Review Article

Pharmaceutical Care in the Community Pharmacies of Saudi Arabia: Present Status and Possibilities for Improvement

Abdulrahman S. Alanazi, Abubakr A. Alfadl[1], Abubaker S. Hussain[1]

Unaizah College of Pharmacy, [1]Department of Pharmacy Practice, Unaizah College of Pharmacy, Qassim University, Unaizah, Qassim, Saudi Arabia

Correspondence: Dr. Abubakr A. Alfadl, Department of Pharmacy Practice, Unaizah College of Pharmacy, Qassim University, P. O. Box: 5888, Unaizah - 51911, Qassim, Saudi Arabia. E-mail: abubakr13@yahoo.com

A B S T R A C T

Pharmaceutical care can be given in all settings: The community, hospitals, long-term care, and the clinic. However, published literature indicates that there is a substantial barrier to implementing pharmaceutical care programs in community pharmacies. This review was conducted to discover gaps and limitations in pharmaceutical care services in community pharmacies in the Kingdom of Saudi Arabia (KSA). We searched PubMed and other available scientific website databases using the following key words to retrieve the relevant articles: Community Pharmacy, Healthcare System, Pharmaceutical Care, KSA. Two authors independently screened the titles and abstracts of promising articles. They discarded irrelevant studies and retained studies, and reviews that held the promise of relevant data or information. The review revealed that only one out of the four studies conducted in KSA retrieved by the authors reported pharmaceutical care service other than dispensing. The same results were reported in other studies conducted in some developing countries. All pharmaceutical care services were reported in studies conducted in Europe. The authors came to the conclusion that in KSA, dispensing of medicines is the dominant service provided by community pharmacists and that there was very limited if not a total absence of other pharmaceutical care services.

Key words: Community pharmacy, drug therapy problems, healthcare system, Kingdom of Saudi Arabia, pharmaceutical care

ملخص البحث :

يمكن تطبيق برنامج الرعاية الصيدلانية في جميع المنشآت الصحية كصيدليات المجتمع، والمراكز الصحية. تشير البحوث المنشورة بوجود عوائق حقيقية تحول دون تنفيذ برامج الرعاية الصيدلانية في صيدليات المجتمع. وتبين هذه المقالة أن هناك قصورا في خدمات الرعاية الصيدلانية في صيدليات المجتمع بالمملكة العربية السعودية، وأن عمليات صرف الدواء هي الخدمة المهيمنة بالصيدليات مع هامش لا يكاد يذكر لخدمات الرعاية الصيدلانية.

INTRODUCTION

Pharmaceutical care

Pharmaceutical care is a philosophy of practice that puts patients at the center of the pharmacist's activities. This implies a way of practice in which pharmacists assume the responsibility of ensuring that everything done is in the best interest of the patient. This concept originated from a term, defined in 1975 by Mikeal *et al*.[1] as a subset of medical care. Thereafter, the concept developed, as a result of the environment of the changing community and its demands on the pharmacy. This includes the drug needs for a given patient, which involves providing the services needed for safe and effective therapy in addition to the required drugs.[2,3] According to this

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practice, which is now accepted worldwide, the main duty of a pharmacist is the provision of drug therapy to achieve specific therapeutic outcomes with the goal of improving patient health and quality of life. The role of the pharmacist which was traditionally restricted to the preparation, dispensing and selling of medicines expanded by this form of practice to enjoin the pharmacist, in addition to dispensing of medicines, to assume the responsibility of improving the quality of patients' outcomes.[4] Since then, pharmacists have worked to develop pharmaceutical care practices. Published literature shows many examples of these practices, suggesting that the participation of a pharmacist in the evaluation of patients' drug therapy regimen improves outcomes.[5-9] Although, pharmaceutical care which involves the detection, prevention, and solution of drug-related problems has proved beneficial in diseases such as asthma and cancer,[10,11] it can also cover all types of patients with all kinds of diseases on any type of drug therapy, thereby, meeting the drug-related needs of individuals and communities.[4] This is because most patients are prescribed multiple drug regimens, and a study conducted by Perkin *et al*. showed that complex drug regimens are usually associated with noncompliance especially after discharge from hospital.[12] Another study conducted by Strand *et al*. revealed that pharmacists may be able to resolve this problem by encouraging patients' compliance and consequently improving treatment outcomes by engaging the patient in pharmaceutical care activities such as monitoring, counseling, resolving drug-related problems, and facilitating communication with the physician.[13]

Although the main objective of pharmaceutical care was to solve medication related problems, it also helps to achieve positive clinical outcomes and optimize the health-related quality of life of the patient within realistic expenditure.[14] Medication errors increase the cost of health care; account for higher utilization of hospitals, nursing homes, and physician visits; and health risks for patients.[15-23] To achieve these clinical, economic, and humane outcomes, pharmacists need to apply the philosophy of pharmaceutical care by working closely with patients and other healthcare professionals in designing, implementing, and monitoring a therapeutic plan to produce specific outcomes.[24-28]

Although it is assumed that all settings are suitable for the application of pharmaceutical care, the published literature shows that reports that the effectiveness of pharmaceutical care is often undermined by serious methodological defects.[10,29-31] Furthermore, there is a difference between the effectiveness of inpatient and outpatient pharmaceutical care. The evidence in the literature about its effectiveness in outpatient is lesser than in inpatient settings.[32,33] Published literature documents substantial barriers to the implementation of pharmaceutical care programs in community pharmacies.[34-39] However, it was decided to carry out this review to examine health services as they relate to community pharmacies, since the assumption is that its impact was greatest on the outcome of community health than on other settings. This is because community pharmacists are to be found and are accessible in a wide range of locations in the heart of the community. There is an increasing support for the view that community pharmacy-based services have a positive impact on patient care and health outcomes.[40] It has been proved that collaboration between the pharmacist and the physician improved patient outcomes, ultimately improved patient's quality of life, raised cost-effectiveness, helped in monitoring the treatment outcomes, and carrying out assessments of the patient's health; and thereby, reduced the demands on the health care system.[41]

Health care system in Saudi Arabia

The Ministry of Health (MOH) plays the role of planning and functions as the regulatory body in the health system.[42] As part of its remit as a regulatory body, MOH enacted a law in 1978 restricting the practice of pharmacy for licensed pharmacists among other regulations on the pharmacy profession. Furthermore, that law forbade pharmacists from dispensing medicines without a prescription, with the exception of those defined by the law as over the counter (OTC).[43] This law represented the start of the modern pharmacy in Saudi Arabia. However, despite that the law, which laid a solid foundation for good pharmacy practice, the pharmacy profession in KSA in general, and community pharmacy in particular, still lags behind the strides made by the health care system in KSA. This review aims at exploring the gaps and limitations, and the reasons behind these in the health care services provided by community pharmacies in KSA.

Objectives

This review aimed at exploring the reasons behind weaknesses in health care services provided by community pharmacies by documenting the range and extent of community pharmacy-based services provided to the public. It was also to explore the extent to which community pharmacies in KSA meet their principal goals of providing good pharmacy practice services in

comparison with other community pharmacy-based services provided regionally and internationally. It is hoped that this would reveal the shortcomings and limitations and shed some light on the reasons behind these limitations and thereby, provide opportunities for future improvement.

Method of review

This exploratory review tries to document the range and extent of community pharmacy-based services provided to the public in a way that permits the ease of a comparison between pharmaceutical care services provided in community pharmacies in KSA, and those community pharmacy-based services provided regionally and internationally. Studies were selected through PubMed, Medline Plus, Science Direct, and Scopus search from the first of January to April 22nd, 2014. The following key words were used to retrieve the relevant articles: Healthcare system, pharmaceutical care, patient-centered, pharmaceutical care plan, and therapeutic monitoring.

Selection of the studies

The search strategy described above was used to obtain the data for the studies relevant to this review. The authors, independently, screened the titles and abstracts of promising articles. They discarded studies that were not suitable but retained studies and reviews that possibly included relevant data or information. The authors, independently, assessed the quality of studies for inclusion.

Specific criteria for selecting the services were: Services provided by a pharmacist in a community pharmacy. The exclusion criteria were: Services not provided in a community pharmacy, service not published in a scientific journal, and an article not published in the English language.

Types of services

The types of services provided in community pharmacies and studied in this review were: Dispensing (D), educating (E) (e.g., teach how to take the medicine and how to use equipment), outcomes monitoring (OM) of the therapy (monitoring symptoms and checking patient's satisfaction), solving drug therapy problems (DTP) (e.g., overuse, underuse, interaction), and drug therapy recommendations (DTR).

RESULTS

Eighteen studies were included. Of these, four were conducted in KSA,[43-46] eight in the Middle East,[47-54] two in other developing counties[55,56] and four in Europe.[57-60] Only one, out of the four studies conducted in KSA, reported a limited service (DTP) other than dispensing (D). The same results were observed for the ten studies conducted in the other developing countries with one study reporting DTR service in addition to dispensing (D). Results obtained from reviewing studies conducted in Europe revealed that all pharmaceutical care services studied in this review are provided in community pharmacies although at different levels in various community pharmacies.

DISCUSSION

An evaluation of pharmaceutical sector studies reporting services offered in community pharmacies in several developed and developing countries showed great variance in the quality, type, and level of services provided to customers. In developed countries, all pharmaceutical care services are provided to customers, although it is not yet routine practice.[58] In three studies that were conducted in community pharmacies in New Zealand,[60] United Kingdom,[57] and across some European countries,[59] it was reported that all the pharmaceutical care services including patient education (E), OM, and DTP solving, albeit sporadic, are provided to patients.

In developing countries, where there are still great challenges in ensuring access to safe, effective, and affordable essential medicines, national efforts are mostly directed toward ensuring availability and access to drugs, while appropriate use of drugs largely remains an issue of low priority. This is clearly reflected in the quality and level of pharmaceutical care services provided in community pharmacies. In this review 14 studies conducted in different developing countries, including KSA, were reviewed with a focus on the pharmaceutical services provided. Dispensing was found to be the dominant service provided by community pharmacists in all those studied without exception.[43-46]

The dominance of dispensing in KSA community pharmacies pharmaceutical services may be due, reported in some studies, to the fact that adherence to pharmacy law, especially in community pharmacies, is very weak.[61] Furthermore, research conducted in Jeddah-KSA on the dispensing behavior of pharmacists in community pharmacies of three groups of medicines, namely: Antibiotics, antihypertensives, and antipsychotics concluded that the majority of pharmacists violate the pharmacy law by dispensing medicines without prescription.[62] Furthermore, community pharmacies in

KSA are very commercial and profit-oriented, with a very limited clinical role for the community pharmacist.[45,46] Actually, domination of dispensing services has also been reported in other less developed countries such as Palestine, India, and Pakistan.[47,55] This business orientation of community pharmacy ventures had also led to the high rate of OTC drugs sold by community pharmacists. Most of the reviewed studies conducted in KSA reported this. However, business orientation is not the sole factor. The commercial pressure applied by drug company representatives, who offer big discounts to pharmacists when they purchase large quantities of their products is a great encouragement for pharmacists to indulge in more OTC dispensing practice. It is apparent from this review that this high rate OTC dispensing is not limited to KSA but is most likely to be present in all other developing countries.[53,55,56]

More seriously, of the studies conducted in KSA, the majority of those reviewed reported that most consumers who went to community pharmacies for pharmaceutical services self-medicated not only with OTC medicines but also with other classified pharmacy and prescription drugs. Moreover, some of these customers received treatment initiated by the community pharmacists. Although such practices are banned by a law which states that a pharmacist is required to dispense drugs on prescription only, except those drugs defined as OTC, community pharmacists rarely adhere to this. This lack of professionalism and the lack of compliance to the law by the community pharmacist is due to many factors. Some of these factors are weak supervision and enforcement of pharmacy laws, especially those regulating and governing pharmacy practices. Furthermore, the ownership of community pharmacies by nonpharmacists and the large number of community pharmacies, which are far in excess of public need, has led to commercial competition between pharmacies, exerting additional commercial pressure on community pharmacies, thus engendering malpractices by community pharmacists. For example, community pharmacists, with few exceptions, would offer any drug (except narcotics and psychotropics) without a prescription,[62] simply at the request of customers who, in many instances, do not even know the name of the drug and can only show a product sample. The malpractices noticed in this review draw attention to the potential hazard of drug misuse, and possible abuse, which may result from the lack of professionalism and non-adherence to dispensing regulations. However, these practices are not confined to KSA, for as this review indicates, almost all developing countries reviewed suffer from the same malpractices with the same consequences and drawbacks.[53,55,56]

CONCLUSIONS

In KSA, dispensing of medicines is the dominant service provided by community pharmacists with very limited scope, if not total absence, of other pharmaceutical care services. It seems that this situation will remain, at least in the foreseeable future, because of the many difficulties and challenges in the implementation of pharmaceutical care services in community pharmacies. However, further studies are needed to explore further the real reasons behind the absence of pharmaceutical care services in community pharmacies, and the best means of addressing this issue.

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Conflicts of interest

There are no conflicts of interest.

REFERENCES

1. Mikeal RL, Brown TR, Lazarus HL, Vinson MC. Quality of pharmaceutical care in hospitals. Am J Hosp Pharm 1975; 32:567-74.
2. Brodie DC. Pharmacy's societal purpose. Am J Hosp Pharm 1981;38:1893-6.
3. Brodie DC. Drug use control: Keystone to pharmaceutical service. Drug Intell Clin Pharm 1967;1:63-5.
4. Hepler CD, Strand LM. Opportunities and responsibilities in pharmaceutical care. Am J Hosp Pharm 1990;47:533-43.
5. Chrischilles EA, Carter BL, Lund BC, Rubenstein LM, Chen-Hardee SS, Voelker MD, *et al.* Evaluation of the Iowa medicaid pharmaceutical case management program. J Am Pharm Assoc 2004;44:337-49.
6. Knapp KK, Okamoto MP, Black BL. ASHP survey of ambulatory care pharmacy practice in health systems-2004. Am J Health Syst Pharm 2005;62:274-84.
7. Cranor CW, Bunting BA, Christensen DB. The Asheville Project: Long-term clinical and economic outcomes of a community pharmacy diabetes care program. J Am Assoc 2003;43:173-84.
8. Schumock GT, Butler MG, Meek PD, Vermeulen LC, Arondekar BV, Bauman JL, *et al*. Evidence of the economic benefit of clinical pharmacy services: 1996-2000. Pharmacotherapy 2003;23:113-32.
9. Ellis SL, Carter BL, Malone DC, Billups SJ, Okano GJ, Valuck RJ, *et al.* Clinical and economic impact of ambulatory care clinical pharmacists in management of dyslipidemia in older adults: The IMPROVE study. Impact of Managed Pharmaceutical Care on Resource Utilization and Outcomes in Veterans Affairs Medical Centers. Pharmacotherapy 2000;20:1508-16.
10. Kennie NR, Schuster BG, Einarson TR. Critical analysis of the pharmaceutical care research literature. Ann Pharmacother 1998;32:17-26.
11. Herborg H, Soendergaard B, Froekjaer B, Fonnesbaek L, Jorgensen T, Hepler CD, *et al.* Improving drug therapy for patients

with asthma — part 1: Patient outcomes. J Am Pharm Assoc (Wash) 2001;41:539-50.

12. Parkin DM, Henney CR, Quirk J, Crooks J. Deviation from prescribed drug treatment after discharge from hospital. Br Med J 1976;2:686-8.
13. Strand LM, Cipolle RJ, Morley PC, Perrier DG. Levels of pharmaceutical care: A needs-based approach. Am J Hosp Pharm 1991;48:547-50.
14. ISMP. Medication Safety Alert! Vol. 6. October 31, 2001.
15. Lazarou J, Pomeranz BH, Corey PN. Incidence of adverse drug reactions in hospitalized patients: A meta-analysis of prospective studies. JAMA 1998;279:1200-5.
16. Bates DW, Spell N, Cullen DJ, Burdick E, Laird N, Petersen LA, *et al.* The costs of adverse drug events in hospitalized patients. Adverse Drug Events Prevention Study Group. JAMA 1997;277:307-11.
17. Matsui D, Hermann C, Braudo M, Ito S, Olivieri N, Koren G. Clinical use of the Medication event monitoring system: A new window into pediatric compliance. Clin Pharmacol Ther 1992;52:102-3.
18. Rudd P, Ahmed S, Zachary V, Barton C, Bonduelle D. Compliance with medication timing: Implications from a medication trial for drug development and medical practice. J Clin Res Pharmacoepidemiol 1992;6:15-27.
19. Bronson JG. Is noncompliance with outpatients Rx therapy common? Drug Topics 1991;135:30-5.
20. Col N, Fanale JE, Kronholm P. The role of medication noncompliance and adverse drug reactions in hospitalizations of the elderly. Arch Intern Med 1990;150:841-5.
21. Cramer JA, Scheyer RD, Mattson RH. Compliance declines between clinic visits. Arch Intern Med 1990;150:1509-10.
22. Maronde RF, Chan LS, Larsen FJ, Strandberg LR, Laventurier MF, Sullivan SR. Underutilization of antihypertensive drugs and associated hospitalization. Med Care 1989;27:1159-66.
23. Hulka BS, Cassel JC, Kupper LL, Burdette JA. Communication, compliance, and concordance between physicians and patients with prescribed medications. Am J Public Health 1976;66:847-53.
24. Bell JS, Whitehead P, Aslani P, McLachlan AJ, Chen TF. Drug-related problems in the community setting: Pharmacists' findings and recommendations for people with mental illnesses. Clin Drug Investig 2006;26:415-25.
25. Haugbølle LS, Sørensen EW. Drug-related problems in patients with angina pectoris, type 2 diabetes and asthma – Interviewing patients at home. Pharm World Sci 2006;28:239-47.
26. Blix HS, Viktil KK, Moger TA, Reikvam A. Identification of drug interactions in hospitals – Computerized screening vs. bedside recording. J Clin Pharm Ther 2008;33:131-9.
27. Søndergaard J, Foged A, Kragstrup J, Gaist D, Gram LF, Sindrup SH, *et al.* Intensive community pharmacy intervention had little impact on triptan consumption: A randomized controlled trial. Scand J Prim Health Care 2006;24:16-21.
28. Sturgess IK, McElnay JC, Hughes CM, Crealey G. Community pharmacy based provision of pharmaceutical care to older patients. Pharm World Sci 2003;25:218-26.
29. Singhal PK, Raisch DW, Gupchup GV. The impact of pharmaceutical services in community and ambulatory care settings: Evidence and recommendations for future research. Ann Pharmacother 1999;33:1336-55.
30. Hatoum HT, Akhras K. 1993 Bibliography: A 32-year literature review on the value and acceptance of ambulatory care provided by pharmacists. Ann Pharmacother 1993;27:1106-19.
31. Tett SE, Higgins GM, Armour CL. Impact of pharmacist interventions on medication management by the elderly: A review of the literature. Ann Pharmacother 1993;27:80-6.
32. Lipton HL, Bird JA. The impact of clinical pharmacists' consultations on geriatric patients' compliance and medical care use: A randomized controlled trial. Gerontologist 1994;34:307-15.
33. Lipton HL, Bero LA, Bird JA, McPhee SJ. The impact of clinical pharmacists' consultations on physicians' geriatric drug prescribing. A randomized controlled trial. Med Care 1992;30:646-58.
34. Latner AW. The top 200 drugs of 1999. Pharm Times 2000; 66:16-32.
35. Murray MD, Loos B, Tu W, Eckert GJ, Zhou XH, Tierney WM. Work patterns of ambulatory care pharmacists with access to electronic guideline-based treatment suggestions. Am J Health Syst Pharm 1999;56:225-32.
36. Erickson SR, Kirking DM, Sandusky M. Michigan Medicaid recipients' perceptions of medication counseling as required by OBRA '90. J Am Pharm Assoc (Wash) 1998;38:333-8.
37. McDonough RP, Rover JP, Currie JD, Hagel H, Vallandingham J, Sobotka J. Obstacles to the implementation of pharmaceutical care in the community setting. J Am Pharm Assoc (Wash) 1998; 38:87-95.
38. Berger BA, Grimley D. Pharmacists' readiness for rendering pharmaceutical care. J Am Pharm Assoc (Wash) 1997;NS37:535-42.
39. Cowen DL. Changing relationship between pharmacists and physicians. Am J Hosp Pharm 1992;49:2715-21.
40. Posey LM. Proving that pharmaceutical care makes a difference in community pharmacy. J Am Pharm Assoc 2003;43:136-9.
41. Othman NH. Monitoring drug compliance: A psychosocial perspective in the assessment of patient drug taking behavior. Penang: University Sains Malaysia (USM); 1991.
42. Al-Yousuf M, Akerele TM, Al-Mazrou YY. Organization of the Saudi health system. East Mediterr Health J 2002;8:645-53.
43. Bawazir SA. Prescribing pattern at community pharmacies in KSA. Int Pharm J 1992;6:222-4.
44. Al-Arifi MN. Community pharmacists' attitudes toward dispensing errors at community pharmacy setting in Central Saudi Arabia. Saudi Pharm J 2014;22:195-202.
45. Al-Hassan MI. Community pharmacy practice in Saudi Arabia: An overview. Internet J Pharmacol 2010;9:1.
46. Al-Hassan MI. A survey on consumer need and opinion about the community pharmacists in Riyadh, Saudi Arabia. J Med Sci 2009;9:36-40.
47. Khdour MR, Hallak HO. Societal perspectives on community pharmacy services in West Bank – Palestine. Pharm Pract (Granada) 2012;10:17-24.
48. Jaradat N, Sweileh WA. Descriptive study of community pharmacy practice in Palestine: Analysis and future look. An Najah Univ J Res 2003a;17:191-9.
49. Jaradat N, Sweileh WA. Drug information for community pharmacies: Survey on needs and use of drug information with special focus on new information technology. An Najah Univ J Res 2003b;17:287-300.
50. Alenezi NA, Wazaify MM, Albsoul-Younes A. Evaluation of outpatient-pharmacists' counseling behavior and content in a teaching hospital in Jordan-an observational study. Jordan J Pharm Sci 2014;7:77-87.
51. Aburuz S, Al-Ghazawi M, Snyder A. Pharmaceutical care in a community-based practice setting in Jordan: Where are we now with our attitudes and perceived barriers? Int J Pharm Pract 2012;20:71-9.

52. Wazaify M, Maani M, Ball D. Drug information resources at community pharmacies in Amman, Jordan. Int J Pharm Pract 2009;17:151-5.
53. Wazaify M, Al-Bsoul-Younes A, Abu-Gharbieh E, Tahaineh L. Societal perspectives on the role of community pharmacists and over-the-counter drugs in Jordan. Pharm World Sci 2008;30:884-91.
54. Kheir N, Al Saad D, Al Naimi S. Pharmaceutical care in the Arabic-speaking Middle East: Literature review and country informant feedback. Avicenna 2013:2http://dx.doi.org/10.5339/avi.2013.2
55. Sreelalitha N, Vigneshwaraan E, Narayana G, Reddy YP, Reddy MR. Review of pharmaceutical care services provided by the pharmacists. Int Res J Pharm 2013;3:78-9.
56. Anyama N, Adome RO. Community pharmaceutical care: An 8-month critical review of two pharmacies in Kampala. Afr Health Sci 2003;3:87-93.
57. Richmond S, Morton V, Wong I, Kei C, Russell I, Philips Z, *et al*. Effectiveness of shared pharmaceutical care for older patients: Respect trial findings. Br J Gen Pract 2010;60:e10-e19.
58. Hughes CM, Hawwa AF, Scullin C, Anderson C, Bernsten CB, Björnsdóttir I, *et al.* Provision of pharmaceutical care by community pharmacists: A comparison across Europe. Pharm World Sci 2010;32:472-87.
59. van Mil JW, Schulz M. A review of pharmaceutical care in community pharmacy in Europe. Harvard Health Policy Rev 2006;7:155-68.
60. Emmerton L, Shaw J, Kheir N. Asthma management by New Zealand pharmacists: A pharmaceutical care demonstration project. J Clin Pharm Ther 2003;28:395-402.
61. Al-Arifi MN, Al-Dhuwaili OA, Gubara HA, Al-Omar MS, Al-Sultan, Saeed RI. Pharmacy students' attitudes toward pharmaceutical care in Riyadh region Saudi Arabia. Saudi Pharm J 2007;15:146-59.
62. Al-Mohamadi A, Badr A, Bin Mahfouz L, Samargandi D, Al Ahdal A. Dispensing medications without prescription at Saudi community pharmacy: Extent and perception. Saudi Pharm J 2013;21:13-8.