

<b>Access this article online</b>
Quick Response Code:

<b>Website:</b> <a href="http://www.jehp.net">www.jehp.net</a>
<b>DOI:</b> 10.4103/jehp.jehp_1374_20

# Health-promoting services provided in pharmacies: A systematic review

Arash Shirdel, Abolghasem Pourreza<sup>1</sup>, Amin Daemi<sup>2</sup>, Batoul Ahmadi

## Abstract:

Pharmacies are a major component of health systems and a major part of health service provision. This study aimed at identifying and introducing the potentials of pharmacies in health promotion. This was a systematic review that searched PubMed, Web of Science, Science Direct, SID, Magiran, and IranMedex from February 1990 to September 2018 for related materials. The main search keywords were (pharmacy services), (community pharmacy services), (retail pharmacy services), (pharmacy practice intervention). Inclusion was limited to those papers that discussed the health-promoting services provided in the pharmacies. The quality of included papers was assessed by the Critical Appraisal Skills Program checklists. The Preferred Reporting Items for Systematic Reviews and Meta-Analyses chart was followed in all stages of the study. Of the 4156 papers retrieved, 18 met the inclusion criteria and included in the analysis. Study findings were categorized into three main categories: Health and prevention services, services related to treatments, and the awareness about the pharmacies' functions. The health and prevention category consisted of education, vaccination, screening and prevention of diseases, family planning, blood pressure monitoring, quitting smoking, limiting alcohol, and weight management. The treatment-related services consisted of adherence to medication, medication consultation, minor pains, and emergency medical services. Pharmacies can provide a wide variety of services besides the medications. Purposeful development of the services provided in the pharmacies and involving them in an extended array of services may accelerate the health promotion activities of the health system and result in improved quality of life and decreased costs. To do so, the legal, educational-skill, and pricing challenges should be resolved.

## Keywords:

Community pharmacy services, health promotion, pharmacies

## Introduction

Pharmacies are a major component of the health systems of the countries and a major place to provide health services.<sup>[1]</sup> They are an integral part of primary health care and in many cases, the first place that the health system faces the clients.<sup>[2]</sup> The World Health Organization believes that the pharmacies are easily accessible for the people and thus can have a key role in health service provision.<sup>[3]</sup>

This is an open access journal, and articles are distributed under the terms of the Creative Commons Attribution-NonCommercial-ShareAlike 4.0 License, which allows others to remix, tweak, and build upon the work non-commercially, as long as appropriate credit is given and the new creations are licensed under the identical terms.

For reprints contact: [WKHLRPMedknow\\_reprints@wolterskluwer.com](mailto:WKHLRPMedknow_reprints@wolterskluwer.com)

The role of the pharmacies has changed in the past two decades and they are no longer just a place for dispensing the medications of the patients. But they had become a center for providing comprehensive care. The role of the pharmacists also has changed from producing and dispensing the medicines to service provision, caregiving, health promotion, education, prevention, and assuring safe use of the medications.<sup>[4,5]</sup>

Pharmacies in Africa provide primary health care, screening tests, and emergency

**How to cite this article:** Shirdel A, Pourreza A, Daemi A, Ahmadi B. Health-promoting services provided in pharmacies: A systematic review. *J Edu Health Promot* 2021;10:234.

Department of Health Management and Economics, School of Public Health, Tehran University of Medical Sciences, Tehran, Iran,  
<sup>1</sup>Department of Health Education and Promotion, School of Public Health, Tehran University of Medical Sciences, Tehran, Iran, <sup>2</sup>Health Management and Economics Research Center, Iran University of Medical Sciences, Tehran, Iran

### Address for correspondence:

Dr. Batoul Ahmadi,  
Department of Health Management and Economics, School of Public Health, Tehran University of Medical Sciences, Tehran, Iran.  
E-mail: [ahmadiba@tums.ac.ir](mailto:ahmadiba@tums.ac.ir)

Received: 10-10-2020  
Accepted: 21-11-2020  
Published: 30-06-2021

services.<sup>[1]</sup> It is estimated that annually 40,000–50,000 adults in the USA die due to diseases that are preventable by vaccines. Whilst the pharmacies can have a major role in reducing these preventable deaths by educational and vaccination services.<sup>[6]</sup> As another example, considering the increasing prevalence of high blood pressure in Japan, pharmacies can provide education and change the lifestyle of the population to decrease the disease and its consequences.<sup>[7,8]</sup>

Since the pharmacies are in the frontline of the health system and thus in contact with the population, they have an undeniable role in population health. So, their efforts in health promotion activities can lead to increased health levels of the population and reduced costs of the health system.<sup>[9,10]</sup> Pharmacies all around the world provide various services to help health promotion of the population while these services are not provided at an optimum level in all places. This is in spite of their capacities, the remarkable access to these facilities, and the fact that they can highly contribute in health promotion programs. This study aimed at the identification of health-promoting services that can be provided in pharmacies. So, seeing the pharmacies not just as a place for prescription and distribution of the medicines but also a place for the provision of additional services may promote the health of the population and in return, reduce the health-care costs.

## Materials and Methods

### Search strategy and database search

This was a systematic review to identify the health-promoting services of the pharmacies. The primary keywords were determined based on the viewpoints of several experts in the field of study. Subsequently, the related keywords were extracted from the PubMed database through the MESH. Although the primary keywords were considered as the basis of the study, the keywords of other related articles were used in the preliminary search and investigated by the experts. The keywords of (pharmacy services), (community pharmacy services), (retail pharmacy services), (pharmacy practice intervention) were investigated in the databases of PubMed, Google Scholar, Science Direct, Web of Science from February 1990 through September 2018. As an example, the search strategy for the PubMed is provided here: (Pharmacy [Title] OR retail pharmacy [Title] OR retail pharmacies [Title] OR community pharmacy [Title] OR community pharmacies [Title]) AND (services [Title] OR education [Title] OR quality [Title] OR intervention [Title]).

The SID, Magiran, and IranMedex as national Iranian databases also were searched with the Persian equivalent of the search keywords. This search yielded in no

relevant study and the retrieved studies in the Persian language were mostly about the satisfaction of the pharmacy customers. Further to the database search, the reference list of the included papers was searched for additional related articles.

### Selection of articles

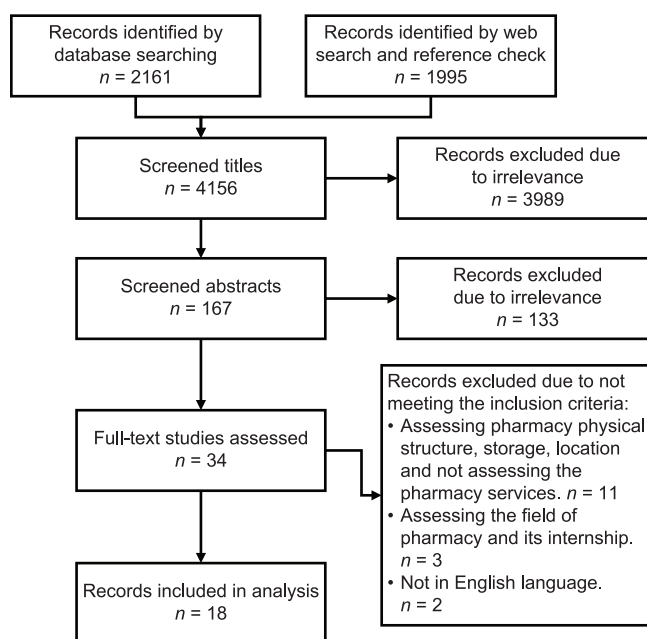
The retrieved papers were screened independently by two members of the research team according to inclusion and exclusion criteria. In case of any disagreement, a third researcher was consulted. Figure 1 shows the screening and selection process of the related papers for identifying the health-promoting functions of the pharmacies. The Preferred Reporting Items for Systematic Reviews and Meta-Analyses flowchart was followed in the selection of the studies.

### Inclusion and exclusion criteria

The main inclusion criterion was addressing at least one function of pharmacy, other than the prescription of medicines. The other criteria were being published in the study period and in the English language. Those papers that had no full text available, such as conference papers, were excluded.

### Study quality assessment

The Critical Appraisal Skills Program checklists were used for assessing the quality of the included studies. The assessment showed that of the 18 included studies eight had good quality<sup>[3,6,10-15]</sup> and 10 had moderate quality.<sup>[1,16-24]</sup> To assure uniform handling of the data, a form was used for data extraction which included title,



**Figure 1:** Screening and selection process of the identified studies for functions of the pharmacies according to the Preferred Reporting Items for Systematic Reviews and Meta-Analyses flowchart for the study selection process in this research

author(s), year of publication, country of study, study purpose, applied methodology, and the results-the mentioned functions for the pharmacies. The narrative analysis method was used to analyze and report the data.

## Results

### Characteristics of the included studies

Of the total 4156 identified records finally, 18 studies met the inclusion criteria and were included in the analysis. Figure 1 shows the screening and selection process of the studies. Table 1 shows the characteristics and main findings of the included studies.

Majority of the included studies were from the USA (33.3%) and the UK (22.2%). Other studies were from Vietnam, Brazil, Australia, South Africa, India, Qatar, Canada, and Malaysia. Half of the studies (50%) had a cross-sectional nature and 27.7% were systematic reviews. In terms of time, most studies were from recent years so that two-third of the included studies were related to 2015–2018. This shows an attention to the functions of the pharmacies in recent years.

### Synthetic results

The studies introduced several functions for the pharmacies that are categorized into two main categories of “health and prevention services” and the “treatment-related services.” The other major finding of this review was about the awareness and how to use the pharmacies. The health and prevention category included vaccination, screening and disease prevention, family planning, healthy lifestyle, and public health services. The treatment-related services included adherence to medication, medication consultation, prescriptions for minor pains, and emergency medical services.

### Health and prevention

#### Vaccination

Four studies mentioned the vaccination services in the pharmacies.<sup>[6,10,11,24]</sup> The study by Todd *et al.* in the UK used the geographic information system and reported that people have access to the pharmacies more than the general physicians. The study suggested that considering the access to the pharmacies, it is better that the identification of in-risk people and their vaccination be performed by the pharmacies, especially in deprived areas.<sup>[11]</sup>

Bach and Goad investigated the role of American pharmacies in educating, accelerating, and immunizing. The study found that most people prefer to be vaccinated in pharmacies because of no waiting time and no visit payments. Since 93% of the Americans are living five miles from the pharmacies, they are able to easily access them. The pharmacists can educate the customers

on the vaccination, be a host for immunizing and administer the vaccines according to the related laws. The study concluded that the pharmacies can increase the immunization rate and thus prevent many deaths.<sup>[6]</sup>

Merks *et al.* conducted a study in 2016 in the rural areas of the UK and found that many people did not know about the immunization services that were available in the pharmacies and thus did not utilize the services.<sup>[10]</sup>

The other study was conducted by Hurley-Kim (2018) in the US and assessed the vaccination services for those people who want to travel to other countries. The study reported that the vaccination by the pharmacies is effective in preventing the transmission of diseases from other countries to the US.<sup>[24]</sup>

Numerous people die each year due to the diseases that are preventable by the vaccines.<sup>[24]</sup> While the pharmacies can play a positive role in this regard. The pharmacists can educate the people on the immunization, provide recommendations for vaccination, and administer the vaccines.<sup>[10,11]</sup> This will prevent the deaths, elevate the health status of the society, and lower the health costs.<sup>[6,25]</sup>

#### Screening and disease prevention

Four studies discussed this function of the pharmacies.<sup>[10,15,17,23]</sup>

Cancer screening and identification: The study by Havlicek and Mansell in Canada stated that many people need cancer screening tests and the pharmacists can identify the high-risk people and thus help early diagnosis of the cancers which would result in reduction in deaths due to cancer. The pharmacists can also increase the awareness of the people about cancer prevention and screening. The study stated that to do so, the pharmacists should know the risk factor of each cancer.<sup>[15]</sup>

Cancer is a major cause of morbidity and mortality worldwide and many people die each year due to late diagnosis. Pharmacies are good places for the identification, screening, and education of the people about cancer and may increase early diagnosis of the cancer.<sup>[15,26]</sup>

Prevention and control of heart diseases: Two studies reported the blood pressure control as a function of pharmacy.<sup>[10,17]</sup> Merks *et al.* reported that only 5.8% of the participant in the UK were aware of the blood pressure control in the pharmacies.<sup>[10]</sup> Curtiss *et al.* stated the blood pressure control as a function of US pharmacies.<sup>[17]</sup>

The heart diseases are the major cause of death in the world. Providing blood pressure control and monitoring in the pharmacies may prevent or help early diagnosis of the heart diseases and thus reduce the health costs.

**Table 1: Characteristics and main findings of the included studies on functions of the pharmacies**

Raw	Author (s)	Country, year	Study design	Aim	Relevant findings	Conclusions/recommendations
1	Richardson and Pollock <sup>[16]</sup>	UK, 2010	Cross-sectional	Assessing the implementation of reforms in services of public pharmacies	The government approved new services of public pharmacies which increased access of the population and decreased workload of physicians and health-care costs	Increasing the provided services of the pharmacies
2	Todd <i>et al.</i> <sup>[111]</sup>	UK, 2015	Cross-sectional	Assessing the access to general physicians and comparing the access to pharmacies in various regions	Provision of services such as vaccination of at-risk individuals, obesity control, quitting alcohol and smoking, and providing public health services	Access of most of the population to the public pharmacies creates the opportunity to improve equity in access by providing primary health care
3	Curtiss <i>et al.</i> <sup>[17]</sup>	US, 2004	Systematic review	Reviewing the studies on improving the services of the pharmacies	Provision of blood pressure control, lipid control, and reducing the risk of heart diseases	Studying and resolving the challenges of the pharmacies help them provide effective services and improve customer satisfaction
4	Melton and Lai <sup>[12]</sup>	US, 2017	Systematic review	Studying the services of the pharmacies and the available opportunities to increase customers' satisfaction	Provision of additional services in the pharmacies and new services by using new technologies	Providing new services in the pharmacies help increase the customers' satisfaction
5	Larsson <i>et al.</i> <sup>[18]</sup>	Vietnam, 2006	Cross-sectional	Studying the distribution of medicines and the extent of enclosing the side effects of the medicines	Enclosing the side effects of the medicines is an important service of the pharmacies and defects in the role may cause health problems for the patients and the society	Powerful financial incentives exist for the pharmacies to provide medicines irrespective of the regulations
6	Pringle and Coley <sup>[13]</sup>	US, 2015	Before-after interventional study	Proposing a framework for improving patients' adherence to medication	Monitoring the patients by the pharmacies after prescription resulted in increased adherence to the medication	Monitoring the adherence of the patients results in better therapeutic results and lower health costs
7	Obreli-Neto <i>et al.</i> <sup>[19]</sup>	Brazil, 2016	Systematic review	Studying the effect of media in in-service training on the clinical services of the pharmacies	The main challenges are using online education for pharmacy workers and lack of valid tools to assess this education	Training the pharmacy workers made them provide effective services
8	Hattingh and Tait <sup>[20]</sup>	Australia, 2018	Systematic review	Studying the possibility of screening and alcohol quitting services in the pharmacies	Identifying high-risk individuals in terms of alcohol consumption. Providing primary screening and alcohol quitting services in the pharmacies require staff training and a proper place	Providing the alcohol quitting services in a private room cause clients to trust more
9	Singleton <i>et al.</i> <sup>[14]</sup>	US, 2017	Before-after interventional study	Implementing a telephone intervention to increase adherence to medication in early diabetic patients	Using telephone monitoring by pharmacy increased the adherence to medication among diabetic patients in the early stage of the disease and prevented disease progress	Slowing down the disease progress and reducing health costs of diabetic patients by telephone monitoring of drug use

Contd...

**Table 1: Contd...**

Raw	Author (s)	Country, year	Study design	Aim	Relevant findings	Conclusions/recommendations
10	Brown <i>et al.</i> <sup>[9]</sup>	UK, 2016	Systematic review	Assessing the effect of pharmacy services for reducing alcohol, quitting smoking, and weight control	The services for quitting smoking and obesity control were effective but the effectiveness of the alcohol restricting services was not proved	Potential of the pharmacies for public health interventions such as weight management and smoking quitting
11	Malangu <sup>[11]</sup>	South Africa, 2014	Review	Studying the challenges of adding new services to the pharmacies	Adding new services, such as case finding, diagnosis, prescription, and monitoring, to the pharmacies requires training courses but increases the income of the pharmacies. It also increases the responsibility of the pharmacists	Potential of the pharmacies in providing primary health care but it requires legal and political infrastructure
12	Basak and Sathyanarayana <sup>[21]</sup>	India, 2009	Cross-sectional	Studying the situation of Indian pharmacies in the past, now, and future	Lack of awareness of people about services provided in the pharmacies and their inappropriate attitude toward the pharmacies cause them not to use the services of the pharmacies	Potential of the pharmacies in providing primary health care
13	El Hajj <i>et al.</i> <sup>[22]</sup>	Qatar, 2011	Cross-sectional	Studying the viewpoints of the society about the role of pharmacists and assessing the utilization and satisfaction of pharmacy services	The population has low perception about the role of the pharmacists which leads to lack of awareness on the services provided in the pharmacies and not using the services	Participants were dissatisfied with the time that the pharmacists devote to the clients and asked physicians about their pharmaceutical questions
14	Bach and Goad <sup>[6]</sup>	US, 2015	Cross-sectional	Assessing the role of the pharmacies in increasing the vaccination coverage	Providing vaccination services in the pharmacies was successful and helped improving the health of the society. Yet it had some challenges for payment rules and training	Vaccination by the pharmacies increases the vaccine coverage
15	Merks <i>et al.</i> <sup>[10]</sup>	UK, 2016	Cross-sectional	Studying the attitudes of the people about the services provided in the pharmacies and providing some suggestions for increasing their awareness in this regard	Few advanced services of the pharmacies were used in the rural areas which was due to low awareness of the people about the services	People usually know the pharmacies as a place for just prescription and distribution of medicines. This requires good communication about the services provided
16	Havlicek and Mansell <sup>[15]</sup>	Canada, 2016	Cross-sectional	Studying the role of pharmacists in monitoring and prevention of cancer	Cancer screening, providing cancer prevention education, and lifestyle modification by the pharmacies	Cancer prevention services resulted in the prevention and early identification of cancer and increased the treatment probability
17	Verma <i>et al.</i> <sup>[23]</sup>	Malasia, 2018	Cross-sectional	Studying the awareness of the people about weight management services in the pharmacies and its utilization	Most people did not use the weight management services of the pharmacies because they were not aware of the service	Possibility of weight management services in the pharmacies

Contd...

**Table 1: Contd...**

Raw	Author (s)	Country, year	Study design	Aim	Relevant findings	Conclusions/recommendations
18	Hurley-Kim <i>et al.</i> <sup>[24]</sup>	US, 2018	Review	Studying the drug regulations and pharmacy interventions for those people who want to travel to other countries	Vaccination by the pharmacies has an important role in disease prevention and preventing the transmission of diseases from other countries	Providing travel-related health services -including vaccination and educations specific to destination country

Diabetes prevention and control: The study by Verma *et al.*, in Malaysia, mentioned measuring blood glucose in pharmacy which helps control and prevention of the diabetes.<sup>[23]</sup> Diabetes is a widespread chronic disease with an increasing prevalence in most countries particularly the developing ones. It is estimated that near half of the diabetic patients are not aware of their diabetes. This unawareness and lack of control increase the complications of the disease. But the pharmacies, by checking blood glucose, can help identifying latent diabetes disease and controlling the disease.<sup>[27]</sup>

Family planning: One study by Malangu in South Africa reported this function for the pharmacies but the service was not free of charge.<sup>[1]</sup>

### Healthy lifestyle

Lifestyle is a pattern of behavioral choices from among various options which individuals choose according to socioeconomic conditions and easiness. Thus, choosing to smoke or not to smoke, drinking alcohol or not drinking, using a car or public transport are all parts of our choices and decision patterns that make our lifestyle. Some diseases root from the lifestyle, rather than genetics or transmission from other people.<sup>[28]</sup> Those studies related to weight management and diet therapy, and quitting smoking and alcohol are categorized in this group.

Quitting smoking: Four studies found in this regard as mentioned below. The studies by Merks, Richardson, and Todd only mentioned the smoking quitting as a service provided in the pharmacies. But the study by Brown *et al.* described more details. They compared behavior therapy, nicotine replacement, and placebo and found both strategies effective. The pharmacy workers should be trained on behavior therapy and how to give consultation.<sup>[3,10-11]</sup>

Smoking significantly increases the risk of coronary heart diseases, lung diseases, diabetes, nervous diseases such as Parkinson’s and Alzheimer’s disease, and cancers such as lung, larynx, stomach cancers. Smoking not only decreases the life expectancy and increases the medical costs of the smokers but also the people around them such as family members.<sup>[3,29,30]</sup> Providing smoking quitting services in the pharmacies can help reduce the

consequences of smoking the society and thus have a positive impact on population health.

Weight management: Three studies reported weight management as a service of pharmacies. The study by Todd *et al.* in 2015 in the UK mentioned controlling the obesity in pharmacies. The study stated that considering the more access of the people to the pharmacies than the general physicians, this will increase the access to these services, especially in less developed areas.<sup>[11]</sup> The study by Brown *et al.* 0 rted the diet therapy as a service provided in the pharmacies of the UK which included setting up diet, exercise plans, and consultation.<sup>[3]</sup> Verma *et al.* in 2018 studied weight management service in the pharmacies of Malaysia and reported these items: Measuring height and weight, calculating body mass index, providing education, consultation for a healthy diet and physical activity, referring to relevant health-care centers, medicine therapy, consultation for weight loss by surgery, and making professional groups for deciding for the visitors.<sup>[23]</sup>

Overweight and obesity prepare the individuals for diseases like high blood pressure, type 2 diabetes, coronary heart disease, stroke, and liver and kidney diseases.<sup>[31]</sup> Regarding the increasing trend of obesity and overweight, providing weight management services can be an area of interest for the pharmacies and can be helpful from the public health viewpoint. Yet, it has some challenges defining tariff, the waiting times, and preparing a proper place.

Alcohol consumption control: Three studies reported this service for the pharmacies.<sup>[3,11,20]</sup> The studies by Todd *et al.* and Brown *et al.* mentioned that this service is provided in the pharmacies but did not provide more details about it.<sup>[3,11]</sup> Hattingh *et al.* in a study in 2018 in Australia assessed the possibility of screening and interventions by the pharmacies for reducing alcoholism in the society. They stated that the pharmacies can be effective in the identification of individuals with high risk of alcohol consumption and then making them aware of the consequences of drinking, as long as providing education about its importance in those with chronic diseases like diabetes.<sup>[20]</sup>

Drinking alcohol increase the risk of hepatitis, depression, high blood pressure, stroke, and some kinds of cancers.<sup>[17,20]</sup> Providing alcohol consumption control services in the pharmacies can be helpful in reducing the physical and mental health problems of the people. The pharmacists should be trained on communication skills and professional knowledge about alcohol consumption and should provide these services with regard to privacy.<sup>[20,32]</sup>

Public health services: The studies by Richardson and Pollock and Todd *et al.* mentioned this function for the pharmacies. Providing public health services in the pharmacies increases access to health care and options of the individuals, and decreases the workload of the physicians and health costs of the society.<sup>[11,16]</sup>

### Treatment-related services

Adherence to medication: Two studies had mentioned this service for the pharmacies.<sup>[13,14]</sup> The study by Pringle and Coley reported that holding educational workshops for pharmacists and training them on communication skills results in elevated motivation for providing consultation and then consulting the patients in an appropriate place with respect to their beliefs cause patients to have more adherence to the medication.<sup>[13]</sup> Singleton *et al.* studied 96 diabetic patients for 1 year and found that providing consultation, making reminders by smartphones, communicating on importance of each medicine in control of the disease, making them aware of costs of alternative therapies, and motivating them for preventing the consequences of diabetes lead to a considerable increase in adherence to medication and reducing disease progress.<sup>[14]</sup> Poor adherence to medication may result in poor effectiveness of treatment and waste of costs.<sup>[13,14]</sup> So, the pharmacies can play a positive role in this regard.

### Medication consultation

Six studies reported pharmaceutical consultation which were mainly about adherence to medication, choosing and how to use the OTCs, methods of consumption, and side effects of the medicines.<sup>[1,3,13,14]</sup>

Providing consultation is an important service of the pharmacies which requires proper space Pharmacists had a pivotal role in regulating medication therapy, promoting optimum use of the medicines, and minimizing the side effects of them.<sup>[33]</sup> Giving information on the method, time and amount of consumption, side effects, interactions, and contraindications of each medicine all are basic roles of the pharmacies. These services are connected with customers' satisfaction so that some patients expressed dissatisfaction about the amount of provided information and devoted time for consultation.<sup>[22]</sup>

### Prescriptions for minor pains

This service was mentioned in four studies.<sup>[1,10,19,22]</sup> Studies in various countries showed that most of the customers believe that treating minor pains is a necessary function of pharmacies. This function may include treating viral and bacterial infection, minor incidences, stomach problems, and allergies.<sup>[10,19,22]</sup> Malangu in South Africa stated that these services are provided for those who have the ability to pay.<sup>[1]</sup> This function of the pharmacies can decrease the workload of the specialist therapy centers, costs of treatment, and the waiting time for treatment.<sup>[1,10]</sup> This may also increase the access to health services in remote areas.

### Emergency medical services

Only one study by Merks *et al.* in the UK reported this function for the pharmacies and also reported that the people were not aware of this service.<sup>[10]</sup>

### Awareness and how to use the pharmacies

Three studies investigated the awareness of customers about the services of the pharmacies. These studies were conducted in Qatar, India, and the UK and reported that generally, people have low perception of services provided in the pharmacies and few people use the services.<sup>[10,21,22]</sup> Providing various services would be effective only when people be aware of and utilize them.<sup>[34]</sup>

A study of Basak and Sathyanarayana in India showed that most people know the pharmacies as a place of just prescription of medicines and thus did not use their consultation services. They found that the people have a low perception of the pharmacy and the services provided thus the pharmacies are faced with challenges in providing some services.<sup>[21]</sup> El Hajj *et al.* in Qatar found that 50% of the participants believe that physicians are the primary persons to answer their questions about medications, 70% did not expect that pharmacies have any role in monitoring and health programs and screening, 73% believe that the pharmacists do not have knowledge and time to answer the patients.<sup>[22]</sup> Merks *et al.* in the UK found that 84% of the participants stated that they know the pharmacy as a place of prescription of medicines, 72% as a place of redistribution of medicines, 23% as a place of specific therapies such as minor pains, infections, minor injuries, and allergies.<sup>[10]</sup>

### Innovations and limitations

A limitation of this study was limiting the search to only English and Persian languages. This may cause some evidence to be neglected. But the time period of the search was wide enough and the major databases were searched to include every potential document.

Researches on the pharmacy services usually are concerned with the customer satisfaction but this study

systematically reviewed the services providable in the pharmacies to make them a place for health promotion.

## Conclusion

Pharmacies are not only a place for the prescription of medicines nowadays. They had got a wider role in community health and became a place for comprehensive health care. They are easily accessible and help equitable service provision. This study identified a wide variety of functions for the pharmacies that include education, smoking quitting, diet therapy and weight management, vaccination, reducing alcohol consumption, family planning, adherence to medication, treating minor pains, emergency medical services, and screening for noncommunicable diseases such as cancer, diabetes, high blood pressure, and heart disease. Involvement of the pharmacies in the abovementioned services may result in the improved health status of the population, increased quality of life of the patients, reduced costs of treatments, and reduced workload of the physicians. Yet, it has some challenges and requires training courses for pharmacists and pharmacy workers, licensing and pricing for the services, and communicating the availability of the services.

## Acknowledgment

This study is financially supported by the Tehran University of Medical Sciences (TUMS). The study protocol is reviewed and approved by the Ethics Committee of TUMS with the ethics code of IR.TUMS.SPH.REC.1396.4103.

## Financial support and sponsorship

This manuscript was derived from a Ph.D. thesis in the field of Health Services Management at Tehran University of Medical Sciences (TUMS). The study is supported by TUMS. The sponsor has no role in data acquisition or interpretation.

## Conflicts of interest

There are no conflicts of interest.

## References

1. Malangu N. The future of community pharmacy practice in south africa in the light of the proposed new qualification for pharmacists: Implications and challenges. *Global J Health Sci* 2014;6:226.
2. Watkins K, Wood H, Schneider CR, Clifford R. Effectiveness of implementation strategies for clinical guidelines to community pharmacy: A systematic review. *Implement Science* 2015;10:151.
3. Brown TJ, Todd A, Malley CO, Moore HJ, Husband AK, Bambra C, *et al.* Community pharmacy-delivered interventions for public health priorities: A systematic review of interventions for alcohol reduction, smoking cessation and weight management, including meta-analysis for smoking cessation. *BMJ Open* 2016;6:e009828.
4. Bacci JL, Akinwale TP, Adams AJ, Somma M. An analysis of

- community pharmacy shared faculty members' contributions to teaching, service, and scholarship. *Am J Pharm Educ* 2016;80:115.
5. Dugan BD. Enhancing community pharmacy through advanced pharmacy practice experiences. *Am J Pharm Educ* 2006;70:21.
6. Bach AT, Goad JA. The role of community pharmacy-based vaccination in the USA: Current practice and future directions. *Integr Pharm Res Pract* 2015;4:67-77.
7. Sharma S, Bhuvan KC, Alrasheedy AA, Kaundinnayana A, Khanal A. Impact of community pharmacy-based educational intervention on patients with hypertension in Western Nepal. *Australas Med J* 2014;7:304-13.
8. Mizuno T, Nabetani N, Yamashita N, Matsumoto C, Yasuda Y, Nagamatsu T, *et al.* Pharmacist blood pressure management programs using telemonitoring systems are useful for monitoring side effects of antihypertensive drugs in a community pharmacy. *Clin Case Rep* 2016;4:1041-4.
9. Blalock SJ, Roberts AW, Lauffenburger JC, Thompson T, O'Connor SK. The effect of community pharmacy – Based interventions on patient health outcomes: A systematic review. *Med Care Res Rev* 2013;70:235-66.
10. Merks P, Świeczkowski D, Jaguszewski MJ. Patients' perception of pharmaceutical services available in a community pharmacy among patients living in a rural area of the United Kingdom. *Pharm Pract (Granada)* 2016;14:774.
11. Todd A, Copeland A, Husband A, Kasim A, Bambra C. Access all areas? An area-level analysis of accessibility to general practice and community pharmacy services in England by urbanity and social deprivation. *BMJ Open* 2015;5:e007328.
12. Melton BL, Lai Z. Review of community pharmacy services: What is being performed, and where are the opportunities for improvement?. *Integr Pharm Res Pract* 2017;6:79-89.
13. Pringle J, Coley KC. Improving medication adherence: A framework for community pharmacy-based interventions. *Integr Pharm Res Pract* 2015;4:175-83.
14. Singleton J, Veach S, Catney C, Witry M. Analysis of a community pharmacy intervention to improve low adherence rates to oral diabetes medications. *Pharmacy* 2017;5:58.
15. Havlicek AJ, Mansell H. The community pharmacist's role in cancer screening and prevention. *Can Pharm J* 2016;149:274-82.
16. Richardson E, Pollock AM. Community pharmacy: Moving from dispensing to diagnosis and treatment. *BMJ* 2010;340:c2298.
17. Curtiss FR, Fry RN, Avey SG. Framework for pharmacy services quality improvement – A bridge to cross the quality chasm. Part I. The opportunity and the tool. *J Manag Care Pharm* 2004;10:60-78.
18. Larsson M, Thanh Binh N, Tomson G, Chuc NT, Falkenberg T. Private pharmacy staff in Hanoi dispensing steroids-theory and practice. *Pharm Pract* 2006;4:60.
19. Obreli-Neto PR, dos Reis TM, Guidoni CM, Giroto E, Guerra ML, Baldoni AO. A systematic review of the effects of continuing education programs on providing clinical community pharmacy services. *Am J Pharm Educ* 2016;80:88.
20. Hattingh HL, Tait RJ. Pharmacy-based alcohol-misuse services: Current perspectives. *Integr Pharm Res Pract* 2017;7:21.
21. Basak SC, Sathyanarayana D. Community pharmacy practice in India: Past, present and future. *South Med Rev* 2009;2:11-4.
22. El Hajj MS, Salem S, Mansoor H. Public's attitudes towards community pharmacy in Qatar: A pilot study. *Patient Prefer Adherence* 2011;5:405.
23. Verma RK, Paraidathathu T, Taha NA, Chong WW. Perceptions of the Malaysian general public on community pharmacy-based weight management services. *J Pharm Policy Pract* 2018;11:17.
24. Hurlley-Kim K, Goad J, Seed S, Hess KM. Pharmacy-based travel health services in the United States. *Pharmacy* 2019;7:5.
25. Smith AJ, Scahill SL, Harrison J, Carroll T, Medlicott NJ. Service provision in the wake of a new funding model for community pharmacy. *BMC Health Serv Res* 2018;18:307.



26. Lindsey L, Husband A, Nazar H, Todd A. Promoting the early detection of cancer: A systematic review of community pharmacy-based education and screening interventions. *Cancer Epidemiol* 2015;39:673-81.
27. Larejani B, Zahedi F. Epidemiology of diabetes mellitus in Iran. *Iran J Diabetes Metab* 2001;1:1-8.
28. Ayuoghi Rahnema V, Mokhtari Tavana A. The relationship between ischemic heart disease and lifestyle. *J Community Health Res* 2018;7:42-7.
29. Das SK. Harmful health effects of cigarette smoking. *Mol Cell Biochem* 2003;253:159-65.
30. Saha I, Islam K, Paul B, Som TK. Tobacco-related morbidity and nicotine dependence: An experience in an urban slum of Burdwan district, West Bengal, India. *J Educ Health Promot* 2018;7:94.
31. Kopelman P. Health risks associated with overweight and obesity. *Obes Rev* 2007;8 Suppl 1:13-7.
32. Fitzgerald N, McCaig D, Watson H, Thomson D, Stewart DC. Development, Implementation and evaluation of a pilot project to deliver interventions on alcohol issues in community pharmacies. *International Journal of Pharmacy Practice* 2008;16(1):17-22.
33. Safaeian L, Mostafavi SA, Changiz T, Mirzadeh M. Pharmacists' opinions and self-reporting performance regarding the professional tasks and responsibilities in Isfahan, Iran. *J Educ Health Promot* 2014;3:2.
34. Nitadpakorn S, Farris KB, Kittisopee T. Factors affecting pharmacy engagement and pharmacy customer devotion in community pharmacy: A structural equation modeling approach. *Pharm Pract* 2017;15:999.