Journal of the Academic Society for Quality of Life (JAS4QoL)

2017 Vol. 3(3) 1:1-18

Role of Community Pharmacists in Medication Management: Current and Future Prospects in Asia

Mohamed Azmi Ahmad HASSALI

Professor of Social and Administrative Pharmacy, School of Pharmaceutical Sciences, Universiti Sains Malaysia, 11800 Penang, Malaysia azmihassali@gmail.com

Citation: HASSALI, M. A. A. Role of Community Pharmacists in Medication Management: Current and Future Prospects in Asia *JAS4QoL* **2017,** *3(3) 1*:1-18.
Online: http://as4qol.org/?p=2019#art1

Received Date: 2017/09/25 Accepted Date: 2017/09/26 Published: 2017/09/30

JAS4QoL

Mini-Review

Role of Community Pharmacists in Medication Management: Current and Future Prospects in Asia

Mohamed Azmi Ahmad HASSALI

Professor of Social and Administrative Pharmacy, School of Pharmaceutical Sciences, Universiti Sains Malaysia, 11800 Penang, Malaysia
(azmihassali@gmail.com)

Abstract

The role of pharmacist had changed during the last three decades from that of a mere specialist involved directly in patient care services. This represents a paradigm shift, where it has brought new sets of beliefs and assumptions on way services should be delivered to pharmacy clients. The pharmaceutical world is evolving continuously and has become more dynamic, so is the role of the community pharmacist. Pharmaceutical care has evolved to embrace different counseling services delivered by pharmacists. These services range from brief counseling following medication purchase to lengthy extensive counseling services and other value added services. Several countries are offering various extended or improved services as a result of the changing roles and challenges faced by the pharmacists. The extended pharmacy-services offered through community pharmacies by pharmacists require additional or special skills, knowledge and/or facilities, and are provided to people with special needs. The traditional community pharmacy practices are prevalent and common in all the Asian countries with few exceptions. The dominance of physician culture has kept pharmacists off dispensing rights, where most of the physicians prescribe and dispense the medicines. This issue of dispensing separation (DS) is of prime importance in the region not only for the pharmacists' rights but also for the promotion of rational and quality use of medicines. Other key barriers in the region identified are the drug and pricing policies, shortage of pharmacy workforce, up-gradation of pharmacy curricula and skill development of the pharmacists. It is concluded that in order to have proactive role of pharmacists in community pharmacy and primary healthcare, there is need to address shortage of pharmacists, their skill developmentand dispensing separation implementation. Sound policy making should be encouraged to protect the rights and roles of pharmacist and develop professionally committed workforce. Moreover, the policy making should be evidence-based rather close door negotiations and must involve the pharmacy stakeholders.

Keywords: Community pharmacist, roles, challenges,opportunity,Asia

Citation: HASSALI, M. A. A. Role of Community Pharmacists in Medication Management: Current and Future Prospects in Asia. *JAS4QoL* **2017**, *3(3) 1*:1-18.

Available online at
http://as4qol.org/?p=2019#art1

Received: 2017/09/25
Accepted: 2017/09/26
Published: 2017/09/30

1. Introduction

Community pharmacists are the most accessible health professionals to the public and in many parts of the world, pharmacists are increasingly being recognized as a source of professional health-related advice (Hassali et al., 2009a). Pharmacists supply medicines in accordance with a prescription when legally permitted, sell them without a prescription and they maintain links with other health professionals in primary health care (World Health Organization, 1994). Recently, pharmacists have become increasingly involved in patient care and have expanded their traditional role of preparing and dispensing medications to influencing the prescribing process and delivery of pharmaceutical care. As a result of this there has been a shift within community pharmacy practice; increasingly, patients are turning to pharmacists for a more holistic approach (Hepler and Strand, 1990, Schumock et al., 2003). In institutional setting such as hospitals, medical practitioners are more familiar with the roles of pharmacists as a part of healthcare team. However, in the private sector, the association between the general medical practitioners and pharmacists is less formalized especially in developing countries. (Hassali et al., 2009c).

The concept of pharmaceutical care basically refers to what an individual pharmacist does when he or she evaluates a patient's drug-related needs, determines whether the patient has one or more actual or potential drug-related problems, and then works with the patient and other professionals to design, implement, and monitor treatment plan that will resolve the drug related problem (Mohamed, 2013). Many studies have been done worldwide to illustrate pharmacy practice, the role of the pharmacist in the health care system and the pharmacy education (Chisholm-Burns et al., 2010, Fuentes, 2012, Kibicho and Owczarzak, 2012).

The health policy of any country revolves around availability, quality, safety and efficacy of medicines, timely access to affordable medicines, quality use of medicines (QUM), and responsible and viable medicines industry (Liaw and Peterson, 2009). The promotion of QUM requires a multidisciplinary approach including contributions from government, the pharmaceutical industry, health professionals, consumers, and academia. However, there are significant tensions and unintended effects associated with the multidisciplinary approach, especially with the relationship between prescribers and dispensers of medicines (Alabid et al., 2013).

The healthcare environment is facing a number challenges because of the increasing prevalence of chronic diseases, ageing societies, feminization of the health workforce, increased specialization, escalating costs of healthcare, and rising patient expectations (Kumar, 2011). The fragmentation of care (Stange, 2009) along with poor communication and inconsistencies in health practice within a complex environment and knowledge base also makes it difficult for the patients to understand and manage their illness and care (Dreischulte et al., 2012).

The shortage of global pharmacy workers is an emerging challenge for the pharmacy profession. The WHO estimates that there is a global healthcare workforce shortage of 7.2 million, which is estimated to grow to 12.9 million by the year 2035 (Bates et al., 2016). The countries and regions with lower economic indicators tend to have fewer pharmacists and pharmacy technicians implicating for inequalities regarding access to medicines and medicinal expertise (Gal and Bates, 2012).

The partnership between the patient and clinician is considered as an important part of successful care not only for common illnesses but also for chronic illness (Légaré et al., 2010). This involves actively involving the patients with chronic illnesses in full control of the management of their own illness (Braveman and Egerter, 2008).

Hence community pharmacists are the most accessible and sometimes the sole providers of health care advice or services (Hassali et al., 2009d). Nevertheless, little has been done regarding the implementation of clinical pharmacy practice and the role of pharmacists in medicine management in community pharmacies. This involves several dimensions such as restructuring of the pharmacy to include private areas for counseling, appointment of pharmacy technicians and remuneration of pharmacists. These necessary shifts of focus and authority in the delivery of medical care towards the pharmacists are difficult to implement under the current physician-dominated state of the health care profession. Some postgraduate research projects provided evidence that patient care at community setting can make a difference. This can be achieved by empowering the community pharmacists with full professional autonomy.

2. Expanded roles for pharmacists

The expanded roles of pharmacists have evolved over a period of time, particularly with regard toprimary care (Olaniyan et al., 2015). These include prevention and aspects of chronic disease management with medication reviews in individual patient's homes or residential aged care facilities and the development of formularies and reviewing repeat prescriptions. This model gives rise to new models of interprofessional care in the hospital and community (Azmi et al., 2012).

Over a period of time extended pharmacy services (EPS) rendered community pharmacists have developed. These include those services which are not associated with traditional services offered by the pharmacists such as dispensing and providing individual consultations on prescription and over-the-counter (OTC) medications, but include new series of services as, medications therapy management (MTM), home medication review (HMR) which involves comprehensive medication reviews to look for medication-related problems. Additionally, EPS also includes all aspects of chronic disease management (CDM) which may include screening, patient education and knowledge, disease monitoring and communication with the primary healthcare team (Berbatis et al., 2007, Cruthirds et al., 2013).

The extended role of pharmacists can improve prescribing practices, reduce healthcare utilization and medication costs and contribute to clinical improvements in many chronic conditions such as cardiovascular diseases, diabetes, osteoporosis and psychiatric illness (Liaw and Peterson, 2009). Keeping the extended roles of community pharmacists in view, the scenario of community pharmacy practice has been discussed in the proceeding sections of this draft.

3. Global perspective of community pharmacy practice

The role of pharmacist has evolved over a period of time from that of a compounder and supplier of pharmaceutical products towards that of a provider of services and information and ultimately that of a provider of patient care (Schommer et al., 2008). The pharmacist's task is to ensure the quality use of drugs that the patient receives appropriate drug therapy for the indication drug is prescribed for, effective, safe, convenient and even ensures the availability of the product (World Health Organisation, 1984). Pharmacists in fact take direct responsibility for patients' medicine-related needs and contribute toward the positive outcome of the drug therapy. In this way pharmacists contribute to enhancing the quality of life of patients by assuring quality use of medicines. The pharmaceutical care rendered by pharmacists becomes an obligation for them. In order to fulfill this obligation pharmacists need to be able to perform many different functions (Penm et al., 2015). Many studies had showed the positive impact of patient-centered roles of community pharmacists in term of health outcome, quality of life, cost-effectiveness of the patient-orientated services, as well as improve patients' medicines use (Bunting and Cranor, 2006, Chumney and Robinson, 2006, Hawksworth et al., 1999, Verma et al., 2012).

4. Community pharmacy practices in developing countries in Asia

Prescribing and dispensing drugs are important aspects of access to primary health care. In most developed countries, the main role of family physicians is to prescribe drugs without direct dispensing. Doctors are not allowed to sell drugs directly to their patients in several Organizations for Economic Co-operation and Development (OECD) countries such as Italy, Germany and Scandinavian countries. (Filippini et al., 2014). While most OECD countries fully ban physician dispensing, there are some notable exceptions: the USA, the UK, Japan, and Switzerland (partly) allow medical doctors to dispense drugs.

The current trends in community pharmacy practices in the developing countries are discussed herein in detail. The community pharmacy practices are discussed according to the regions which the developing countries are part of. The community pharmacy practices, expanded roles of community pharmacists, pharmacy services and the barriers toward practice change are discussed in the following sections according to the region, i.e. the United Arab Emirates, Middle East, South East Asia and South Asia.

5. Community pharmacy practices in the UAE

There are approximately 2500 pharmacies in UAE and the number of pharmacies is increasing (Hasan et al., 2012). The worldwide shift from product-to patient-focused approach is increasing the ac-

cumulated pressure on UAE pharmacists to provide a better level of service accompanied with higher degree of inter-personal skills and intellectual ability (Rayes et al., 2015b).

In the UAE, Federal Law permits that only UAE citizens can own a pharmacy and the majority of community pharmacies are private and owned by non-pharmacist businesspersons; however, the pharmacy is required to be under the supervision of qualified registered pharmacist only (Rayes et al., 2015b). Overall professional services are seldom provided to customers, pharmacist's job is to perform managerial tasks (Dameh, 2009b). Occasionally pharmacists advise patients about the side effects of medicines and give instruction on the use of the medicines. Patient medication reviews are rarely carried out in community pharmacies (Dameh, 2009a). Prescription-only-medicines (PoM) can be obtained without a legal prescription (Akshar et al., 2014, Rayes et al., 2015a).

Some of the community pharmacies in Dubai, however, provide services, but limited only to information about nutritional supplements, diet plans, skin care, herbal remedies, and body weight reduction (Rayes et al., 2015a). Nevertheless, the newer generation of qualified licensed pharmacists are ready to accept change and offer extended services (Rayes et al., 2015a, Rasool et al., 2010). The pharmacist should keep themselves abreast of advances in community pharmacy practices (Al-Tabakha et al., 2013). In Kuwait, pharmacists are found to be well prepared in terms of providing counseling services (Awad and Abahussain, 2010). Babiker et al., found community pharmacists in Qatar sufficiently aware of the concept of medication use review (MUR) and its scope however; there are still some deficiencies that warrant further education of community pharmacists (Babiker et al., 2014). The patient's trust of pharmacists has been reported to be greater in Qatar, where patients are more familiar with the roles of pharmacists as people there tend to self-medicate themselves with OTC therapy (Wilbur et al., 2010).

The identifiable barriers toward community pharmacy practice change in UAE are; non-pharmacist business-oriented owners of pharmacies, and inadequate salaries and lack of incentives to pharmacists (Rayes et al., 2014b). Other barriers include; time constraints, shortage of pharmacists, and absence of training programs for pharmacists (Awad and Waheedi, 2012). Lack of awareness in public about the pharmacists' services is another significant barrier (Rayes et al., 2014b). Determinants like media, health authorities, pharmacist's knowledge level, attire, nationality, age and pharmacy location can be helpful in influencing the perception of public toward pharmacist (Rayes et al., 2014a).

6. Middle Eastern countries

In Middle Eastern countries like, Saudi Arabia, Palestine, Iraq and Jordan, traditional dispensing practices are prevalent and there is unrestricted public access to medications from community pharmacies and under-appreciation of professional services of pharmacists (Bawazir, 2006, Maher et al., 2014, Aburuz et al., 2012, Ibrahim et al., 2013). Identifiable barriers include; lack of technical and appropriate knowledge on medication errors and adverse drug reactions and reporting, multilingualism, high work load and insufficient salaries (Aljadhey et al., 2014). Community pharmacists should play a pro-active role in becoming an effective and indispensable part of health care and have to be well equipped with appropriate knowledge and competencies (Al-Arifi, 2012).

7. Community pharmacy practices South East Asia

Malaysia: the professional role of community pharmacies in Malaysia to deliver pharmaceutical care is limited due to absence of dispensing rights to the pharmacists working in community pharmacies (Shafie et al., 2012b). In fact, to date there is no dispensing separation in Malaysian community pharmacy system and this is presented be as one of the major barriers in the transformation of services from a product-based selling of drugs to a patient-oriented approach (Hassali et al., 2009a). The Malaysian Poison Act 1952 (Section 7) and Poison Regulation 1952 (Regulation 3), gives rights to general practitioners to dispense medications directly to the patients. This has resulted in the role of pharmacists evolving in community pharmacies into to one of information provider on health supplements and foods, homecare, personal hygiene and beauty products as well as the complementary alternative medicines (Hassali et al., 2009b).

The community pharmacies in Malaysia function more like personal drug stores, as they are seldom involved in provision of primary care (Saleem and Hassali, 2016). Therefore, community pharmacies

have limited opportunity to optimize their clinical knowledge. Recent work by Hassaliet. al. has identified the current barriers toward transformation of community pharmacy practice in Malaysia. Dispensing separation is believed to be a critical policy change that will help to reduce medical costs, improve population health and increase the quality of health in Malaysia (Shafie et al., 2012a). There is an urgent need for the development and implementation of new policies to facilitate the practice change. It is suggested to improve the community pharmacy practice in general and facilitate the implementation of extended pharmacy services with major emphasis on the dispensing separation (Hassali et al., 2009e). (Hassali et al., 2009a)

China: In China, in addition to the traditional roles of dispensing prescriptions and selling medicines, community pharmacists must adopt responsibility in primary care by delivering pharmaceutical care services (Fang et al., 2013). A large majority of pharmacies in China provide prescription drugs and over-the-counter products (OTC), as well as prescription dispensing and patient counseling. However, the lack of reimbursement mechanism reduces the willingness of pharmacists to offer EPS. Dispensing separation is considered as dilemma for practice change in China (Xiao-yun, 2011). The shortage of qualified pharmacists has been reported in China and other identifiable barriers include the failure to meet increasing patient needs lack of training of pharmacists has led to low priority for delivery of expanded role of pharmacists in routine pharmacy practice (Fang et al., 2011).

Thailand: Community pharmacies in Thailand provide first line care for the patients with minor ailments and common illnesses. The authorities in Thailand are working with the intent of upgrading community pharmacies to providing the first line of healthcare services where the responsible area and target population will be well defined (Payanantana et al., 1998). In 2005, Thai Food and Drug Administration (TFDA) established Quality Drug Store project for improvement and development of community pharmacy as a service with good standards (Lochid-amnuay et al., 2009). The Thai Pharmacy Council accredits community pharmacy as Quality Drug Store that must comply with those criteria meeting the Good Pharmacy Practices (GPP) guidelines. This compliance with the criteria and standards has led to better performance by the community pharmacists in Thailand (Arkaravichien et al., 2016). Thai Pharmacy Council enforces the concept of quality services rendered by the community pharmacists (Lochid-amnuay et al., 2009). A model concept of Perceived Community Pharmacy Service Quality (PCPSQ) is being practiced in Thailand, intended for measuring services quality and focuses on the patients' perception and satisfaction (Panyawuthikrai et al., 2006).

Taiwan: In Taiwan the pharmacists working in community pharmacies have been reported to have greater job satisfaction than the contemporary hospital and clinical pharmacists (Yen-Ju Lin et al., 2007). In 2002, the Bureau of Pharmaceutical Affairs, Department of Health Taiwan, began a national effort entitled as Community Education Program on Medication Use, which involved the expertise of pharmacists in educating public on safe use of medicines (Wen et al., 2007). This program facilitated by pharmacists improved the medication knowledge of the public and it was later re-iterated that community pharmacists should play a proactive role on large-scale (Huang et al., 2006). In Taiwan, public has some level of trust for pharmacists, aware of the services that pharmacists render (Chen et al., 2012).

Hong Kong: The role of pharmacist in Hong Kong is not different from rest of the developing world. Traditionally the role of pharmacist is not well understood by the public (You et al., 2011). Most see pharmacists as "pill counters" and nothing more. This situation has taken a positive turn in the past decade when in 2002, a group of pharmacists started promoting an improved image of the profession to public via media including (print and electronic)(Wong et al., 2011). Nowadays the public is more aware of the roles, responsibilities, and capabilities of pharmacists and this has, in turn created an increase in the demand for community pharmacists in Hong Kong. There are also plans to implement services in community pharmacies such as medicine use review in the future (You et al., 2011).

Singapore: The majority of the community pharmacists in Singapore play the traditional role of dispensing (George et al., 2010). In Singapore, although the community pharmacist provides advice-giving services to consumers who seek self-medication for the management of minor ailments, consumers lack the awareness that pharmacists can help them with safe and effective use of medicines (Wong et al., 2011). More efforts in public education and current state of poor documentation of advisory function of CPs is warranted to improve the services (Chui and Li, 2005).

Korea: In Korea, until recently both physicians and pharmacists were allowed to prescribe and dispense drugs for patient care that resulted in the quality and efficiency of the healthcare system (Kim et al., 2004, Kwon, 2003). In July 2000, the Korean government launched a radical drug policy reform. The South Korean government expected to reduce the cost of medications and improve service levels, medical appropriateness of care and drug effectiveness (Kim and Ruger, 2008). However, despite the reforms, unintended consequences have distorted the supply of medical services and spending. This consequently resulted in increased use of uninsured services, and the prescribing of high-d drugs and a growing market share for multinational companies (Lee, 2003).

Japan: With recent advances in the separation of dispensing and prescribing drugs, the social role of community pharmacists has expanded in Japan (Hayashi, 2003). Pharmacists working in community sector provide the quality information required for the optimum management of patients and environment is suitable for pharmacy externships (Iguchi et al., 1998). In Japan, community pharmacies are not only contributing to the community by dispensing medicines, but also providing information on prescription and nonprescription drugs, and through other activities (Akaho et al., 2003). More specifically, the following activities are provided by community pharmacists: (1) labeling the drugs dispensed with a pharmacy label that mentions the patient's name, dosage, indication, and warnings; (2) documenting past medical and social histories of patients to avoid adverse drug events; and (3) dispensing a patient information leaflet with the drugs (Yamamura et al., 2006). Generic substitution services have been started in Japan, pharmacists can provide information about the branded and generic drugs (KAMEI et al., 2001). In general, the primary work of pharmacists is still dispensing medicines. Therefore, pharmacists are not required to provide screening, which ideally they should do (Inoue et al., 2016). It is hoped that work done by Japanese pharmacists would transition from primarily dispensing drugs to patient care, advice, and counseling to enrich overall health promotion (Inoue et al., 2015).

8. Other South East Asian countries

In other South East Asian countries such as Vietnam, Philippines, Cambodia, Indonesia, more than 80 percent of people go directly to community pharmacies when they become ill. However, the pharmacists are in short number and they face the same problems and barriers as discussed earlier for developing countries (Loquias and Robles, 2012).

9. Community pharmacy practices in South Asia

In South Asian countries like Iran, India, Pakistan, Afghanistan, Nepal, Bangladesh, Bhutan and Sri Lanka, pharmacists are involved only in traditional dispensing of medicines (Smith, 2009). Pharmacists are still underutilized and both the public and health care professionals do not consider their role as health care professionals (Azhar et al., 2013). This lack of recognition can be attributed to limited interaction of pharmacists with public, being least aware and healthcare professionals (Azhar et al., 2009).

There is no distinction between the pharmacist and technician working in community pharmacies, a common trend seen in South Asian countries (Bhagavathula et al., 2014). India being the biggest country in the region, community pharmacy practice is in developing stage and has many barriers which need to be overcome. Important barriers to the provision of patient / pharmaceutical care include lack of proper education, weak law enforcement and lack of recognition of the pharmacy as a profession by other healthcare professionals and the public (Basak et al., 2009). However, trust of the public for community pharmacists has also been reported in India to a little extent in advisory role of pharmacists for their drug related and lifestyle issues (Singh and Khale, 2015). A wide range of corrective actions can be helpful in promoting the level of customer satisfaction (Mehralian et al., 2014).

The situation is not different in other countries as Nepal, Afghanistan, Bangladesh, Bhutan and Sri Lanka where traditional practices prevail with more focus on drug selling rather patient-centered practices (Goel et al., 1996). Majority of community pharmacies do not comply with the regulatory provisions. Presence of authorized personnel in some pharmacies has only partially controlled non-compliance (Poudel et al., 2016). The current practice of Iranian community pharmacists needs improvement with regard to their roles in community practice: promoting rational drug use (Hanafi et al., 2015).

10. Major challenges in the region

Major challenges to community pharmacy practice and recognition of the role of community pharmacists have been identified as common in the region. These challenges are also considered to be barriers toward practice change and need to be overcome. The barriers toward community pharmacy practice change are given as follows:

1. Insufficient pharmacy workforce.
2. Lack of dispensing rights to pharmacists.
3. Poor enforcement of laws governing the drug control aspects of a country.
4. Lack of recognition of pharmacists as healthcare professional and underutilization of pharmacists by health professionals and the public.
5. Pharmacy curriculum.
6. Lack of presence of national essential medicine list in some countries or lack of compliance toward following the essential medicine list.
7. Non-uniform prices or the uncontrolled prices of drugs and pharmaceuticals.
8. Accessibility and affordability of quality medicines to the public.

11. The importance of having dispensing separation in Asian countries

Prescribing and dispensing of drugs are one of the main aspects of access to primary health care. In most developed countries, the main role of family physicians is to prescribe drugs without direct dispensing. Doctors are not allowed to sell drugs directly to their patients in several Organizations for Economic Co-operation and Development (OECD) countries such as Italy, Germany and Scandinavian countries. (Filippini et al., 2014). While most OECD countries fully ban physician dispensing, there are some notable exceptions: the USA, the UK, Japan, and Switzerland (partly) allow medical doctors to dispense drugs.

Historically there has been some tension between dispensing doctor practices and community pharmacies (Gilbert, 1998) regarding where each should be located and the quality of service that each provides. If physicians are allowed to sell drugs to patients, they may prescribe more drugs or, depending on drug pricing, substitute toward more expensive prescriptions to generate additional income. In other words, dispensing can create financial incentives for physicians to induce demand and thus raise healthcare expenditures (Kaiser and Schmid, 2016).

In many Asian countries, physicians both prescribe and dispense drugs, earning profits that vary with the types and amount of drugs dispensed. This is largely the case in China, Hong Kong, Japan, Malaysia, South Korea, Taiwan and Thailand. Combining prescribing and dispensing creates incentives for physicians to increase drug prescriptions and is hypothesized to be a major cause of high drug expenditure and widespread prescription of antibiotics in Asia. For example, drug expenditure as a share of total health expenditure is approximately 30% for Japan, South Korea and Taiwan, and as high as 52% for China, compared with an average of 10–14% among OECD countries where, in most cases, prescribing and dispensing are separate activities (Chou et al., 2003). In recent years, in an effort to control drug expenditure growth and improve appropriate drug prescription, separating the drug prescribing and dispensing functions of physicians has gained popularity in policy debate among Asian countries. Underdevelopment of pharmacy in Asia can be explained by remembering the history of the respective health care systems. In the West, the main expected outcome from visiting a physician has always been the diagnosis and explanation. While in Asian countries, due to the domination of herbal medicinal traditions, the expected outcome from visiting a physician is the preparation and dispensing of medication. This drug-related revenue has frequently been the only source of income for physicians, since charging the patient for diagnosis and advice was considered to be inappropriate (Salmasi et al., 2016).

12. The Malaysian experience

One of the few countries in the region, where physician dispensing practices are still allowed, has been pondering a separation of roles for many decades, but fierce vocal opposition from a few parties unfortunately has misled and confused the Malaysian public and has inhibited further progress toward separation (Shafie et al., 2012b). In Malaysia, both prescribing and dispensing rights still lie with private general practitioners (GPs) in private clinics. Concerns have arisen with this model, due to potential conflicts of interest, as GPs profit from the prescribing and sale of prescription medicines. This may well lead to unnecessary as well as over-prescribing. The idea of dispensing separation is not new and has been discussed for many years with strong objections from various organizations, including the medical associations. More recently, there has been increasing discussions on this topic and many arguments still remain around reduced convenience and increased costs to consumers and an insufficient pharmacist workforce (Mak and Hassali, 2015). Malaysia remains one of the few countries in the South East Asia region without such a health policy owing to the colonial era legislation, particularly the Poisons Act 1952 (and its subsequent amendment in 1989) which granted the rights of dispensing to both doctors and pharmacists (Tiong et al., 2016). A significant milestone was achieved with the signing of a Memorandum of Understanding in 1986 between the Malaysian Medical Association (MMA) and the Malaysian Pharmaceutical Society (MPS), which recognized the dispensing role of pharmacists. Despite this, doctors in private practice continue to dispense medications in the absence of legislation which prohibits them from doing so (Tiong et al., 2016). By separating the prescribing and dispensing of medicines, it is believed that the process will reduce the overuse and misuse of medicines, improve the quality of the consumption of prescription drugs, and enhance the patients' right to know about medications (Saleem and Hassali, 2016). One way to reduce resistance from prescribers is an upsurge of consultation fees. Furthermore, dispensing services fees can be offered for the pharmacists to assume their new role in the health care system. Nonetheless, Malaysian policymakers have to weigh the benefits of the separation policy against the need to increase consultation and dispensing fees to assist in policy implementation (Saleem and Hassali, 2016).

13. Dispensing separation: need of the hour

The separation between prescribing and dispensing medicines will indeed be an enormous task to achieve as it involves various stakeholders and it is not only confined to community pharmacists and GPs. Traditionally doctors have held on the practice of prescribing as well as dispensing and GPs in particular have served as one-stop center for patients' needs. It seemed to have worked well for many years; however, there are certain merits and demerits to the separation of roles. Specifically:

1. **Convenience**: It is very convenient to go to one center where one not only receives treatment but also obtain medications. A separation of the services will entail going to two places, first to see the doctor and then to collect medications from the pharmacist. While it might appear that going to two place will inconvenience the patient, in fact this might not necessarily be so. Let us consider the example of a general hospital. One can receive the treatment in one room and still cross over to another block to collect the medications. By the same token, a pharmacy located close to a clinic will serve just as well.

2. **Cost:** Another common misconception is the fear that medication would be more expensive if obtained from pharmacist compared to GPs. This fear is however unfounded as the risk of excessive pricing is actually higher with the present policy whereby the GPs play both prescribing and dispensing role. This means that the GPs would play the role of buyer and seller at the same time at the expense of the patient. There is evidence that this would influence GPs into expanding patient need (supplier induced demand) by prescribing unnecessary intervention that would consequently increase cost to the patients. In addition it is well known that clinics cannot have an exhaustive list of medications. There are instances where prescriptions have to be written by doctors for patients to purchase from pharmacists which would have a competitively priced medications available.

3. **Generic medicines:** The use of generic medicines will mean tremendous savings for patients as well as the country and this can be achieved without compromising quality. The generic substitution policy is best carried out by the community pharmacists as medicines are the cornerstone

of any medical treatment and pharmacists are trained to dispense medicines. Drug therapy and medicine-related illness cannot be managed and monitored effectively without pharmaceutical care.

4. **Safety:** By engaging two practitioners, there will be a good check and balance system to prevent any medication errors which sometimes could be fatal to patients. This is an important area that is recognized internationally and dispensing separation has become a norm in many developed countries. Any change in the dispensing separation policy should take the issues into consideration.

14. Dispensing separation: the way forward

Further, in order to successfully implement dispensing separation, following factors need to be closely looked into:

1. **The need for rescheduling the current laws**: Consider the case of Malaysian poison list; currently some of the medicines such as those listed for the treatment of diabetes e.g. Daonil® (Glibenclamide) and Diamicron® (Gliclazide) are categorized as "Group C" poisons which can be sold by pharmacists without a physician's prescription. With the implementation of dispensing separation, it is imperative that more drugs from "Group C" poisons are moved to "Group B" poisons which can only be sold with a doctor's prescription. This move will help the doctors monitor their patients' health regularly as the patients need to go and see them for their prescriptions. In addition the loss of income due to patients being able to buy their medicines from pharmacists without visitng the GPs, a serious concern for GPs would be resolved.

2. **The need for establishing a generic substitution policy:** There should be a very strong regulatory mechanism for the safe use of generic medicines. The regulatory authorities should require bio-equivalence evidence that the generic products are comparable with the branded products for them to be registered for sale.

3. **Establish the need for pharmacist-physician patient referrals:** The concerned authorities within the ministry of health should establish a pharmacist-patient referral system for GPs. Currently doctors only receive referrals from their medical peers. According to recent recommendations from the World Health Organization (WHO) and International Federation of Pharmacy (FIP), establishing such a system will help overcome the problems of some under-diagnosed ailments in the community as some of the findings from initial screening tests that can be performed by pharmacists will be evaluated further by a medical doctor.

4. **Provision of special loans for pharmacists:** The fourth factor that should be considered if dispensing separation is to implemented is providing special loans to pharmacists to start their practice in rural areas. The provision of special loans will be an incentive for pharmacists to start their practice in rural areas and this has been proven effective in many other developed countries such as Australia and New Zealand. We believe there is room for implementation of dispensing separation in the region but it is a question of the right timing and appropriate policies.

5. **Changes in the current curriculum of pharmacy schools**: With the changes in the current curriculum of pharmacy schools across the globe, pharmacist undergraduate training has become more patient oriented rather than product oriented. It is also emphasized that the approach in the pharmacy curriculum should be integrated, having collaboration of the other healthcare professionals.

6. **Collaboration between the physicians and pharmacists**: At most institutions across the world medical specialists are also are intensely involved in teaching clinical aspects of disease management to pharmacy students during their clinical years. Therefore, a mutual insight into each other's professional roles is needed and any personal conflict should be avoided as it will mar the professional images of both professions. A few countries, like Korea and Taiwan, in the region have been successful in separating the dispensing from doctors. It is time for rest of the countries in the region to give dispensing rights to pharmacists.

7. **Price regulation of pharmaceuticals:** One of the biggest barriers towards dispensing separa-

tion in the region is believed to be pricing policy. As a measure of affordability of medicines, many countries have regulated the price of essential medicines. New rules should be made or existing rules amended and the prices of pharmaceuticals must be fixed. Having fixed the prices of medicines there will be a fixed percentage of profits being offered to the pharmacies so that the patients would can receive maximum benefit. This will keep the pharmaceutical companies from offering lucrative incentives to the physicians.

8. **Consumer demand and expectations:** Changes in disease and demographic patterns, and better standards of living have impacted patient perceptions and expectations of health, leading to increased demand for medical care. Resource constraints complicate access to expensive and sophisticated treatment in many developing countries. By addressing such types of issues, that is by meeting the patients' expectation health care providers can bring a positive change in the system, provided all healthcare professionals work in their own domains and honor the domains of their peer professionals.

15. Conclusion

In conclusion, in order to develop and maintain a proactive role for pharmacists in community pharmacy and primary healthcare, the shortage of pharmacists should be addressed, their skill development needs to be emphasized and dispensing separation should be implemented following the Taiwan- and Japan-models. Sound policy making should be encouraged to protect the rights and roles of pharmacist and develop a professionally committed workforce. Moreover, policy making should be evidence-based rather than door negotiations and must involve the pharmacy stakeholders.

16. References/Bibliography

ABURUZ, S., AL-GHAZAWI, M. & SNYDER, A. 2012. Pharmaceutical care in a community-based practice setting in Jordan: where are we now with our attitudes and perceived barriers? *International Journal Pharmacy Practice,* 20**,** 71-79.

AKAHO, E., UCHINASHI, M., TSURUSAWA, A., TOMINAGA, J. & HAYASHI, S. 2003. A study of pharmacists' consciousness toward separation of medical practice from pharmaceutical dispensing. *Journal of the Pharmaceutical Society of Japan,* 123**,** 179-183.

AKSHAR, S. A., METWALY, Z. & SHAMSSAIN, M. 2014. Patients' perceptions of community pharmacy practice in UAE: An overview. *IOSR Journal Of Pharmacy,* 4**,** 8-14.

AL-ARIFI, M. N. 2012. Patients' perception, views and satisfaction with pharmacists' role as health care provider in community pharmacy setting at Riyadh, Saudi Arabia. *Saudi Pharmaceutical Journal,* 20**,** 323-330.

AL-TABAKHA, M. M., AKOULAH, L. H. & FAHELELBOM, K. M. 2013. Drug information in community pharmacy and outpatient pharmacy in Al Ain city, U.A.E.: a descriptive study. *International Journal of Pharmacy,* 3**,** 316-322.

ALABID, A. H., IBRAHIM, M. I. & HASSALI, M. A. 2013. Do professional practices among Malaysian private healthcare providers differ? A comparative study using simulated patients. *Journal of Clinical and Diagnostic Research,* 7**,** 2912-2916.

ALJADHEY, H., MAHMOUD, M. A., HASSALI, M. A., ALRASHEEDY, A., ALAHMAD, A., SALEEM, F., SHEIKH, A., MURRAY, M. & BATES, D. W. 2014. Challenges to and the future of medication safety in Saudi Arabia: A qualitative study. *Saudi Pharmaceutical Journal,* 22**,** 326-332.

ARKARAVICHIEN, W., WONGPRATAT, A. & LERTSINUDOM, S. 2016. Quality indicators to compare accredited independent pharmacies and accredited chain pharmacies in Thailand. *Int J Clin Pharm,* 38**,** 899-907.

AWAD, A. & ABAHUSSAIN, E. 2010. Health promotion and education activities of community pharmacists in Kuwait. *Pharmacy World & Science,* 32**,** 146-53.

AWAD, A. & WAHEEDI, M. 2012. Community pharmacists role in obesity treatment in Kuwait: a cross-sectional study. *BMC Public Health* 12**,** 1-9.

AZHAR, S., HASSALI, M. A., IBRAHIM, M. I., AHMAD, M., MASOOD, I. & SHAFIE, A. A. 2009. The role of pharmacists in developing countries: the current scenario in Pakistan. *Human Resource for Health,* 7**,** 54.

AZHAR, S., HASSALI, M. A., TAHA, A., KHAN, S. A., MURTAZA, G. & HUSSAIN, I. 2013. Evaluation of the perception of community pharmacists regarding their role in Pakistan's healthcare system: a qualitative approach. *Tropical Journal of Pharmaceutical Research,* 12**,** 635-639.

AZMI, S., NAZRI, N. & AZMI, A. 2012. Extending the roles of community pharmacists: views from general medical practitioners. *The Medical Journal of Malaysia,* 67**,** 577-581.

BABIKER, A. H., CARSON, L. & AWAISU, A. 2014. Medication use review in Qatar: are community pharmacists prepared for the extended professional role? *International Journal of Clinical Pharmacy,* 36**,** 1241-1250.

BASAK, S. C., VAN MIL, J. W. & SATHYANARAYANA, D. 2009. The changing roles of pharmacists in community pharmacies: perception of reality in India. *Pharmacy World & Science,* 31**,** 612-618.

BATES, I., JOHN, C., BRUNO, A., FU, P. & ALIABADI, S. 2016. An analysis of the global pharmacy workforce capacity. *Human Resources for Health,* 14**,** 61.

BAWAZIR, S. A. 2006. Attitude of community pharmacists in Saudi Arabia towards adverse drug reaction reporting. *Saudi Pharmaceutical Journal,* 14**,** 75-83.

BERBATIS, C. G., SUNDERLAND, V. B., JOYCE, A., BULSARA, M. & MILLS, C. 2007. Enhanced pharmacy services, barriers and facilitators in Australia's community pharmacies: Australia's National Pharmacy Database Project. *International Journal of Pharmacy Practice,* 15**,** 185-191.

BHAGAVATHULA, A. S., SARKAR, B. R. & PATEL, I. 2014. Clinical pharmacy practice in developing countries: Focus on India and Pakistan. *Archives of Pharmacy Practice,* 5**,** 91-94.

BRAVEMAN, P. & EGERTER, S. 2008. Overcoming obstacles to health: report from the Robert Wood Johnson Foundation to the commission to build a healthier America. Princeton: Robert Wood Johnson Foundation.

BUNTING, B. A. & CRANOR, C. W. 2006. The Asheville project: long-term clinical, humanistic, and eco-

nomic outcomes of a community-based medication therapy management program for asthma. *Journal of the American Pharmacists Association,* 46**,** 133-147.

CHEN, Y. C., TARN, Y. H. & KRELING, D. H. 2012. Public views of community pharmacists in Taiwan. *International Journal of Pharmacy Practice,* 20**,** 203-206.

CHISHOLM-BURNS, M. A., LEE, J. K., SPIVEY, C. A., SLACK, M., HERRIER, R. N., HALL-LIPSY, E., ZIVIN, J. G., ABRAHAM, I., PALMER, J. & MARTIN, J. R. 2010. US pharmacists' effect as team members on patient care: systematic review and meta-analyses. *Medical Care,* 48**,** 923-933.

CHOU, Y. J., YIP, W. C., LEE, C. H., HUANG, N., SUN, Y. P. & CHANG, H. J. 2003. Impact of separating drug prescribing and dispensing on provider behaviour: Taiwan's experience. *Health Policy and Planning,* 18**,** 316-329.

CHUI, W. & LI, S. 2005. Advice-giving on self-medication: perspectives of community pharmacists and consumers in Singapore. *Journal of Clinical Pharmacy and Therapeutics,* 30**,** 225-231.

CHUMNEY, E. C. & ROBINSON, L. C. 2006. The effects of pharmacist interventions on patients with polypharmacy. *Pharmacy Practice,* 4**,** 103-109.

CRUTHIRDS, D. L., HUGHES, P. J. & WEAVER, S. 2013. Value of pharmacy services to the healthcare system: an interdisciplinary assessment. *International Journal of Pharmacy Practice,* 21**,** 38-45.

DAMEH, M. 2009a. Pharmacy in the United Arab Emirates. *Southern Med Review* 2**,** 15-18.

DAMEH, M. 2009b. Pharmacy in the United Arab Emirates. *Southern Med Review,* 2**,** 15-19.

DREISCHULTE, T., GRANT, A. M., MCCOWAN, C., MCANAW, J. J. & GUTHRIE, B. 2012. Quality and safety of medication use in primary care: consensus validation of a new set of explicit medication assessment criteria and prioritisation of topics for improvement. *BMC Pharmacology and Toxicology,* 12**,** 5.

FANG, Y., YANG, S., FENG, B., NI, Y. & ZHANG, K. 2011. Pharmacists' perception of pharmaceutical care in community pharmacy: a questionnaire survey in Northwest China. *Health & Social Care in the Community,* 19**,** 189-197.

FANG, Y., YANG, S., ZHOU, S., JIANG, M. & LIU, J. 2013. Community pharmacy practice in China: past, present and future. *International Journal of Clinical Pharmacy,* 35**,** 520-528.

FILIPPINI, M., HEIMSCH, F. & MASIERO, G. 2014. Antibiotic consumption and the role of dispensing physicians. *Regional Science and Urban Economics,* 49**,** 242-251.

FUENTES, D. G. 2012. Integration of pharmacotherapy topics across the curriculum using a "Create-Your-Own-Patient Case" team project. *Currents in Pharmacy Teaching and Learning,* 4**,** 60-71.

GAL, D. & BATES, I. 2012. FIP Global Pharmacy Workforce Report. The Netherlands: International Pharmaceutical Federation (FIP).

GEORGE, P. P., MOLINA, J. A., CHEAH, J., CHAN, S. C. & LIM, B. P. 2010. The evolving role of the community pharmacist in chronic disease management-a literature review. *Annals of the Academy of Medicine, Singapore,* 39**,** 861-867.

GILBERT, L. 1998. Dispensing doctors and prescribing pharmacists: A South African perspective. *Social Science & Medicine,* 46**,** 83-95.

GOEL, P., ROSS-DEGNAN, D., BERMAN, P. & SOUMERAI, S. 1996. Retail pharmacies in developing countries: a behavior and intervention framework. *Social Science & Medicine,* 42**,** 1155-1161.

HANAFI, S., POORMALEK, F., TORKAMANDI, H., HAJIMIRI, M., ESMAEILI, M., KHOOIE, S., GHOLAMI, K., HAYATSHAHI, A. & JAVADI, M. 2015. Evaluation of community pharmacists' knowledge, attitude and practice towards good pharmacy practice in Iran. *Journal of Pharmaceutical Care,* 1**,** 19-24.

HASAN, S., SULIEMAN, H., CHAPMAN, C. B., STEWART, K. & KONG, D. C. 2012. Community pharmacy services in the United Arab Emirates. *International Journal of Pharmacy Practice,* 20**,** 218-225.

HASSALI, M., AWAISU, A., SHAFIE, A. & SAEED, M. 2009a. Professional training and roles of community pharmacists in Malaysia: views from general medical practitioners. *Malaysian Family Physician,* 4**,** 6.

HASSALI, M., AWAISU, A., SHAFIE, A. & SAEED, M. 2009b. Professional training and roles of community pharmacists in Malaysia: views from general medical practitioners. *Malaysian Family Physician: the Official Journal of the Academy of Family Physicians of Malaysia,* 4**,** 71.

HASSALI, M., AWAISU, A., SHAFIE, A. & SAEED, M. 2009c. Professional training and roles of community pharmacists in malaysia: views from general medical practitioners. *Malays Fam Physician,* 4**,** 71-6.

HASSALI, M. A., AWAISU, A., SHAFIE, A. A. & SAEED, M. S. 2009d. Professional training and roles of community pharmacists in Malaysia: views from general medical practitioners. *Malaysian Family Physician,* 4**,** 71-76.

HASSALI, M. A., SHAFIE, A. A., JAYABALAN, T. & PALAIAN, S. 2009e. Medicine dispensing in Malaysia: a case for separation of roles. *Indian Journal of Pharmacy Practice,* 2**,** 84-85.

HAWKSWORTH, G., CORLETT, A., WRIGHT, D. & CHRYSTYN, H. 1999. Clinical pharmacy interventions by community, pharmacists during the dispensing process. *British Journal of Clinical Pharmacology,* 47**,** 695-700.

HAYASHI, S.-R. 2003. The expected role of community pharmacist in society. *Journal of the Pharmaceuti-*

cal Society of Japan, 123, 163-171.

HEPLER, C. D. & STRAND, L. M. 1990. Opportunities and responsibilities in pharmaceutical care. *American Journal of Hospital Pharmacy,* 47, 533-543.

HUANG, Y.-M., WANG, H.-P., YANG, Y.-H. K., LIN, S.-J., LIN, H.-W., CHEN, C.-S. & WU, F.-L. L. 2006. Effects of a national health education program on the medication knowledge of the public in Taiwan. *Annals of Pharmacotherapy,* 40, 102-108.

IBRAHIM, I. R., TUKMAGI, H. F. A. & WAYYES, A. 2013. Attitudes of Iraqi society towards the role of community pharmacists. *Innovations in Pharmacy* 4, 1-5.

IGUCHI, S., OHNISHI, M., NISHIYAMA, T., HOSONO, K. & UMEZAWA, C. 1998. Community pharmacy practice in Japan-results of a survey. *Journal of Clinical Pharmacy and Therapeutics,* 23, 223-227.

INOUE, Y., MORITA, Y., TAKIKAWA, M., TAKAO, K., KANAMOTO, I. & SUGIBAYASHI, K. 2015. Future expectations for Japanese pharmacists as compared to the rest of the world. *Research in Social and Administrative Pharmacy,* 11, 448-458.

INOUE, Y., TAKIKAWA, M., MORITA, Y., TAKAO, K., KANAMOTO, I. & SUGIBAYASHI, K. 2016. A comparison of pharmacists' role functions across various nations: The importance of screening. *Research in Social and Administrative Pharmacy,* 12, 347-354.

KAISER, B. & SCHMID, C. 2016. Does physician dispensing increase drug expenditures? Empirical evidence from Switzerland. *Health Economics,* 25, 71-90.

KAMEI, M., TESHIMA, K., FUKUSHIMA, N. & NAKAMURA, T. 2001. Investigation of patients' demand for community pharmacies: relationship between pharmacy services and patient satisfaction. *Journal of the Pharmaceutical Society of Japan,* 121, 215-220.

KIBICHO, J. & OWCZARZAK, J. 2012. A patient-centered pharmacy services model of HIV patient care in community pharmacy settings: a theoretical and empirical framework. *AIDS Patient Care and STDs,* 26, 20-28.

KIM, H.-J. & RUGER, J. P. 2008. Pharmaceutical reform in South Korea and the lessons it provides. *Health Affairs,* 27, w260-w269.

KIM, H. J., CHUNG, W. & LEE, S. G. 2004. Lessons from Korea's pharmaceutical policy reform: the separation of medical institutions and pharmacies for outpatient care. *Health Policy,* 68, 267-275.

KUMAR, R. K. 2011. Technology and healthcare costs. *Annals of Pediatric Cardiology,* 4, 84-86.

KWON, S. 2003. Pharmaceutical reform and physician strikes in Korea: separation of drug prescribing and dispensing. *Social Science & Medicine,* 57, 529-538.

LEE, J.-C. 2003. Health care reform in South Korea: success or failure? *American Journal of Public Health,* 93, 48-51.

LÉGARÉ, F., RATTÉ, S., STACEY, D., KRYWORUCHKO, J., GRAVEL, K., GRAHAM, I. D. & TURCOTTE, S. 2010. Interventions for improving the adoption of shared decision making by healthcare professionals. *The Cochrane Library.*

LIAW, S.-T. & PETERSON, G. 2009. Doctor and pharmacist-back to the apothecary! *Australian Health Review,* 33, 268-278.

LOCHID-AMNUAY, S., WAIYAKARN, S., PONGCHAROENSUK, P., KOH-KNOX, C. P. & KEOKITICHAI, S. 2009. Community pharmacy model under the universal coverage scheme in Thailand. *Thai Journal of Hospital Pharmacy* 19, 110-122.

LOQUIAS, M. M. & ROBLES, Y. R. 2012. Issues and concerns on utilization of the pharmacy workforce in the Philippines. *Journal of Asian Association of Schools of Pharmacy,* 1, 86-96.

MAHER, J. H., LOWE, J. B., HUGHES, R. & ANDERSON, C. 2014. Understanding community pharmacy intervention practice: lessons from intervention researchers. *Research in Social and Administrative Pharmacy,* 10, 633-646.

MAK, V. & HASSALI, M. A. A. 2015. Separation of dispensing and prescribing in Malaysia: will the time come? *Journal of Pharmacy Practice and Research,* 45, 394-395.

MEHRALIAN, G., RANGCHIAN, M. & RASEKH, H. R. 2014. Client priorities and satisfaction with community pharmacies: the situation in Tehran. *International Journal of Clinical Pharmacy,* 36, 707-715.

MOHAMED, S. S.-E. 2013. Clinical pharmacy in the Sudan: Current state and future challenges. *Khartoum Medical Journal,* 5, 729-739.

OLANIYAN, J. O., GHALEB, M., DHILLON, S. & ROBINSON, P. 2015. Safety of medication use in primary care. *International Journal of Pharmacy Practice,* 23, 3-20.

PANYAWUTHIKRAI, P., SAKULBUMRUNGSIL, R., WONGWIWATTHANANUKIT, S. & PITAKNITINAN, K. 2006. Development of perceived community pharmacy service quality scale in client perspective for Thai community pharmacy accreditation. *Thai Journal of Hospital Pharmacy,* 1, 151-161.

PAYANANTANA, N., SAKOLCHAI, S., PITAKNITINUN, K., PALAKORNKUL, D., THONGNOPNUA, N., FARAMNUAYPHOL, P., EKACHAMPAKA, P. & TAVERAT, R. 1998. Future human resources balance for pharmacy and health consumer protection services in Thailand. *Human Resources Development Journal,* 2, 1-15.

PENM, J., CHAAR, B. & MOLES, R. 2015. Clinical pharmacy services that influence prescribing in the Western Pacific Region based on the FIP Basel Statements. *International Journal of Clinical Phar-*

macy, 37, 485-496.

POUDEL, B. K., ISHII, I. & KHAKUREL, B. 2016. Assessment of regulatory compliance in selected pharmacy outlets of Nepal. *Journal of Pharmaceutical Health Services Research,* 7, 31-36.

RASOOL, B. K. A., FAHMY, S. A., ABU-GHARBIEH, E. F. & ALI, H. S. 2010. Professional practices and perception towards rational use of medicines according to WHO methodology in United Arab Emirates. *Pharmacy Practice,* 8, 70.

RAYES, I. K., HASSALI, M. A. & ABDUELKAREM, A. R. 2014a. A pilot study assessing the barriers to pharmacy practice in Dubai, United Arab Emirates. *Tropical Journal of Pharmaceutical Research,* 13, 1537.

RAYES, I. K., HASSALI, M. A. & ABDUELKAREM, A. R. 2015a. Perception of community pharmacists toward their current professional role in the healthcare system of Dubai, United Arab Emirates. *Saudi Pharmaceutical Journal,* 23, 235-240.

RAYES, I. K., HASSALI, M. A. & ABDUELKAREM, A. R. 2015b. The role of pharmacists in developing countries: The current scenario in the United Arab Emirates. *Saudi Pharmaceutical Journal,* 23, 470-474.

RAYES, I. K., HASSALI, M. A. A. & ABDUELKAREM, A. R. 2014b. A qualitative study exploring public perceptions on the role of community pharmacists in Dubai. *Pharmacy Practice,* 12, 1-4.

SALEEM, F. & HASSALI, M. A. 2016. The true picture of dispensing separation in Malaysia. *Research in Social and Administrative Pharmacy,* 12, 173-174.

SALMASI, S., LONG, C. M. & KHAN, T. M. 2016. Interplay of medication errors and the separation of dispensing. *Research in Social and Administrative Pharmacy,* 12, 171-172.

SCHOMMER, J. C., PLANAS, L. G., JOHNSON, K. A. & DOUCETTE, W. R. 2008. Pharmacist-provided medication therapy management (part 1): Provider perspectives in 2007. *Journal of the American Pharmacists Association,* 48, 354-363.

SCHUMOCK, G. T., BUTLER, M. G., MEEK, P. D., VERMEULEN, L. C., ARONDEKAR, B. V. & BAUMAN, J. L. 2003. Evidence of the economic benefit of clinical pharmacy services: 1996–2000. *Pharmacotherapy,* 23, 113-132.

SHAFIE, A. A., HASSALI, M. A., AZHAR, S. & SEE, O. G. 2012a. Separation of prescribing and dispensing in Malaysia: a summary of arguments. *Res Social Adm Pharm,* 8, 258-62.

SHAFIE, A. A., HASSALI, M. A., AZHAR, S. & SEE, O. G. 2012b. Separation of prescribing and dispensing in Malaysia: A summary of arguments. *Research in Social and Administrative Pharmacy,* 8, 258-262.

SINGH, D. & KHALE, A. 2015. Perception of patients towards the knowledge of community pharmacist

as a health care provider: A pilot study. *World Journal of Pharmaceutical Sciences,* 3**,** 1397-1402.

SMITH, F. 2009. The quality of private pharmacy services in low and middle-income countries: a systematic review. *Pharmacy World and Science,* 31**,** 351-361.

STANGE, K. C. 2009. The problem of fragmentation and the need for integrative solutions. *The Annals of Family Medicine,* 7**,** 100-103.

TIONG, J. J. L., MAI, C. W., GAN, P. W., JOHNSON, J. & MAK, V. S. L. 2016. Separation of prescribing and dispensing in Malaysia: the history and challenges. *International Journal of Pharmacy Practice,* 24**,** 302-305.

VERMA, A., HARRISON, A., TORUN, P., VESTBO, J., EDWARDS, R. & THORNTON, J. 2012. Are pharmacists reducing COPD'S impact through smoking cessation and assessing inhaled steroid use? *Respiratory Medicine,* 106**,** 230-234.

WEN, M. F., LIN, S.-J., YANG, Y.-H. K., HUANG, Y.-M., WANG, H.-P., CHEN, C.-S. & WU, F.-L. L. 2007. Effects of a national medication education program in Taiwan to change the public's perceptions of the roles and functions of pharmacists. *Patient Education and Counseling,* 65**,** 303-310.

WILBUR, K., SALAM, S. E. & MOHAMMADI, E. 2010. Patient perceptions of pharmacist roles in guiding self-medication of over-the-counter therapy in Qatar. *Patient Preference and Adherence,* 4**,** 87-93.

WONG, F. Y. Y., CHAN, F. W. K., YOU, J. H. S., WONG, E. L. Y. & YEOH, E. K. 2011. Patient self-management and pharmacist-led patient self-management in Hong Kong: A focus group study from different healthcare professionals' perspectives. *BMC Health Services Research,* 11**,** 1.

WORLD HEALTH ORGANISATION 1984. The WHO program of action for essential medicinal drugs and vaccines. Rational use of drugs. Geneva: World Health Organisation.

WORLD HEALTH ORGANIZATION. PHARMACEUTICALS UNIT 1994. The role of the pharmacist in the health care system: report of a WHO consultative group, New Delhi, India, 13-16 December 1988; report of a WHO meeting, Tokyo, Japan, 31 August-3 September 1993. Geneva: World Health Organization.

XIAO-YUN, W. 2011. On dilemma and reformation of medical separation of dispensing and prescribing. *Social Sciences in Ningxia,* 2**,** 7.

YAMAMURA, S., YAMAMOTO, N., OIDE, S. & KITAZAWA, S. 2006. Current state of community pharmacy in Japan: practice, research, and future opportunities or challenges. *Annals of Pharmacotherapy,* 40**,** 2008-2014.

YEN-JU LIN, B., YEH, Y.-C. & LIN, W.-H. 2007. The influence of job characteristics on job outcomes of pharmacists in hospital, clinic, and community pharmacies. *Journal of Medical Systems,* 31**,** 224-229.

YOU, J. H., WONG, F. Y., CHAN, F. W., WONG, E. L. & YEOH, E.-K. 2011. Public perception on the role of community pharmacists in self-medication and self-care in Hong Kong. *BMC Pharmacology and Toxicology,* 11**,** 19.