



## Original article

# Health consumer engagement in developing novel preventive health community pharmacy roles in cardiovascular disease in Saudi Arabia: A qualitative analysis



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## ABSTRACT

**Introduction:** Cardiovascular diseases (CVD) are one of key leading causes of mortality worldwide. Both modifiable and non-modifiable risk factors contribute to the development of CVD. Modifiable risk factors such as smoking, unhealthy diets and lack of exercise are increasing in prevalence in Saudi Arabia but may be mitigated using pharmacological and non-pharmacological approaches. Thus, identifying, assessing and managing these modifiable risks at an early stage is essential. Pharmacists are highly accessible primary health professionals and can play a crucial role in screening and managing these risk factors in collaboration with primary care physicians. There is currently no research in Saudi Arabia exploring the views of health consumers with CVD risk factors regarding their preferences for or willingness to engage with community pharmacy CVD preventive health services.

**Objectives:** To explore the perceptions of health consumers about current and feasible future services by pharmacists with a specific focus on CVD risk screening and management in Saudi Arabia.

**Methods:** Semi-structured interviews were conducted with consumers with at least one modifiable CVD risk factor. The interviews were audio-recorded, transcribed verbatim, translated into English and then thematically analysed.

**Results:** A total of 25 individuals, most of whom were Saudi (88%) and women (65%), participated in face to face interviews. Five main themes emerged from the analysis of consumers' responses. 1. *Perception of pharmacists' role*, the pharmacists' main role was perceived as medication supply. 2. *Trust and satisfaction with current service*, most participants appeared to have low trust in pharmacists. 3. *Preferences for future pharmacy services*, most participants were willing to engage in future pharmacy delivered CVD preventive health services, provided there was stringent regulation and oversight of the quality of such services. 4. *Viability of new pharmacy services* was raised with promotion of such services to the public, collaboration with other health professionals, financial incentivization and motivational rewards thought of as essential ingredient to ensure service feasibility. 5. *Health beliefs and help seeking behaviours* of consumers were diverse and low health literacy was evident; it was thought that pharmacists can help in these matters by educating and advocating for such consumers. Overall, the data suggested that clinical, communication

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and professional skills need to be enhanced among Saudi pharmacists to enable them to provide optimal patient centered services.

**Conclusion:** Health consumers participants were willing to participate and utilise CVD risk screening and management pharmacy-based services, when offered, provided their concerns are addressed. Therefore, in light of the burden of CVD disease in the country, development, implementation and evaluation of pharmacist provided CVD risk screening and management should be undertaken.

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## 1. Introduction

In Saudi Arabia, the prevalence of non-communicable diseases (NCDs) is currently high and forecast to increase in the coming years (WHO, 2017). The results of a prospective cohort study, conducted with 9149 Saudis (58.6% males), in the central region of Saudi Arabia reported an age-adjusted prevalence of type 2 diabetes, hypertension, and chronic artery disease of 31.6%, 32.6% and 6.9%, respectively (Al-Daghri et al., 2011). Further, economic analysis estimates suggest that in Saudi Arabia, almost 2.8% of gross domestic product is lost due to NCDs and the annual cost that NCDs impose on the system is approximately USD 18.6 billion (WHO, 2017). Of all NCDs, cardiovascular diseases (CVD) and diabetes accounted for 12.5% of total health expenditure in 2015; these diseases accrued approximately USD 13.0 billion per annum as indirect costs to the Saudi health system (WHO, 2017). An important step in reducing the burden of NCDs would be to adopt preventive approaches through programs for risk factor screening and early intervention to prevent progression towards disease (Yach et al., 2004). Indeed, strategic planning by healthcare policy-makers worldwide showcases a focus on improving primary and preventive healthcare worldwide (Hindi et al., 2019, Houle et al., 2014, Mossialos et al., 2015). The modifiable risk factors for CVD include smoking, unhealthy diets, lack of exercise, diabetes, hypertension, hyperglycaemia and hypercholesterolemia; these may be addressed by pharmacological means or by encouraging non-pharmacological measures such as lifestyle changes (Barnes, 2013). Early detection and management of such modifiable risk factors can lead to improved clinical, humanistic and economic outcomes (Al Hamarneh et al., 2019, Mc Namara et al., 2019, Tsuyuki et al., 2016). Such preventive health approaches and services are best performed in the primary healthcare setting, which includes community pharmacies. As NCDs become increasingly prevalent globally, the potential of community pharmacists to screen for, monitor and potentially prevent those conditions is increasingly recognised by healthcare professionals (Hindi et al., 2019, Houle et al., 2014, Mossialos et al., 2015) and policymakers (Nelson S et al., 2014, Pharmaceutical Society of Australia).

Globally, in recent decades pharmacy practice has gradually shifted from an exclusive focus on medication dispensing towards the provision of additional patient-centred health services (Houle et al., 2014, Hughes et al., 2010), such as pharmaceutical care or disease state management (Al Hamarneh et al., 2019, Houle et al., 2014, Hughes et al., 2010, McDonald et al., 2010). Pharmacists' interventions using these approaches in patient care have been shown to improve safety and therapeutic outcomes in various conditions including hypertension, asthma, chronic obstructive pulmonary disease, obesity, diabetes, dyslipidaemia, psychiatric conditions, and infective diseases (Tan et al., 2014, George et al., 2010, Chisholm-Burns et al., 2010, Omboni and Caserini, 2018, Agomo, 2012). Specifically, the benefits and feasibility of implementing pharmacy-based services for assessing and addressing modifiable risks for both primary and secondary prevention of CVDs are well documented in the literature (Willis et al., 2014, Okada H et al., 2016, Tsuyuki et al., 2016, Costa et al., 2017, Mc

Namara et al., 2017, Aminde et al., 2018, Okada et al., 2018, Omboni and Caserini, 2018, Erku and Mersha, 2017, Jahangard-Rafsanjani et al., 2017). A recent literature review explored clinical pharmacy services targeted at screening for and educating patients about CVD risk factors such as diabetes and hypertension (amongst other pharmacy services), and authors reported that overall such services indeed led to significant reduction in HbA1c (ranging from between 0.9 and 2.1%) and in systolic blood pressure (ranging from between 8 and 11 mmHg) (Rotta et al., 2015). This body of evidence suggests that setting up Saudi Arabian community pharmacies to provide preventive health services within the primary care domain is likely to benefit patients and lighten the burden on the health system.

However, while primary healthcare should be the first point of care for most non-urgent health issues, a majority of emergency department presentations in public hospitals in Saudi Arabia still occur for non-urgent issues, possibly due to a lack of trust in the quality of care at primary healthcare centres (Senitan et al., 2018, Alyasin and Douglas, 2014). It is known that health infrastructure development in Saudi Arabia has focussed on the public sector, resulting in a limited private health sector. Reform and investment into primary care is therefore a key necessity in the country, particularly in rural and regional areas, where the access to primary health care centres is more limited and possible service quality is lower than in urban centres (Alfaqeh et al., 2017). The Saudi Ministry of Health's timely '2030 Vision' indeed involves reforming primary healthcare and its expansion (Al-Aqeel, 2018).

Reform and enhancement of primary healthcare globally, has been shown to reduce health disparities, improve the health of the population and lower health costs (Starfield, 2009, Starfield et al., 2005). For example, in the UK, in a task-shifting approach, several secondary care activities have been shifted towards primary care (Hindi et al., 2019). Therefore, given the high prevalence of CVD risk factors in Saudi Arabia and the existing privately-owned infrastructure of community pharmacies (space, access, open during trading hours and presence of qualified staff), a potential solution to the lack of access to primary care, may be to have key primary health services offered through pharmacies. Integrating service provision within community pharmacy settings as part of a national primary care approach would relieve pressure on the secondary and tertiary healthcare systems, and may help in reducing unnecessary hospitalizations, readmissions, and physicians' visits (Briggs et al., 2001, Kennedy et al., 2015, Mossialos et al., 2015).

Since such services are currently not within the practice remit of operating Saudi community pharmacies, this change would constitute a major paradigm shift in practice. Implementation science concepts suggest that prior to planning or truly implementing any practice change, the needs, attitudes, barriers and facilitators for the 'change' as perceived by key stakeholders likely to be involved in or affected by the change must be considered (Elf et al., 2015). Changes designed with this information, or indeed co-designed with stakeholders are far more likely to be sustainable, than changes that are 'imposed' on individuals (Crespo-Gonzalez et al., 2017, Dresser, 2017, Franco-Trigo et al., 2017). In the case of

pharmacy-based screening and preventive services, one of the key stakeholders involved would be members of the population who are intended recipients of such services, i.e., consumers with or at risk of developing chronic diseases (who may or may not be currently receiving health care as 'patients'). Thus, the aim of this study was to explore health consumers' experiences of the current role of the pharmacists in Saudi Arabia and their perspectives around possible future pharmacy services with particular focus on CVD and related risks.

## 2. Methods

### 2.1. Study design and setting

A qualitative study using semi-structured interviews was implemented. All interviews were conducted face-face in the capital city of Saudi Arabia (i.e. Riyadh) and Najran, a less developed city in the South of Saudi Arabia, at preferred locations including participants' homes, social centres, waiting areas at hospital pharmacies, primary health, and outpatient's clinics. Ethical approval for the protocol was obtained from the University of Sydney Human Research Ethics Committee (HREC) (approval no. 2017/614).

### 2.2. Interview design

Data collection was aided by an interview guide developed based on the relevant literature and the clinical and research experience of the research team. The interview guide (Appendix A) aimed to explore health consumers' general views and expectations of pharmacists in Saudi Arabia, their perceived desire and/or need for new services and their views regarding a future pharmacy provided CVD risk screening and management service. To ensure face validity, the structure and wording of the questions within the interview guide were discussed between all research team members to ensure they were contextually relevant, included a broad spectrum of probes covering all intended study objectives and were likely easily understood. The interview guide was translated into Arabic by an accredited translator.

### 2.3. Sampling and recruitment

Purposive and convenience sampling techniques were used to recruit health consumers.<sup>1</sup> The target sample size was 25–30 as this has been reported to be generally sufficient to allow data saturation in a relatively homogenous group of participants (Creswell, 1998).

To recruit participants, we sought the help of community and hospital pharmacists or physicians and community centre managers in Riyadh and Najran who were willing to display posters or provide project information for interested health consumers. Consumers interested in participating were asked to directly contact the research team. These recruitment venues were located within a maximum of two hours' drive from Riyadh or Najran city.

#### 2.3.1. Inclusion and exclusion criteria

Criteria for inclusion of health consumers in the study was that they should be  $\geq 35$  years and less than 80 years of age with at least

one modifiable risk factor for CVD, people who could participate in the interview either in English or Arabic. This age group was chosen, as CVDs and related risks are major causes of mortality amongst people aging  $\geq 35$  years (Benjamin et al., 2017). Multiple CVD risk factors were considered relevant for participant inclusion such as diabetes, hypertension, hypercholesterolemia and smoking. Exclusion criteria included health consumers with a debilitating condition that would make participation difficult (e.g. people with a profound hearing impairment, or speech dysfunction or dementia or those not able to talk/focus for more than 20 min.

### 2.4. Data collection

All interviews were conducted in Arabic or English between September and November 2017. All interviews were audio recorded and transcribed verbatim. Arabic transcripts were translated back to English validated by an accredited translator and then analysed.

### 2.5. Data analysis

All transcripts were checked against the audio recordings by the ground researcher (HA) and entered in QSR NVivo 11 Software (QSR International, Cambridge, MA) to assist data management and analysis. After familiarisation with the data, an iterative thematic analysis was performed to produce initial codes, with a coding framework and finally a thematic map emerging from the coded data. Five random transcripts were initially coded independently by two members of the research team (HA and BS); coding nomenclature and a basic coding framework were arrived at by discussion and consensus. Theme derivation occurred after coding was completed, again emergent themes were arrived at by discussion between these two members, followed by a discussion with all research team members until agreement on the final emergent themes was reached.

## 3. Results

Face to face interviews were conducted with 25 individuals (11 from Najran and 14 from Riyadh) who had at least one modifiable CVD risk factor. Most participants were Saudi Arabian (88%) and the majority were women (56%). Nineteen (76%) participants were recruited via pharmacies and general practitioners' (primary care physicians) offices or primary healthcare centres, four (16%) were recruited from a community centre in Riyadh and two (8%) were recruited via personal contacts. The time taken to complete the interviews ranged between 20 and 63 min with a median of 22 min. Participants' characteristics are presented in Table 1.

A general summary of key results is shown in Fig. 1.

Upon analysis, there were five themes that emerged from the rich data, and these are presented below along with supporting data in the form of illustrative verbatim quotes. These themes were (1) Perception of the pharmacist's role, (2) Trust and satisfaction with current service, (3) Preferences for future pharmacy services, (4) Viability of new pharmacy services and (5) Health beliefs and help seeking behaviours.

### 3.1. Theme 1: Perception of the pharmacist's role

Most participants viewed the current pharmacist role in Saudi Arabia to be merely concerned with medication supply. Hospital pharmacy was the main medication provider for most participants. Help sought from pharmacists focussed on medication queries only. Some participants mentioned that they visited a community

<sup>1</sup> Note: Health consumers may be operationally defined as "people who use health services, as well as their family and carers. This includes people who have used a health service in the past or who could potentially use the service in the future" NSW, H. C. *Who is a health consumer? and other definitions*. [Online]. Available: <https://www.hcns.org.au/consumers-toolkit/who-is-a-health-consumer-and-other-definitions/> [Accessed 13 July 2019].

**Table 1**  
Demographic characteristics (n = 25).

Variable	Variable details	Proportions
Nationality	Saudi	22 (88%)
	Non-Saudi*	3 (12%)
Gender	Male	11 (44%)
	Female	14 (56%)
Employment	Employed	5 (20%)
	Unemployed/ housewives	20 (80%)
Age Bracket (Years)	35–45	9 (36%)
	46–56	6 (24%)
	57–67	9 (36%)
	>67	1 (4%)
Smoking Status	Current Smoker	1 (4%)
	Past Smoker	3 (12%)
	Non-Smokers	21 (84%)
Need for help when reading instructions materials from the doctor or pharmacist	Never	8 (32%)
	Rarely	0 (0%)
	Sometimes	10 (40%)
	Often	4 (16%)
	Always	3 (12%)
Current CVD risk factors	Diabetes (D)	14 (56%)
	Hypertension (HTN)	15 (60%)
	Family history of CVD (FH CVD)	10 (40%)
	Hypercholesterolemia (H CL)	11 (44%)

Note the abbreviations D, HTN, FH CVD, HCL are used to describe the demographic background of participants when exemplar quotes are provided. \*The three non-Saudi participants included: Egyptian (n = 1), Lebanese (n = 1) and Indian (n = 1).

pharmacy for minor health issues or to obtain over-the-counter medications or products.

*“They [hospital pharmacists] only stick a label and write what is in the prescription on the packet. Even when I have additional questions to ask, they would instruct me to ask my doctor.” (Pt10, F, 52yrs, HCL, HTN)*

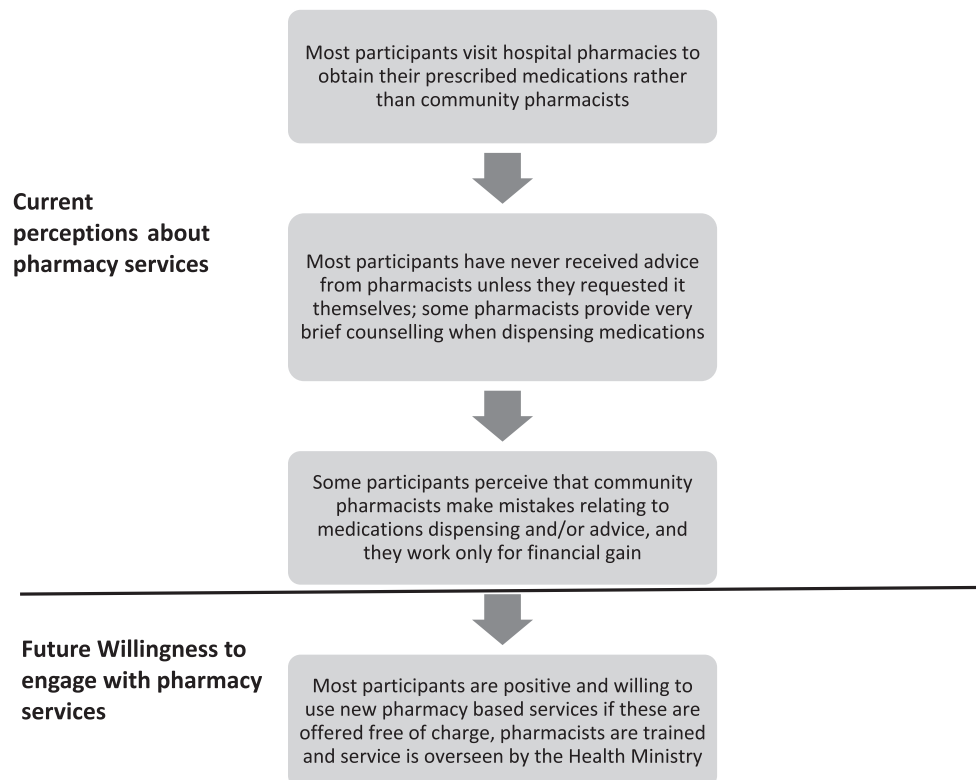
*“Not all community pharmacists are competent. They only dispense medications. They never ask the patient whether he/she suffers from a chronic disease or not. They never give health or lifestyle related advice or weight management advice.” (Pt18, F, 45yrs, D, HTN, FH CVD)*

### 3.2. Theme 2: Trust and satisfaction with current service

Participants appeared to not fully trust pharmacists, particularly community pharmacists. Most participants indicated only usually seeing community pharmacists in a transactional role, given that most pharmacies operate in a business model. Further, participants in general did not feel that their community pharmacists had high level clinical skills. Several participants also appeared hesitant to trust community pharmacists as they were viewed as ‘foreigners’ [most community pharmacists in Saudi Arabia are expatriates; whereas Saudi pharmacists mostly work in hospitals. In addition, hospital pharmacists are required to adhere to strict regulations related to supply of medicines, a fact of which many health consumers would be aware]. In a few cases, a lack of good communication skills by pharmacists led to participants distrusting their pharmacists’ advice.

*“...some people tend to trust hospital pharmacies more than community pharmacies, because community pharmacists are mostly non-Saudi and they are private business, so people trust governmental pharmacies more. But if these services were supported by the ministry of health or other agency, people will trust it more.” (Pt19, F, 35yrs, D, HTN, FH CVD)*

*“I don’t trust community pharmacists, to be honest. Hospital pharmacists work under the supervision of the Ministry of Health while community pharmacists are unsupervised, and they usually look for financial profits.” (Pt12, F, 37yrs, HTN, FH CVD)*



**Fig. 1.** Snapshot of participants view.

Participants noted that though community pharmacy offered several benefits such as accessibility, longer opening hours and less waiting time, a lack of pharmacy-based services in community pharmacies rendered them a less satisfactory venue for care compared to hospital pharmacies. Interestingly, a few participants indicated that they were not satisfied with hospital pharmacists' practice either because they do not provide detailed counselling. On the other hand, some participants who had experienced consultations with non-dispensing pharmacists in outpatient clinics of hospitals had found them very useful and looked forward to seeing such services offered more widely in both hospital and community pharmacies. Drug shortages in some hospital pharmacies, especially in rural areas, were mentioned as an obstacle that should be addressed to enhance satisfaction of pharmacy service in Saudi Arabia. In the case of community pharmacy, higher levels of satisfaction with larger chain pharmacies were discernible within the data. Other issues raised in relation to satisfaction with pharmacies was the issue of addressing gender gaps in the community pharmacy workforce, so that female patients could better avail themselves of pharmacy services.

*"... community pharmacy is nearer to my house than the hospital. Pharmacies are widespread, accessible, without appointments and open longer hours." (Pt19, F, 35yrs, D, FH CVD)*

*"The service of hospital pharmacies in governmental hospital in rural area is so bad; however, the service is good in Riyadh hospitals... The problem is that medications aren't available..." (Pt10, F, 52yrs, HCL, HTN)*

*"I think women may find this is a little bit difficult, especially as community pharmacists are men, so maybe if they employ female community pharmacists, it will help ease the communication obstacles." (Pt12, F, 37yrs, HTN, FH CVD)*

*"I use only two pharmacies: X and Y pharmacies [2 big chain pharmacies] and I'm satisfied with their services. Pharmacists there always respond to my inquiries very well, present professionally and have many options to choose from." (Pt10, F, 52yrs, HCL, HTN)*

One key reason for dissatisfaction was the lack of communication and engagement of pharmacists with health consumers.

*"Some pharmacists aren't willing to communicate. In most cases if you asked for something, their reply would be very short and useless with just 'yes' or 'no'.....Good communication skills are very important for pharmacists to have as they deal with people from different segments of the society....." (Pt1, M, 35yrs, D, HCL, FH CVD)*

*"Some patients may be illiterate and can't read written instructions, so they need to do verbal counselling and make sure patients understand how to take their medications and why they are taking them." (Pt10, F, 52yrs, HCL, HTN)*

### 3.3. Theme 3: Preferences for future pharmacy services

Most participants noted that they had never witnessed comprehensive health service provision in community pharmacies and whilst they were willing to engage in such services, they would have more confidence if the service structure and delivery were overseen by the Ministry of Health or any government agency for quality assurance. Some participants also suggested that service provider pharmacists would need to have specialised certifiable training for both clinical aspects and communication skills. Participants also suggested pharmacists' services would be more credible if offered by pharmacists working in collaboration with a physician to provide CVD risk screening/management services. Whilst most participants were willing to engage in receiving CVD preventive services through community pharmacies, in preference

to hospital pharmacy or hospital inpatient clinics, a few participants expressed worries about the potential standard of care in pharmacies. It was also suggested that should services be implemented after considering key suggestions, then consumers having experienced and benefited from the service, would, in turn enhance public perceptions about quality of healthcare in pharmacies, in a 'word of mouth' approach.

*"Screening and these services can be done in the pharmacy, but the government or ministry of health should take some stand and responsibility to control and evaluate these services in the pharmacy and should set up mandatory criteria." (Pt20, M, 41yrs, smoker, FH CVD)*

*"... community pharmacies would be a better choice. If these services are to be provided in the outpatient clinic, I myself won't use them. In outpatient clinics, I have to get an appointment and I'll be going specifically for this purpose - doing these tests. On the contrary, I can have these checks in the pharmacy while I am waiting for my prescriptions' dispensing. I mean I can do the two things at the same time." (Pt1, M, 35yrs, D, HCL, FH CVD)*

*"... maybe doctors have no time and that's why I prefer that pharmacists work collaboratively with doctors so that they would clarify things for patients in case doctors don't have enough time. You know it is my first time to talk with the pharmacist and I'm very glad that they listen to the patient and explain everything simply and plainly." (Pt4, F, 42yrs, D, HTN, HCL)*

Several participants expressed negative views about possible CVD related services in pharmacies, though some of these participants appeared willing to be convinced otherwise.

*"I think hospitals are the more suitable place for conducting screening tests and services as I think pharmacists are not yet doing their basic jobs well enough." (Pt13, F, 46yrs, D, HCL)*

*"I think the obstacles will be primarily psychological. I mean people might feel the hospital is more suitable and a safer place for providing these services. However, over time, people's attitude would change, especially if they see it done professionally without a focus on the business side, as community pharmacy are mostly profits oriented." (Pt15, M, 61yrs, D, HCL, FH CVD)*

Services that were suggested by participants to be considered for provision nation-wide by pharmacists included non-dispensing pharmacists' clinics, vaccinations, monitoring and point of care tests, health promotion and medications review or medication therapy management. Also, basic medication counselling was mentioned as a need by most participants.

*"... it [providing vaccination] would be excellent, especially in Hajj season and flu seasons, where lots of people line up in medical centres, so if vaccinations are provided in community pharmacy, it will reduce the load." (Pt22, M, 57yrs, D, HCL, HTN)*

*"I'll be attracted if the pharmacy provides services like checking blood glucose level, blood pressure level, provide smoking cessation programs, healthy teeth programs, and weight management programs... patients would be motivated to try these services." (Pt1, M, 35yrs, D, HCL, FH CVD)*

*"... You know pharmacists' significant role in raising people's health awareness is really missed. They are supposed to educate people about healthy lifestyle in the community and distribute leaflets that enlighten people about chronic diseases such as diabetes and hypertension..." (Pt21, F, 40yrs, HTN, HCL, FH CVD)*

*"I take around 10 different medications for diabetes, dizziness, and heartburn, but I need a pharmacist to help, but hospital pharmacists are too busy, so I usually visit my doctor to clarify my queries, but if I know that there is a pharmacist that can help me, then I will discuss my queries with him/her." (Pt8, F, 62yrs, D, HCL)*

“...if I have any issues I can discuss with him [non dispensing pharmacist], but these services are very rare, so it will be useful if other hospitals or even community pharmacy have some pharmacists like him or even nationally to speak patients individually, especially for elderly with multiple medications and diseases.” (Pt22, M, 57yrs, D, HCL, HTN)

### 3.4. Theme 4: Viability of new pharmacy services

In indicating a receptiveness to pharmacy-based CVD services, many participants also emphasized the need to promote and advertise these services via different means such as social media, posters in malls and streets, recommendations from doctors, public health experts and other healthcare professionals.

“These pharmacy services should be advertised, in radio, TV, newspapers and with the support of ministry of health or government agency to increase people trust.” (Pt20, M, 41yrs, smoker, FH CVD)  
 “The community must be made aware of the availability of these services. You know I have been coming to the hospital for a week and I only knew today about this service [non-dispensing pharmacists’ services in outpatient clinics].” (Pt4, F, 42yrs, D, HTN, HCL)

Most participants who were willing to use pharmacy-based CVD risk screening/ management services, indicated that this was conditional on such services being free of charge at least initially. Many felt that should such services demonstrate positive results, then an affordable payment for service might be acceptable. Financial incentives and motivational rewards to pharmacists providing these services were also thought to be essential for sustainability.

“I’d use the screening service if available at the community pharmacy for free or at least for a reasonable price...” (Pt12, F, 37yrs, HTN, FH CVD)

“We can encourage them [Pharmacists] by focusing on offering them three types of incentives: monetary, non-monetary, and social incentives. Non-monetary incentives should be often linked to the pharmacist’s ability to serve the community. By social incentives I mean making people identify the valuable and significant role of pharmacists in the society.” (Pt23, M, 35yrs, FH CVD, HCL)

### 3.5. Theme 5: Health beliefs and help seeking behaviours

Discussions also revealed a range of health beliefs that would need to be considered in any service implementation. For example, some respondents indicated avoiding healthcare interactions as they feared getting diagnosed with a chronic illness. Low levels of health literacy and dysfunctional beliefs were also evident.

“The first thing that might prevent me from using these services is my fear of knowing I have a disease.” (Pt1, M, 35yrs, D, HCL, FH CVD)

“When I first knew I have diabetes, I was shocked. I felt as if life has stopped. There was a common belief that diabetes could raise cancer risk.” (Pt25, M, 50yrs, D, HCL)

“There’s a misconception that if you have diabetes, you won’t live long. I myself felt afraid and was shocked for two days or so when I first knew I’m diabetic. Then, I tried not to worry too much and to control it. But I have to say it’s really a dangerous disease if you don’t seek treatment.” (Pt25, M, 50yrs, D, HCL)

Most participants get their medications dispensed at hospital pharmacy as the medications are provided free in the public hospitals. Most participants only reach out to community pharmacists to enquire about medication related issues and medical devices problems.

“... I may also ask them about the side effects of medications and contradictions. One time, I had a problem with my blood glucose monitor, I found it gives me incorrect reading; so, I visited the community pharmacy to ask the pharmacist about the reason.” (Pt11, F, 54yrs, D, HCL)

“I only use community pharmacies if some drugs aren’t available in the hospital pharmacy.” (Pt13, F, 46yrs, D, HCL)

“I do not use community pharmacies very often. I get all my medications free from the hospital pharmacy and when they run out, they’d dispense them again.” (Pt9, F, 65yrs, D, HCL)

## 4. Discussion

To the best of our knowledge, this is the first study that has identified Saudi health consumers’ perceptions about current pharmacist roles and willingness to receive future CVD preventive health services in Saudi community pharmacies. Consumers in this study were people who had existing CVD risk factors and the focus of potential future pharmacists’ services explored in this research related to reducing CVD risk through screening, health education or treatment management. Current perceptions about pharmacists and pharmacy services were predominantly centered only on medication supply. Consumers perceived that most pharmacists operated in a transactional mode and it was apparent that existing practices within pharmacy did not have consumers’ trust. Although the overall perceptions of the current role of pharmacists were negative, most consumers expressed a willingness to participate in additional health services through pharmacies, provided the services were of high quality. Recommendations to achieve this level of quality comprised better training, service accreditation and oversight from health authorities. Clinical services proposed by consumers as possible offerings in future service models encompassed basic medication counselling, vaccinations, monitoring and point of care tests, medications review or medication therapy management and health promotion/health education. A ‘clinic’ type format operated by non-dispensing pharmacists was suggested by a few consumer participants. Factors that were proposed to render future pharmacy-based services attractive and encourage health consumers to engage with these services involved effective promotion efforts by various means to the public, cost affordability to consumers and financial remuneration or rewards for providers. Finally, it was evident that consumers’ particular health beliefs and help seeking behaviours would drive eventual engagement with pharmacy-based services in the Saudi setting; therefore, the design of any future pharmacy service models for people with CVD risks should be cognizant of such factors to maximize the benefits and sustainability of novel services.

Raising public awareness of pharmacist’s role in Saudi Arabia is crucial and key to improving patient-centred care services in pharmacies. Lack of public awareness of pharmacist’s role and underestimating pharmacist potential to provide extended professional services in community pharmacy in Saudi Arabia was evident within our study and other previous studies (Al-Arif, 2012, Al-Hassan, 2009, Al-Tannir et al., 2016). Also, there is a mismatch between actual pharmacists competence and skills and public perception about these aspects, which seems to be an issue across the broader geographic region, for example in Kuwait and the UAE (Hasan et al., 2013, Awad et al., 2017). In fact, this mismatch is apparent even in developed countries, despite the advancement of community pharmacy practice in providing various professional services to consumers beyond medication supply (Kember et al., 2018, McMillan et al., 2014, Campbell et al., 2017). For example, in Wales, United Kingdom, low awareness of available community pharmacy-based services was apparent among participants in an exploratory study that aimed to explore public views of commu-

nity pharmacy-based services (Kember et al., 2018). Findings suggested the necessity of promoting community pharmacy roles and services to the public; possibly through campaigns run by the government.

A key path to raising professionalism among pharmacists though collaboration with physicians was identified by our participants in common with those in the Welsh consumer study (Kember et al., 2018). This would be further enhanced by Ministerial and physician oversight. It would be important to consider these stakeholder preferences when pharmacy provided CVD prevention services are planned for implementation in Saudi Arabia. These findings also highlight the structural issues within the profession, without addressing these it would be difficult to progress further. Our data highlighted that pharmacists in Saudi Arabia do not have professional codes of practice that mandate ethical and responsible behaviours and current practice appears to reflect this, for example, not providing medicine information when requested. This issue has also been observed by other researchers. The findings of a recent cross sectional study among community pharmacists in Riyadh, which aimed to explore their views and attitudes about ethical issues in their practice, also recommended implementing a code of ethics for pharmacy practice in Saudi Arabia (Al-Arifi, 2014). Importantly, the pharmacy profession in Saudi Arabia would need to proactively engage the public, community-based providers, community and hospital pharmacies, non-governmental organizations, and public-private partnerships at a national level if it were to initiate pharmacy-based health services such as screening and management of CVD risk and complications at early stages.

One method to gauge and engage stakeholder interest would be to run 'demonstration projects' or prototypes of pharmacist delivered CVD preventive health service. An actual high-quality service experience, much like a free sample of a 'new product' could build trust, enhance awareness of pharmacists' potential roles and shape consumer expectations – thereby creating a 'market' for such services. An Australian study involving participants with asthma revealed that those who had experienced a specialised asthma service provided by their community pharmacist had enhanced expectations, willingness to participate in and preferences for pharmacy-based asthma services compared to participants naïve to such services (Naik Panvelkar et al., 2010). In our findings, a few participants had experienced non-dispensing pharmacists' services in outpatient clinics and thus had positive perception of such services, which lead them to suggest that such services be widely provided nationally in Saudi Arabia. Of course, these prototype services need to be carefully designed and provided by well-trained pharmacists who have the skills to counsel and communicate when barriers such as patient's denial or fear of being diagnosed with a disease are encountered, as highlighted by some participants in our study.

Community pharmacy engagement within the Saudi public health system would help pharmacist-physician collaboration. Integrating community pharmacy within the healthcare system would also be important to enhance the contribution and utilisation of professional pharmacy services (Buss et al., 2018, Benrimoj and Frommer, 2004, Al Hamarneh et al., 2019). Community pharmacy practice is evolving in Saudi Arabia, for example, there now appear to be clear motions from the Health Ministry to utilise community pharmacies in dispensing medications for public health system patients. 'Wasfaty' is the initiative that was launched within the Saudi Arabian health system to allow medication dispensing to patients obtain their prescribed medications from the closest community pharmacy for free (NUPCO). This initiative is likely to enhance community pharmacy engagement with the Saudi health system, and in turn is a step forward towards

achieving the '2030 Saudi National Vision to optimise the health services delivery and quality.

To progress community pharmacy in line with the 2030 Vision, Saudi Arabia might have to consider all possible avenues to build the capacity for pharmacy workforce. One pathway to achieve this may be through encouraging local pharmacy graduates to work in the private sectors including community pharmacy, currently most graduates choose to work in the public sector, and the country has to rely on a skilled migrant pharmacy workforce; this situation also leaves many graduates unemployed as they choose to not work in community pharmacies (AlRuthia et al., 2018). Current data indicate that Saudi pharmacists represent less than 20% in the Saudi pharmacy sector (AlRuthia et al., 2018). Developing and implementing more specialised clinical pharmacy services with financial incentives and professional rewards for quality delivery may attract local graduates to community pharmacy. Given several participants in our sample indicated a higher mistrust in non-Saudi pharmacists and the current workforce pattern, raising public awareness of the importance of expatriate pharmacists and health professionals would be important to increase their utilisation of community pharmacists. Another big issue may be the need for tighter regulations over the requisite standards for non-Saudi pharmacists, entering roles as community pharmacists in Saudi Arabia. Increasing gender equity in the community pharmacy employee sector is another key priority; employment opportunities and promotion of female community pharmacists through financial incentives, professional drives and social mobilisation may be required to achieve this (Almansour et al., 2019). Notably, female participants in our study highlighted this need, as they preferred to be served by female community pharmacists. Cultural change is needed to encourage Saudi female pharmacists to work in community pharmacies; the job has to be professionally fulfilling and financially satisfying as well as culturally safe for female pharmacists.

In developing these services other key findings from our study should offer direction. Though pharmacists are one of the most trusted professionals worldwide, for example in Australia (Morgan, 2017), this did not appear to be the case in our sample. While not always transplantable, it may well serve to explore pharmacy practice systems in countries such as Australia where there is high public trust in pharmacy and see if they may be applicable in the Saudi context. In Australia, one of the key initiatives over the last decade have included the rollout of a quality control system by the Pharmacy Guild of Australia (The Pharmacy Guild of Australia). The Quality Care Pharmacy Program (QCCP) is an accreditation program for Australian community pharmacies that aims to improve overall pharmacy service standards and ensure quality, safe and consistent professional services and customer care (The Pharmacy Guild of Australia). Such frameworks may enhance the quality of the service and improve the performance of the community pharmacy practice in Saudi Arabia, which might increase trust and satisfaction of the public towards community pharmacists. Of course, quality frameworks can only serve the purpose, once there is a robust foundation laid through pre-registration curricula, registration maintenance requirements, practice standards and oversight of pharmacy operations through ministerial inspections; all of which also need to be carefully reviewed and plans to build these systems in Saudi Arabia devised at policymaker levels.

The strength of this study is that it lays a clear foundation about health consumers' views towards current pharmacy practice and future needs in Saudi Arabia. However, some study limitations need to be acknowledged. Recruitment of participants from two cities (Riyadh and Najran) may have limited applicability of findings to other parts of the country. To address this a maximum variation sampling strategy was used to ensure representation of different age groups and genders as well as a variety of areas.

We focussed on potential health/pharmacy consumers (i.e. people with CVD risk factors) and pharmacist CVD risk reduction or risk management opportunities and did not probe current treatment related experiences which may have shaped participant's responses and this is acknowledged as a limitation. Future research should involve exploring perceptions of physicians and policymakers about the feasibility of implementing professional services including chronic disease risk screening and management in Saudi community pharmacies. In addition, further research may be needed to assess views, tendencies and readiness of pharmacy graduates and academics in pharmacy colleges of Saudi universities about considering community pharmacy as career path, willingness to serve as patient advocates and willingness for provision of professional pharmacy services in the community setting.

## 5. Conclusion

In conclusion, based on the perceptions and views of health consumer participants in this sample, it was evident that pharmacy-based services are not currently provided in Saudi Arabia. However, there was expressed interest in the potential introduction of such services. Quality assurance, training of pharmacists, service accreditation and oversight from health authorities for these services were thought to be essential to enhance consumers utilisation and services sustainability. Additionally, for pharmacy-based services to be successful there will be a need for active promotion to public, cost affordability to consumers and financial incentives for providers.

## Declaration of Competing Interest

The author declare that there is no conflict of interest.

## Appendix A. Supplementary material

Supplementary data to this article can be found online at <https://doi.org/10.1016/j.jsps.2020.03.004>.

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