐ Fujairah
2. Which of the following describes the setting of this community pharmacy?
☐ Shopping center ☐ Street
3. Is this pharmacy
☐ Independent ☐ Chain
4. Is this pharmacy open 24 hours per day?
☐ Yes
☐ No: How many hours is this pharmacy open per day _____
how many days/week: _____
4. The following is available in this pharmacy: (tick all applicable)
☐ Dispensing computer program ☐ Internet access
5. On average, how many prescriptions per day are sold in this pharmacy?
☐ <50 ☐ 50-100 ☐ 100-150 ☐ 150-200 ☐ 200-250
6. On average, how many OTC medications per day are sold in this pharmacy?
☐ <50 ☐ 50-100 ☐ 100-150 ☐ 150-200 ☐ 200-250
7. Is the owner of this pharmacy a pharmacist: ☐ Yes ☐ No
8. Is the manager of this pharmacy a pharmacist: ☐ Yes ☐ No
9. How many staff members work in this pharmacy?
Pharmacists _____ Pharmacy assistants _____ Trainee pharmacists _____
10. Does this pharmacy participate in training undergraduate Bachelor of Pharmacy students?
☐ Yes ☐ No

C) Resources

1. What references or resources are available to you in this pharmacy: (tick all applicable)

- Text-based resources:

☐ BNF

☐ BP (British Pharmacopeia)

☐ USP

☐ MIMS

☐ Martindale

☐ Drug Facts and Comparisons

☐ Journals and magazines, please specify: _____

☐ Others, please specify: _____

- Electronic resources:

☐ Computerized resources, please specify: _____

☐ Web-based resources, please specify: _____

D) Product and supply services offered in this pharmacy

Tick as many as applicable:

Which of the following do you provide or use in this pharmacy?

Statement	Yes	No
1. Herbal medicine/nutritional supplement selling	<input type="radio"/>	<input type="radio"/>
2. Nutritional support e.g. Ensure, Vivonex selling	<input type="radio"/>	<input type="radio"/>
3. Diabetic care, Insulin + inj supplies.	<input type="radio"/>	<input type="radio"/>
4. Children medication and health product supplies	<input type="radio"/>	<input type="radio"/>
5. Ear piercing (approved by MOH)	<input type="radio"/>	<input type="radio"/>
6. Skin care, beauty products and cosmetics supply	<input type="radio"/>	<input type="radio"/>
7. Smoking cessation aids and treatments.	<input type="radio"/>	<input type="radio"/>
8. Specialized compounding for prescriptions.	<input type="radio"/>	<input type="radio"/>
9. Canes, wheelchairs, walkers, crutches supply	<input type="radio"/>	<input type="radio"/>
10. Weight reduction treatments, herbals and aids	<input type="radio"/>	<input type="radio"/>
11. Wound care products	<input type="radio"/>	<input type="radio"/>
12. Other(s): Please specify _____ _____		

E)Professional services

Which of the following do you provide or use in this pharmacy? Tick where the level of services is best described.

Statement	Never	Occasionally	Sometimes	Mostly	Always
1. Patient information leaflet or other written or printed material	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
2. Use of extra small precautionary labels. Eg. <i>Take with food, don't drive, etc</i>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
3. Private counseling in designated closed area.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
4. Counseling in an open area.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Statement	Never	Occasionally	Sometimes	Mostly	Always
5. Monitoring of patient compliance and adherence to medications	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
6. Clinical testing/disease prevention and detection with devices such as:					
- Weighing scales	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
- Blood glucose meters	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
- Blood pressure meters	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
- Peak flow meters (for asthma)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
- Other(s) _____		<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Skin care counseling	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Smoking cessation counseling	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
7. Referral to specific-specialty health care provider.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
8. Involvement in community education.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
9. Keeping individualized patient records	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
10. Identification and reporting of medication errors	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
11. Identification and reporting of adverse drug reactions	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
12. Other professional services, please list: _____		<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
_____		<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
_____		<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

F) Perceived barriers to the provision of enhanced * pharmacy services

* “Enhanced” refers to the provision of non-distributive patient-centered care activities including but not limited to: *patient counseling, patient record profiling and keeping, patient monitoring services, provision of drug information and other activities.*

Please tick where the barrier is best described:

Barriers to pharmacy services	Not usually a barrier	Somewhat of a barrier	A strong barrier
1. Lack of time to offer service	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
2. Shortage of pharmacists/staff	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
3. Lack of patient demand and acceptance	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
4. Lack of appropriate knowledge/skills by pharmacist	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
5. Lack of financial reward from services	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
6. Doctors do not recognize pharmacist skills in enhanced pharmacy services	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
7. Legal and regulatory constraints	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
8. Other(s), please specify: _____	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Any additional comments?

Appendix 5

Participant Explanatory Statement and Invitation to participate in assessment of community pharmacy practice



Participant Explanatory Statement and Invitation to participate

January 11, 2009

To,

Pharmacist in charge or nominee

Dear Pharmacist,

Re: Assessment of Community Pharmacy Practice in the United Arab Emirates.

You are invited to take part in this research project focusing on the type of pharmacy services currently being provided by community or retail pharmacies in the UAE. The investigators of this project are Dr. David CM Kong, Dr. Kay Stewart, Dr. Colin Chapman – all from Monash University, Prof MohamedBaniyas from United Arab University and Dr. Sanah Hasan from Sharjah University College of Pharmacy and Monash University. This study has been approved by the UAE's Ministry of Health and other relevant authorities in the UAE.

Currently, little is known about the type or extent of pharmacy services being provided by community pharmacies in the UAE. Likewise, not much is known about the competency of the pharmacists practicing in country. Without this knowledge, it is extremely difficult to undertake any strategic initiatives or develop policies to improve the type and depth of community-pharmacy services in UAE. Importantly, it would be difficult to develop a comprehensive and effective Professional Experiential Placement (PEP) program for pharmacy students and a preceptor training program for community pharmacists in UAE. Thus, the purpose of the current

proposal is to conduct an anonymous survey to determine the type and extent of community pharmacy services currently available in the UAE.

The primary aims of this project are:

- 1) To determine the type and depth of existing community pharmacy services in the UAE through an anonymous survey
- 2) To use the data from the survey to develop and implement strategies to improve existing 'professional experiential program' and develop a preceptor training program.

Participation in this project is entirely at your own discretion. If you choose to participate in this project, please complete the attached questionnaire. Once completed, seal the document in the envelope provided and drop the envelope in the closed box the students have. It will take approximately 20-25 minutes to complete the questionnaire. The return of this survey implies consent to participate in the study.

Confidentiality of your response is assured as the survey will not be able to identify you or your affiliated institution. Data from this project will be stored in the Department of Pharmacy Practice (Sharjah University) and only accessible to the investigators listed above. The data will be destroyed after 5 years. This project has been approved by the Monash University Standing Committee for Ethics Research in Humans and, the Sharjah University Research and Ethics Committee. Your contact details have been provided to the investigators by the UAE's Ministry of Health.

The data from this study will be used as a guide to refine existing pharmacy PEP program for pharmacy students at Sharjah University and, to optimise existing preceptor training program for preceptors. At the individual level, you are unlikely to derive any immediate benefit derived from participating in this project. The outcome of this study will be submitted to peer review journals for publications, presented at conferences, reported to Monash and Sharjah University ethics committees. Part or all of the data may contribute towards Mrs. Sanah Hasan's PhD dissertation. If you would like to be informed of the aggregate research finding, please contact Mrs. Sanah Hasan.

Contact inquires for further enquiries or complaints in-relation to this project is as follows:

If you would like to contact the researchers about any aspect of this study, please contact:	If you have any complaint concerning the manner in which this research is being conducted, please contact:
Dr. Sanah Hasan, PharmD Sharjah University-College of Pharmacy [REDACTED] [REDACTED]	Dr. Mazen Qato, PhD Dean, College of Pharmacy, Sharjah University [REDACTED] [REDACTED]

Once again, we would like to invite you to complete the attached survey, seal it in the provided envelope and return it back to our pharmacy students.

Thank you

Yours Sincerely,

[REDACTED]

Sanah Hasan, PharmD
Lecturer, Department of Clinical Pharmacy
Sharjah University-College of Pharmacy
(On behalf of all investigators)

Appendix 6

**Approval from Sharjah University Research and Ethics Committee to conduct patient
satisfaction survey**

University of Sharjah

College of Health Sciences
Medical Laboratory Technology Department



جامعة الشارقة

كلية العلوم الصحية
قسم تقنية المختبرات الطبية

23 June 2010

To: Dr. Sanah Hasan
College of Pharmacy

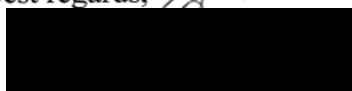
Dear Dr. Sanah,

Greetings!

I would like to let you know that your research project titled “**Patient satisfaction with pharmacy services in the UAE**”, which was submitted to the Ethics and Research Committee (ERC) for ethical review has been **approved**.

On behalf of the committee I would like to wish the best of luck in your research project.

Best regards,



Ra'ed Abu Odeh, PhD
ERC Chair

Appendix 7

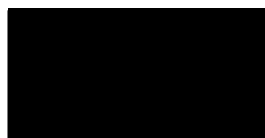
Approval from Monash University MUHREC to conduct patient satisfaction survey

Human Ethics Certificate of Approval

Date: 19 August 2010
Project Number: CF10/1912 - 2010001036
Project Title: Patient Satisfaction with pharmacy services in the UAE
Chief Investigator: Dr David Kong
Approved: From: 19 August 2010 To: 19 August 2015

Terms of approval

1. The Chief investigator is responsible for ensuring that permission letters are obtained, if relevant, and a copy forwarded to MUHREC before any data collection can occur at the specified organisation. **Failure to provide permission letters to MUHREC before data collection commences is in breach of the National Statement on Ethical Conduct in Human Research and the Australian Code for the Responsible Conduct of Research.**
2. Approval is only valid whilst you hold a position at Monash University.
3. It is the responsibility of the Chief Investigator to ensure that all investigators are aware of the terms of approval and to ensure the project is conducted as approved by MUHREC.
4. You should notify MUHREC immediately of any serious or unexpected adverse effects on participants or unforeseen events affecting the ethical acceptability of the project.
5. The Explanatory Statement must be on Monash University letterhead and the Monash University complaints clause must contain your project number.
6. **Amendments to the approved project (including changes in personnel):** Requires the submission of a Request for Amendment form to MUHREC and must not begin without written approval from MUHREC. Substantial variations may require a new application.
7. **Future correspondence:** Please quote the project number and project title above in any further correspondence.
8. **Annual reports:** Continued approval of this project is dependent on the submission of an Annual Report. This is determined by the date of your letter of approval.
9. **Final report:** A Final Report should be provided at the conclusion of the project. MUHREC should be notified if the project is discontinued before the expected date of completion.
10. **Monitoring:** Projects may be subject to an audit or any other form of monitoring by MUHREC at any time.
11. **Retention and storage of data:** The Chief Investigator is responsible for the storage and retention of original data pertaining to a project for a minimum period of five years.



Professor Ben Canny
Chair, MUHREC

cc: Assoc Prof Kay Stewart, Prof Colin Chapman, Prof Mohamed Yousif Baniyas, Mrs Sanah Hasan

Appendix 8

Patient satisfaction questionnaire-English

Patient Satisfaction with Pharmacy Services in the United Arab Emirates

The purposes of this questionnaire are to assess your satisfaction with the services you receive at the pharmacy you usually buy your medications from and to see what services you might like your pharmacy to provide in the future

Section 1: Demographics

❖ Please provide the following information about yourself:

1. Age

2. Gender: ☐ Male ☐ Female

3. Highest education level:

☐ Pre-High School ☐ High-School

☐ Post-High school diploma
(University) degree ☐ Undergraduate

☐ Postgraduate degree

4. How long you have been living in the UAE:

5. Your country of origin:

6. Do you normally obtain your medications from the same pharmacy?

☐ Yes ☐ No

7. The pharmacy/s you usually obtain your medications from is/are:

☐ Part of a chain group of pharmacies (e.g. Bin Sina, Abbott, Life, etc.)

☐ Privately owned

☐ Both

8. How many different pharmacies did you visit in the last two months?

9. Do you have health insurance that covers the cost of medications?

☐ Yes ☐ No

Section 2: Current services

Below please provide an evaluation of the services you receive from your usual pharmacy:

Service	Excellent	Very good	Good	Fair	Poor
10. The explanation I receive from the pharmacy staff about my medications is	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
11. The information provided by the pharmacy staff about possible side effects of medications	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
12. The advice provided on how to manage common ailments (e.g. colds & flu, fever, diarrhea) is	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
13. The advice provided on how to maintain a healthy lifestyle	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
14. My overall satisfaction with the quality of information I receive at my usual pharmacy is	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
15. The interest shown by the pharmacy staff to help me make the best use of my medications is	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
16. The time that the pharmacy staff dedicates for attending to my needs is	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
17. My confidence in the expertise of the pharmacy staff is	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
18. My trust in the information provided by the pharmacy staff is	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
19. The availability of prescription medications in my pharmacy is	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
20. The availability of medications that I buy without a prescription in my pharmacy is	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
21. The location of my pharmacy is	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
22. The availability of a waiting area in my pharmacy is	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
23. The availability of private consultation (explanation) area in my pharmacy is	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
24. My satisfaction with medication prices is	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
25. My satisfaction with the overall insurance medication coverage (if available) is	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
26. My satisfaction with the overall pharmacy services is	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Section 3: Future services

If the following services were offered by the pharmacy, how likely would you be to use them?

Service	Very likely	Likely	Unlikely
27. <i>Screening</i> for conditions such as blood pressure, diabetes and high cholesterol	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
28. <i>Monitoring</i> of your blood pressure, blood sugar or blood cholesterol (after you receive treatments from your doctor).	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
29. Receiving advice on how to self-monitor your condition, such as the use of blood sugar machines.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
30. Receiving advice on how to use devices like inhalers or insulin injections.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
31. The <i>pharmacist</i> giving help in preventing disease, as in smoking cessation and weight control.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
32. The <i>pharmacist</i> giving you advice about your health including referral to a doctor if needed.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
33. Receiving printed information about your medications.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
34. The <i>pharmacist</i> explaining to you how to use your medications.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
35. The <i>pharmacist</i> advising you on possible side-effects of your medications.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
36. The <i>pharmacist</i> keeping a file of all the medications you are taking and monitoring them, especially when a new medication is added.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
37. The <i>pharmacist</i> reviewing your medications and advising your doctor, if needed, about possible changes to your medications.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

38. What other services would you like to see provided by your pharmacy?

Thank you

Appendix 9

Patient satisfaction questionnaire-Arabic

استبيان رضا المرضى عن الخدمات الصيدلانية في دولة الامارات

الهدف من هذا الاستبيان هو تقييم رضاك عن الخدمات التي تتلقاها من الصيدلية التي عادة تشتري منها أدويةك، ومعرفة الخدمات التي تود أن تتوفر في صيدليتك في المستقبل .

القسم الأول: بيانات إحصائية

❖ الرجاء تقديم البيانات التالية عن نفسك:

1. السن:

2. الجنس:

○ ذكر ○ أنثى

3. مستوى التعليم :

○ تعليم قبل ثانوي

○ تعليم ثانوي

○ شهادة دبلوم عليا

○ تعليم جامعي

○ تعليم عال

4. كم هي مدة إقامتك في الامارات ؟

5. موطنك الأصلي:

6. هل تحصل على أدويةك عادة من نفس الصيدلية؟

○ نعم ○ لا

7. الصيدلية التي تحصل منها على أدويةك:

○ خاصة

○ تابعة لسلسلة من الصيدليات (مثل ابن سينا، أبوت، لايف وغيرها)

○ كلاهما

8. كم صيدلية زرت في الشهرين الأخيرين؟

9. هل لديك تأمين صحي يغطي تكاليف الأدوية؟

○ نعم ○ لا

القسم الثاني: الخدمات الحالية

الرجاء تقييم مستوى الخدمة في الصيدلية التي تحصل منها عادة على أدويةك فيما يخص الجوانب التالية:

الخدمات	ممتاز	جيد جدا	جيد	مقبول	غير كاف
10. الشرح الذي أحصل عليه من عاملي الصيدلية فيما يخص دوائي	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
11. المعلومات التي يقدمها عاملو الصيدلية عن التأثيرات الجانبية المحتملة للدواء	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
12. النصيحة المقدمة بخصوص كيفية علاج الأمراض الخفيفة (مثل الرشح والزكام والاسهال)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
13. النصيحة المقدمة بخصوص المحافظة على نمط حياة صحي؟	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
14. الرضا العام عن نوعية المعلومات التي أحصل عليها	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
15. الاهتمام الذي يبديه عاملو الصيدلية بمساعدتي على الاستفادة من دوائي	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
16. الوقت الذي يخصصه عاملو الصيدلية لتلبية احتياجاتي	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
17. ثقتي بكفاءة عاملي الصيدلية حيث أحصل على دوائي	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
18. اطمئناني للمعلومات التي يقدمها عاملو الصيدلية	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
19. توفر الأدوية الموصوفة من الطبيب في الصيدلية التي عادة أشتري منها أدويتي	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
20. توفر الأدوية التي أشتريها دون وصفة طبية	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
21. مكان وجود الصيدلية	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
22. وجود منطقة انتظار في الصيدلية	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
23. وجود غرفة استشارة خاصة في الصيدلية	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
24. الرضا عن أسعار الأدوية	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
25. الرضا العام عن تغطية التأمين الصحي للأدوية (إن وجد)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
26. رضاي العام عن خدمات الصيدلية	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

القسم الثالث: الخدمات المستقبلية

إذا وفرت لك الصيدلية الخدمات التالية ما هي امكانية استخدامك لهذه الخدمات ؟

الخدمات	ممکن جدا	ممکن	غير ممکن
27. عمل فحص مبدئي للأمراض مثل ضغط الدم و السكر و الكولسترول	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
28. مراقبة ضغط الدم و السكر و الكولسترول بعد تلقي العلاج من طبيبك	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
29. تلقي النصائح فيما يخص كيفية مراقبتك لحالتك الصحية، من مثل كيفية استخدام أجهزة قياس سكر الدم	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
30. تلقي النصائح الخاصة بكيفية تعاطيك الدواء، وخاصة في حالات استخدام جهاز الاستنشاق أو حقن الأنسولين	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
31. أن يبين لك الصيدلاني طرق منع الأمراض مثل تلقي المساعدة في الانقطاع عن التدخين و تخفيف الوزن	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
32. أن يعطيك الصيدلاني المشورة الصحية لحالتك وتحويلك الى الطبيب عند الحاجة	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
33. أن تحصل على معلومات مطبوعة عن دوائك	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
34. أن يشرح لك الصيدلاني كيفية تعاطيك الدواء.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
35. أن يبين لك الصيدلاني التأثيرات الجانبية المحتملة لدوائك.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
36. أن يحتفظ الصيدلاني بملف خاص بجميع الأدوية التي تتعاطاها، وأن يراجعها، خاصة عندما يضاف دواء جديد	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
37. أن يراجع الصيدلاني وصفتك الطبية، وأن ينصح الطبيب، عند الحاجة، بضرورة تغيير أدويةك	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

38. ما هي الخدمات الأخرى التي تود أن توفرها صيدليتك؟

شكراً جزيلاً

Appendix 10

Certification of patient satisfaction questionnaire translations

American University of Sharjah

Tel. : (971-6) 558 5555 / 515 5555

Fax : (971-6) 558 5858

P.O. Box : 26666

SHARJAH - U.A.E.



الجامعة الاميركية في الشارقة

هاتف: ٥٥٨ ٥٥٥٥ / ٥١٥ ٥٥٥٥ (٩٧١-٦)

فاكس: ٥٥٨ ٥٨٥٨ (٩٧١-٦)

ص.ب: ٢٦٦٦٦

الشارقة - ع.م.

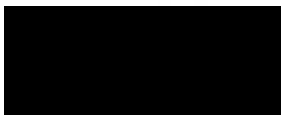
23 June 2010

To Whom It May Concern

This is to certify that I, Said M. Faiq, carried out the following tasks for Sanah Hasan from the College of Pharmacy of Sharjah University (UAE), who is engaged in a research project leading to a doctoral degree.

- 1) Translation from Arabic into English of the Patient Satisfaction Survey.
- 2) Revised the two (2) texts (Arabic and English) of the Explanatory Statement and Invitation to Participate in a Survey.

If you need any further information, please do not hesitate to contact me.



Said M. Faiq, Ph.D.
Professor of Translation & Intercultural Studies
Interim Head, Department of Arabic & Translation Studies.
American University of Sharjah, UAE.
& Visiting Professor, Exeter University, UK.



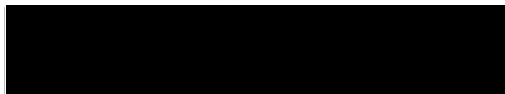
To whom it may concern

20 June, 2010

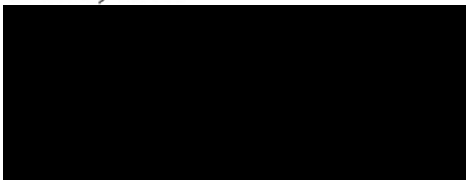
Subject: Certification of Patient-satisfaction Questionnaire

This is to certify that upon the request of Mrs. Sana Enayah, I, Afaf Bataineh, a professor of Arab Studies at Zayed University, United Arab Emirates, carried out the English-Arabic and Arabic-English translation of the Patient-Satisfaction Questionnaire. Please be informed that my Ph.D. thesis was on Arabic Literature, Linguistics and Translation, obtained from Heriot-Watt University in Edinburgh, United Kingdom in 1998. Furthermore, I am a free-lance translator.

Yours Sincerely,



Afaf Bataineh, Ph.D.
Department of Arab and Islamic Studies
Zayed University
P. O. Box 19282,
Dubai, UAE



Appendix 11

Participant Explanatory Statement and Invitation to participate in patient satisfaction study-English



June 20, 2010

Explanatory Statement and Invitation to Participate in a Survey:

Patient Satisfaction with Pharmacy Services in the United Arab Emirates (UAE)

June 20, 2010

Dear Participant,

This information sheet is for you to keep.

My name is Sanah Hasan from the College of Pharmacy of Sharjah University (UAE). I am working on a doctoral research project at Monash University under the supervision of Dr. David CM Kong, Dr. Kay Stewart, and Dr. Colin Chapman (from Monash University in Australia) and Professor Mohamed Baniyas from the United Arab Emirates University, UAE. This means that I will be writing a thesis which is the equivalent of a 300 page book. I will also be seeking funding from Sharjah University College of Graduate Studies and Research to help with the carrying out and analysis of the findings of this survey.

For the purposes of my research, I am requesting patients and customers of community pharmacies and members of the community at large to participate in filling out the enclosed questionnaire. The primary aim of my research is to establish the views of people like you about pharmacy services that are currently offered and what they would like to see as other services their pharmacies could provide. The results of my research will help in recommending ways to improve pharmacy services for the benefits of all in the UAE.

You are kindly requested to complete the enclosed questionnaire as fully as possible, put it in the provided envelope and place it in the collection box with the research assistants. Completion of the questionnaire should not pose any discomfort or harm; the only inconvenience encountered would be the time to complete it, which should not be more than 10 to 15 minutes.

Taking part is totally voluntary and you are under no obligation to consent to participation. However, if you do consent to participate, you may only withdraw prior to the questionnaire

being submitted, as the anonymous nature of the survey means that we will not be able to identify your response.

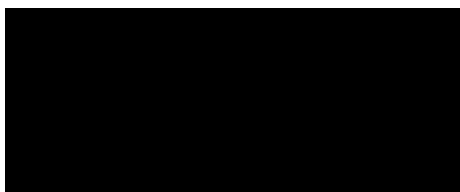
You are asked not to provide your name or any personal identifiable information as this anonymous questionnaire only seeks to establish general levels of satisfaction of patients with pharmacy services.

Storage of the data collected will adhere to both Monash University and University of Sharjah regulations and will solely be kept on University premises in a locked cupboard/filing cabinet for 5 years. A report of the study may be submitted for publication in journals and/or presented at conferences, but individual participants will not be identified in any way.

If you would like to be informed of the aggregate research findings, please contact me (Sanah Hasan) at 050-3608206 or e-mail me at shasan@sharjah.ac.ae.

If you would like to contact the researchers about any aspect of this study, please contact the Chief Investigator:	If you have a complaint concerning the manner in which this research is being conducted, please contact:
Sanah Hasan, PharmD Sharjah University-College of Pharmacy Department of Pharmacy Practice [Redacted]	Taleb Al-Tal, PhD Sharjah University-College of Pharmacy Head, Department of Pharmacy Practice [Redacted]

Thank you for your cooperation.



Sanah Hasan

Appendix 12

Participant Explanatory Statement and Invitation to participate in patient satisfaction study-Arabic



التاريخ 2010/6/20

رسالة توضيحية و دعوة للمشاركة
رضا المرضى عن الخدمات التي تقدمها الصيدليات في الإمارات العربية المتحدة

عزيزي المشارك:-

هذه رسالة توضيحية و يمكن لك للإحتفاظ بها.

اسمي سناء حسن من جامعة الشارقة و أشارك في مشروع بحث لنيل شهادة الدكتوراة مع بعض الأشخاص من جامعة موناخ الأسترالية و هم: د. دافيد كونغ و د. كولن شابمان و د. كاي ستيوارت و كذلك مع د. محمد يوسف من جامعة الإمارات العربية المتحدة. نتيجة هذا المشروع ستكون أطروحة من 300 صفحة، و ولهذا الغرض سأحاول الحصول على منحة من جامعة الشارقة لتغطية تكاليف القيام بهذا العمل و تحليل نتائجه.

في هذا البحث، سأوزع استبياناً إلى بعض المرضى و عامة الناس راجية تعبئته بأدق صورة. والهدف من هذا الإستبيان هو معرفة مدى رضى المرضى و زوار الصيدليات بالخدمات التي تقدمها لهم هذه الصيدليات، و كذلك معرفة الأمور التي يرغب هؤلاء الناس في أن تتوفر لهم فيها في المستقبل. هذا بدوره سيساعدني في التعرف على تلك الأمور و من ثم تقديم مقترحات من شأنها تحسين الخدمات الصيدلية.

إذا قررت المشاركة، فأرجو أن تضع الإستبيان في الظرف المزود لك، ثم و ضعه في الصندوق المتوفر مع المساعدين في جمع الإستبيانات.

و المشاركة في إكمال هذا الإستبيان لا تتضمن أي ضرر أو مضايقة: اللهم 10-15 دقيقة التي تحتاجها لملئ الإستبيان. أرجو أن تعلم أن المشاركة في تعبئة هذا الإستبيان إختيارية و أنك غير مجبر على المشاركة، و أنك تستطيع أن تتوقف عن المشاركة في أي وقت طالما أن ذلك يكون قبل وضع الإستبيان في الصندوق. إن طبيعة هذا الإستبيان لا تتطلب منك الإفصاح عن إسمك أو أية معلومات شخصية عنك و التي قد تؤدي للتعرف على هويتك.

إن الحفاظ على المعلومات التي سيتم الحصول عليها سيتمشى مع لوائح و نظم حفظ المعلومات المعمول بها في كل من جامعتي الشارقة و موناخ، و ستكون محفوظة في خزانة مغلقة لمدة خمس سنوات.

سيتم تقديم تقرير بنتائج هذا البحث في المجالات و المؤتمرات العلمية و لكن لن تكون هناك طريقة لمعرفة هوية صاحب المعلومات المقدمة من كل شخص ساهم في إكمال الإستبيان.

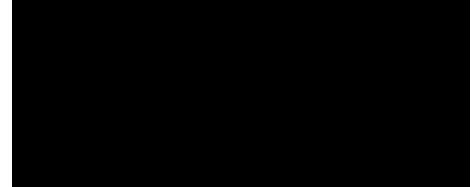
إذا كنت ترغب في معرفة نتائج هذا البحث فأرجو الإتصال بالدكتورة سناء حسن

عن طريق الجوّال: [REDACTED]

أو [REDACTED]

إذا أردت أن توجه شكوى عن الطريقة التي تم بها هذا البحث فيمكنك الإتصال ب:	إذا كنت تود الإتصال بالقائمين على هذا البحث فأرجو الإتصال ب:
د. طالب الطل جامعة الشارقة – كلية الصيدلة رئيس قسم الممارسات الصيدلانية [REDACTED] [REDACTED] E.mail [REDACTED]	د. سناء حسن جامعة الشارقة – كلية الصيدلة قسم الممارسات الصيدلانية ت: [REDACTED] [REDACTED] Email: [REDACTED]

وشكراً لك



د. سناء حسن

Appendix 13

**Approval from Sharjah University Research and Ethics Committee to conduct interviews
and focus groups with physicians**

University of Sharjah

College of Health Sciences
Medical Laboratory Technology Department



جامعة الشارقة

كلية العلوم الصحية
قسم تقنية المختبرات الطبية

5 June 2011

To: Dr. Sanah Hasan
College of Pharmacy

Dear Dr. Sanah,

Greetings!

I would like to let you know that your research project titled
“Physicians’ perspectives of the pharmacist’s role in the UAE”,
which was submitted to the Ethics and Research Committee (ERC)
for ethical review has been **approved**.

On behalf of the committee I would like to wish the best of luck in your
research project.

Best regards,

Ra’ed Abu Odeh, PhD
ERC Chair

Appendix 14

**Approval from Monash University MUHREC to conduct interviews and focus groups with
physicians**



Human Ethics Certificate of Approval

Date: 3 November 2011

Project Number: CF11/2927 – 2011001672

Project Title: Physicians' perspectives and their expectations of the community pharmacists in the UAE

Chief Investigator: Dr David Kong

Approved: From: 3 November 2011 To: 3 November 2016

Terms of approval

1. The Chief investigator is responsible for ensuring that permission letters are obtained, if relevant, and a copy forwarded to MUHREC before any data collection can occur at the specified organisation. **Failure to provide permission letters to MUHREC before data collection commences is in breach of the National Statement on Ethical Conduct in Human Research and the Australian Code for the Responsible Conduct of Research.**
2. Approval is only valid whilst you hold a position at Monash University.
3. It is the responsibility of the Chief Investigator to ensure that all investigators are aware of the terms of approval and to ensure the project is conducted as approved by MUHREC.
4. You should notify MUHREC immediately of any serious or unexpected adverse effects on participants or unforeseen events affecting the ethical acceptability of the project.
5. The Explanatory Statement must be on Monash University letterhead and the Monash University complaints clause must contain your project number.
6. **Amendments to the approved project (including changes in personnel):** Requires the submission of a Request for Amendment form to MUHREC and must not begin without written approval from MUHREC. Substantial variations may require a new application.
7. **Future correspondence:** Please quote the project number and project title above in any further correspondence.
8. **Annual reports:** Continued approval of this project is dependent on the submission of an Annual Report. This is determined by the date of your letter of approval.
9. **Final report:** A Final Report should be provided at the conclusion of the project. MUHREC should be notified if the project is discontinued before the expected date of completion.
10. **Monitoring:** Projects may be subject to an audit or any other form of monitoring by MUHREC at any time.
11. **Retention and storage of data:** The Chief Investigator is responsible for the storage and retention of original data pertaining to a project for a minimum period of five years.



Professor Ben Canny
Chair, MUHREC

cc: Assoc Prof Kay Stewart, Prof Colin Chapman, Prof Mohamed Yousif Baniyas, Mrs Sanah Hasan

From: MRO Human Ethics Team [REDACTED]

Sent: Tuesday, February 14, 2012 2:10 PM

To: David Kong; Kay Stewart; Colin Chapman; [REDACTED]

Subject: MUHREC Amendment CF11/2927 - 2011001672: Physicians' perspectives and their expectations of the community pharmacists in the UAE

PLEASE NOTE: To ensure speedy turnaround time, this correspondence is being sent by email only. MUHREC will endeavour to copy all investigators on correspondence relating to this project, but it is the responsibility of the first-named investigator to ensure that their co-investigators are aware of the content of the correspondence.

Dear Researchers

Thank you for submitting a Request for Amendment to the above named project.

This is to advise that the following amendment has been approved and the project can proceed according to your approval given on 3 November 2011:

Change to procedures: for the researchers to sign the consent form on behalf of some of the participants who are happy for the researcher to complete the consent form and participate in the project.

Thank you for keeping the Committee informed.

Professor Ben Canny
Chair, MUHREC

Human Ethics
Monash Research Office

Our aim is exceptional service

Monash University
Clayton Campus
Building 3E, Room 111, Clayton 3800



<http://www.monash.edu.au/researchoffice/human/>

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Appendix 15

Local authorities' permissions to conduct interviews and focus groups with physicians

The next page contains a generic letter sent to different medical services clinics such as Ministry of Health primary care clinics, private care clinics and outpatient government and private hospital clinics to request administrative management permission for physicians employed in these institutions to participate in individual interviews or focus groups. Approvals of participation were obtained through telephone, e.mail, or letters from the different institutions.

The following clinics were included:

Al-Amal outpatient clinics

Al-Baraha outpatient clinics

Al-Corniche outpatient clinics

Al-Qarya primary care clinic

Al-Qassimi outpatient clinic

Al-Fujairah outpatient clinics

Al-Ittihad primary care

Al-Rashidyya primary care

American University of Sharjah campus clinic

Corniche Plaza II private clinics

Dr Makram Dermatology clinic

Hor-Al-Anz primary care

Motor City private clinic

Royal private outpatient clinics

Tawam private outpatient clinic



Date 30/9/2011

التاريخ 2011\9\30

Director of Medical Services:

حضرة السيد مدير ادارة الخدمات الطبية المحترم:

We would like to request your permission to allow us to interview some doctors who are working in the community clinics at your institution either on an individual or group basis as part of a research project conducted in the UAE. The purpose of this project is to find out what physicians think of the role of the pharmacist in caring for patients and in their opinion of other services pharmacists could be providing. The findings will help to recognize ways to improve pharmacy services in the community.

Thank you for cooperating with us in this project.

Sanah Enayah



Principal Investigator

Sharjah University

College of Pharmacy

For any questions please call Dr. Sanah



حرصا على استمرار التعاون بين الجامعات والمؤسسات الصحية المختلفة العاملة في دولة الإمارات العربية المتحدة ومتاملين توطيد ذلك التعاون، فإننا نطلب من سعادتكم السماح لنا بأجراء مقابلات مع بعض الأطباء العاملين في قطاع الرعاية الأولية كجزء من بحث علمي يهدف الى التعرف على رأي هؤلاء الأطباء بالدور الذي يقوم به الصيدلاني من حيث خدمته للمرضى وما اذا كانت هناك أمور "أخرى يتوقع هؤلاء الأطباء من الصيدلاني أن يقوموا بها.

ان الهدف المرجو من هذه الدراسة هو التعرف على الأمور الممكن تحسينها للخدمات الصيدلانية في الدولة.

شاكرين لكم حسن التعاون والجهود الطبية ومع فائق الاحترام والتقدير.

د. سناء عنايه



مشرفة البحث

جامعة الشارقة

كلية الصيدلة

Appendix 16

Interview guide topic headings

Interview Guide Topic Headings

Interviewer: Welcome to this interview session. Thank you for participating in this study. As you know the purpose of this study is to explore your perceptions and thoughts on:

- a) Current pharmacists' roles in providing primary care services community pharmacies.
- b) What your perspectives are on collaborative working relationships with pharmacists.
- c) What barriers exist against involvement of pharmacists in extended roles and how do you think we could overcome these barriers.

Interviewer: Before we start, I will ask you some information about yourself and the practice setting you work at. I plan to audio tape this session and if you do not want to be recorded, can you please let me know. Furthermore, you can skip or choose not to answer any questions raised during the interview.

- (i) Interviewer: Can you tell me how many years of experience have you been practicing as a doctor?
- (ii) Interviewer: Do you specialise in any areas of practice (e.g. endocrinology, internal medicine, respiratory, cardiovascular)? If yes, what is your area of specialty?
- (iii) Interviewer: Can you please tell me where you practice? And if the clinic you practice in is located in a metropolitan, rural or remote area?
- (iv) Interviewer: On average, how many prescriptions per day do you normally write?
- (v) Interviewer: On average, how many contacts do you have with community pharmacists per day? What are the contacts usually for?
- (vi) Interviewer: What are your expectations of community pharmacists?
- (vii) Interviewer: What is your experience with community pharmacists providing the following services, and if they are not providing the services, what are your views on pharmacists providing them:

Current and future Services:

- Supply of printed information
- Counseling of patients about the appropriate use of medications, risks and benefits;

- Patient education about their disease state;
- Offering screening services for blood pressure, lipids, glucose, etc;
- Offering monitoring services for blood pressure, lipids, glucose, etc;
- Primary care and referral roles for pharmacists: health advice and preventative care;
- Reporting of drug-related problems(ADR's & Interactions) to physicians;
- Monitoring of patient adherence, helping patients with compliance aids;
- Helping patients with OTC medication selection, self-ailments;
- Records of patient care, keeping a patient profile;
- Recommending (advice on) cost effective treatments to physicians;
- Supply of drug information to physicians;

(viii) Interviewer: Collaborative working relationships are defined as a multidisciplinary process for selecting appropriate drug therapies, educating patients, monitoring patients, and continually assessing outcomes of therapy, their scope includes the initiation, modification, or discontinuation of a drug therapy; patient counseling and education; and the identification, resolution, and prevention of potential and actual drug-related problems. Have you been involved in any collaborative working relationships with community pharmacists in the past?

If yes, can you elaborate on your experience:

What roles did the community pharmacist have?

What challenges did you have when a community pharmacist was incorporated in your practice?

What barriers stood against full use of a community pharmacist in providing patient care at your practice?

If no, what are your views on collaborating with community pharmacists in working relationships?

What challenges could this pose?

In your opinion, what barriers stand against full use of a community pharmacist in providing patient care at your practice?

Appendix 17

Explanatory Statement and Invitation to participate in interviews and focus groups



Explanatory Statement and Invitation to Participate in the Project:

Physicians' perspectives and their expectations of the community pharmacists in the UAE

October 9, 2011

Dear Participant,

This information sheet is for you to keep.

You are invited to take part in this research project focusing on the physicians' perspective and expectations of the community pharmacists in the UAE. The Director of the clinic where you are currently working has given us permission to invite you to participate in this study and provided your contact details to us. The investigators of this project are Dr. David CM Kong, Dr. Kay Stewart, Dr. Colin Chapman – all from Monash University, Prof Mohamed Baniyas from United Arab University and Dr. Sanah Hasan from Sharjah University College of Pharmacy and Monash University.

Currently, not much is known about physicians' perspective of the community pharmacists' roles in the Middle East. Indeed, in the UAE, physicians' expectations of the pharmacists' roles have not been studied. Identifying physicians' views on pharmacists' roles will help to identify areas of pharmacy services that can be improved. This information is useful in long term planning for improving the services provided by community pharmacies to the UAE population. Therefore, the purpose of this research is to determine physicians' expectations of community pharmacists' roles and to explore what they expect pharmacists to do in the future including views on collaborative working relationships. All or part of this project will contribute to Ms Sanah Hasan's PhD thesis at Monash University.

If you decide to participate in this study, we would want to interview you either on a one-to-one basis or in a small group discussion (ie. focus group). We will be asking you a number of questions related to your perceptions on the community pharmacists' roles, future community pharmacy services that you would like to see and what barriers exist against good working relationships between physicians and pharmacists. The individual interview should last for one hour or less while the focus group should last for about 1-2 hours. The investigator (Ms Hasan) will discuss with you with respect to whether you want to be in the one-to-one interview or focus

group. Once this is decided, we will then schedule a date, time and place that is suitable for you for the interview to take place.

Taking part in this project is totally voluntary and you are under no obligation to consent to participate. We plan to audio-tape the interview or focus group. During the interview or focus group, you may decide not to answer any question if you choose to do so, and you are free to stop participating if you feel uncomfortable with the way the interview is conducted. There is minimal or negligible risk associated with this project except inconvenience to you as the interview or group discussion may last between 1-2 hours.

A report of the study will be submitted for publication in journals and/or presented at conferences. Confidentiality of your response is assured as the investigators will not reveal your identity in any publications or report originating from the interviews. The identity of ALL participants will be kept anonymous. As part of this research we will also ask you to provide information such as your age, your specialty, years of practice, the location of the clinic where you work at and if you had any experience collaborating with pharmacists in the past.

The data collected will be stored according to both Monash University and University of Sharjah's regulations and will be kept on University premises in a locked cupboard/filing cabinet for 5 years.

If you would like to be informed of the aggregate research findings, please contact Ms. Sanah Hasan at [REDACTED]

If you would like to contact the researchers about any aspect of this study, please contact:	If you have a complaint concerning the manner in which this research is being conducted, please contact:
Sanah Hasan, PharmD Sharjah University-College of Pharmacy Department of Pharmacy Practice [REDACTED]	Taleb Al-Tal, PhD Sharjah University-College of Pharmacy Head, Department of Pharmacy Practice [REDACTED]

Thank you for your cooperation.

[REDACTED]

Sanah Hasan

Appendix 18

Participant consent form to participate in interviews and focus groups



October 9, 2011

Participant Consent Form

Title: **Physicians' perspectives and their expectations of the community pharmacists in the UAE**

Note: **This consent form will remain with the Monash University researcher for their records.**

I agree to take part in the Monash and Sharjah Universities research project specified above. I have had the project explained to me, and I have read the Explanatory Statement, which I keep for my records. I understand that agreeing to take part means that:

I agree to be interviewed by the researcher	<input type="checkbox"/> Yes	<input type="checkbox"/> No
I agree to allow the interview to be audio-taped	<input type="checkbox"/> Yes	<input type="checkbox"/> No
I agree to allow the information which I provide to be used as indicated in the Explanatory Statement.	<input type="checkbox"/> Yes	<input type="checkbox"/> No

I understand that my participation is voluntary, that I can choose not to participate in part or all of the project, and that I can withdraw at any stage of the project without being penalised or disadvantaged in any way.

I understand that any data that the researcher extracts from the interview for use in reports or published findings will not, under any circumstances, contain names or identifying characteristics.

I understand that I will be given a transcript of data provided by me for my approval before it is included in the analysis and write up of the research.

I understand that any information I provide is confidential, and that no information that could lead to the identification of any individual will be disclosed in any reports on the project, or to any other party.

I understand that data from the interview and focus groups will be kept in a secure storage and only accessible to the research team. I also understand that the data will be destroyed after a 5 year period unless I consent to it being used in future research.

Participant's name

Telephone

Signature

E.mail:

Date