

## Pharmacists' contributions to the delivery of pharmaceutical care to patients with type 2 diabetes in Kuwait

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**Abstract** This study was designed to identify pharmacists' potential contributions to the delivery of pharmaceutical care to patients with type 2 diabetes in Kuwait, and to identify and explore barriers that were preventing them from providing care to this specific group. A pretested self-administered questionnaire was distributed to all pharmacists registered in the Kuwait Pharmaceutical Association's email registry (N =250). Invitations to a focus group interview were then sent to all pharmacists (N =50) who had responded to the questionnaire. Seven pharmacists accepted the invitation and participated in the focus group interview. Of the 50 respondents to the questionnaire, 31 (62.0 %; 95 % CI: 47.2–75.4) indicated that they were "comfortable" and "extremely comfortable" in discussing patient's blood pressure target and annual screening with physicians rather than discussing smoking cessation advice or specific medication-related care issues. More than 75 % of the respondents were "comfortable" and "extremely comfortable" in sharing and verifying the patient's drug history, blood pressure, cholesterol and stability of blood glucose with the healthcare team, and to maintain a pharmaceutical care plan for patients with diabetes. Overall, pharmacists indicated that they were more comfortable in undertaking clinical activities than discussing care issues with physicians. The focus group interview identified issues related to pharmacist-physician interaction, pharmacists' confidence, pharmacists' image by patients and physicians and barriers to implementing pharmaceutical care. This study shows that pharmacists in Kuwait perceive that their contribution to the

delivery of pharmaceutical care could develop further with increased partnership between pharmacists and physicians and provision of further education, training and continuing professional development support.

**Keywords** Kuwait · Barriers · Pharmacists

### Introduction

The number of people worldwide living with diabetes is expected to increase to 552 million by 2030 [1]. The prevalence of diabetes in Kuwait has doubled in the last 15 years, reaching 21.2 % in 2011 [1]. Diabetes and its complications affect the society's economic status and have adverse impact, due to the cost of treatment, social costs and loss of working days [2, 3].

Appropriate diabetes care requires setting goals for glycaemia, blood pressure and lipid levels, regular monitoring for diabetes' complications, dietary and exercise modifications, appropriate medications, appropriate self-monitoring of blood glucose, and assessment also above [4]. A collaborative, multidisciplinary approach involving physicians, pharmacists, nurses and dieticians is the ideal method for provision of diabetes care in order to encourage patients' empowerment and self-management of the disease [4]. Several studies in developed countries have acknowledged the importance of the role of the pharmacist in diabetes, especially in encouraging effective use of medicines to achieve glycaemic targets, promoting healthy lifestyles, supporting self-care and carrying out medication reviews [5–7]. Pharmaceutical care mandates that practitioners not only dispense medications, but also assume responsibility for improving the quality of patients' outcomes [8].

Many studies have been undertaken to identify factors that

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influence pharmacists' behaviours to facilitate pharmaceutical

care implementation [9–12]. In Kuwait, only one study has been conducted to study the awareness of pharmacists to the concept of pharmaceutical care and to identify barriers to its implementation [13]. Thus, our study used mixed methodology to identify pharmacists' potential contributions to the delivery of pharmaceutical care to patients with type 2 diabetes in Kuwait, and to explore perceived barriers faced by them to deliver care for this target population.

## Methods

### Study design

This descriptive, mixed-method, cross-sectional study was conducted between February and April 2011 following an approval from the Medical Research Ethics Committee of the Ministry of Health and the Human Ethical Committee, Health Sciences Centre, Kuwait. Questionnaires were distributed via an online survey (Kwik Survey [14]) to pharmacists in primary and secondary care centres in Kuwait. This was followed by a focus group interview with pharmacists to further explore the responses from the questionnaire.

Undertaking research in such an unexplored area resulted in our decision to choose mixed methodology, in order to identify and explore pharmacists' contributions to the delivery of pharmaceutical care to patients with type 2 diabetes in Kuwait. The relationship between qualitative and quantitative methodology is complementary, and can be used to a) enable corroboration of each other by triangulation, b) elaborate and provide rich, detailed information and c) provide fresh insight and novel ways of thinking [15]. This study used an initial survey (quantitative) to help in pointing the researcher to phenomena of importance, followed by a qualitative part to help in validating, interpreting and illuminating quantitative findings.

### Study sample

All the 250 pharmacists who were registered in the Kuwait Pharmaceutical Association's (KPA) email directory in 2011 were included in the study. Since no pharmacists' register in Kuwait exists for all licensed pharmacists, the KPA email register was the closest alternative. All the pharmacists who had responded to the questionnaire (N = 50) were invited to a focus group interview.

### Study questionnaire

The questionnaire comprised of three different sections. The first section was designed to collect the respondents' demographic information. The second section comprising of nine questions was designed based on findings from a previous study undertaken by our group to measure the level of

prescribers' adherence to international guidelines for treating patients with type 2 diabetes mellitus in Kuwait [16]. The primary design of the medication assessment tool used in that study [16] included recommendations for the management of type 2 diabetes from the American Diabetes Association (ADA) [17], the European Association for the Study of Diabetes (EASD) [18], Scottish Intercollegiate Guidelines Network (SIGN) [19] and National Institute for Health and Clinical Excellence 2008 (NICE) [20] guidelines. The third part of the questionnaire included eleven clinical pharmacy activities derived from a multidisciplinary model of care of patients with type 2 diabetes mellitus in primary care [21] and other previous studies [22, 23].

Responses to the questionnaire were measured on a 5-point Likert scale (1 = extremely uncomfortable, 2 = uncomfortable, 3 = neutral, 4 = comfortable, 5 = extremely comfortable). Face and content validity of the questionnaire were established by a research group at the University of Strathclyde and Kuwait University. It was pretested for content, design, readability, and comprehension on 15 pharmacists and modifications were made as necessary so that the questionnaire was simple to answer, yet gave accurate data.

### Focus group interview

A semi-structured topic guide was prepared by the author and a second researcher with a special interest in qualitative work and was discussed with a research group at Kuwait University (Table 1). Questions were presented via PowerPoint and discussed openly. The choice of undertaking a focus group interview was due to two reasons: a) logistical—such as location of the interviews and participants inflexible working schedules made it more difficult to undertake individual interviews, and b) the social interaction between participants in a focus group interview would stimulate thoughts and provoke discussion to this unexplored area of study [24].

During the focus group interview, the facilitator asked participants a series of questions designed to identify reasons behind their comfort level in communicating pharmaceutical care issues to physicians, determine their willingness to undertake clinical activities at their healthcare settings and identify perceived barriers related to the provision of pharmaceutical care to patients with type 2 diabetes.

The focus group interview was conducted with seven pharmacists who accepted the invitation. Participants were seated in a semi-circular seating arrangement in order to facilitate interaction and allow them to freely see and hear each other. They were informed that they may discuss positive or negative incidents that they had experienced. The participants were encouraged to exchange information on each other's experiences and points of view, talk to each other, ask questions and listen to what others say, which in turn may help them to articulate their own issues [25, 26].

Table 1 Topic guide used in focus group interview

1. Discussion of care issues with doctors:
  - Target blood pressure not achieved
  - Smoking cessation advice
  - Statin not prescribed in patient >40 years with coronary heart disease risk factors
  - Metformin discontinued if estimated glomerular filtration rate <30 ml/min
  - Sublingual nitroglycerin use in secondary prevention
  - Annual checks
  - ACEI<sup>a</sup> and beta blocker use in secondary prevention
  - ACEI<sup>a</sup> target dose not achieved
  - ACEI<sup>a</sup> or ARB<sup>b</sup> not used in microalbuminuria
2. Undertaking clinical activities
  - Share and verify with patients' and other team members: the patient's drug history, individualised targets for HbA<sub>1c</sub>, blood pressure, cholesterol, stability of blood glucose/frequency of hypoglycaemia
  - Patient motivation
  - Help to individualise the patient's antidiabetic treatment
  - Assess the suitability of medication in the presence of renal impairment
  - Routine medication review to identify and address care issues
  - Identifying interactions between co-prescribed/purchased medicines with antidiabetic treatment
  - Monitoring the patient and referring to physician when failure to reach personalised treatment goals
  - Maintain a pharmaceutical care plan for patients with type 2 diabetes
  - Support the multidisciplinary team's use of a patient-held diabetes record booklet
3. Identification and ranking of barriers to implementing pharmaceutical care

<sup>a</sup>ACEI Angiotensin converting enzyme inhibitor

<sup>b</sup>ARB Angiotensin II receptor blocker

## Data analysis

Data were entered into the Statistical Package for Social Sciences (SPSS, version 17) and descriptive analysis conducted. Pharmacists' demographics were presented as means (standard deviations) and percentages (95 % confidence intervals). Pharmacists' responses to the second and third sections of the survey were presented as percentages (95 % confidence intervals) and medians Likert scale rating (interquartile ranges). The chi-squared test was used to compare between the dichotomized responses (neutral, uncomfortable, extremely uncomfortable) and (comfortable, extremely comfortable).  $P < 0.05$  was considered statistically significant.

The focus group interview was recorded, transcribed verbatim and stored in electronic format. The transcript was read repeatedly by the authors and subject to thematic analysis [27], whereby emerging topics were identified as themes and

sub-themes. This was followed by coding of the interview text relating to these themes and sub-themes. Quotes that aided the understanding of the content of the themes or sub-themes were identified.

## Results

### Questionnaire study

The response rate was 20 %. The majority of respondents were females (66.0 %; 95 % CI: 51.2–78.8), less than 31 years old (82.0 %; 95 % CI: 68.6–91.4) and were practising pharmacy in secondary care (54.0 %; 95 % CI: 39.3–68.2). The mean (SD) experience of the participants as practitioners was 3.8 (3.1) years. The basic qualifications of respondents were B. Pharm (76.0 %), MPharm (20.0 %) and PharmD (4.0 %). 36 % of the respondents had post-graduate qualifications in pharmacy, 92 % indicated they had a special interest in diabetes and 75 % claimed that they had routine contact with patients with diabetes.

Table 2 shows the pharmacists' level of comfort in discussing standards of care with physicians. Of the 50 respondents, 31 (62.0 %; 95 % CI: 47.2–75.4 %) indicated that they were "comfortable" and "extremely comfortable" in discussing patient's blood pressure target and annual screen-ing with physicians rather than discussing smoking cessation advice (44.0 %; 95 % CI: 29.9–58.8) or specific medication-related care issues (range: 34.0–54.0 %).

Table 3 shows the pharmacists' level of comfort in undertaking certain clinical activities. More than 75 % of the participants were "comfortable" and "extremely comfortable" in sharing and verifying with patients and other healthcare team members the patient's drug history, blood pressure, cholesterol and stability of blood glucose/frequency of hypoglycaemia, and to maintain a pharmaceutical care plan for patients with type 2 diabetes in respect of advice on the use of oral antidiabetic therapy and self-monitoring of glucose control.

### Focus group interview

An overview of the main themes and sub-themes that emerged from the focus group interview is shown in Table 4. Analysis of the qualitative data revealed the emergence of five main themes from the three parts of the focus group interview, these included: issues around pharmacist-physician relationship (inter-professional interaction—positive or negative), pharmacists' confidence issues, pharmacists' views regarding importance of care issues (prioritization of care issues), pharmacists' image (patients' and physicians' perspective) and barriers that pharmacists face in implementing pharmaceutical care such as the pharmacist's attitude, lack of access to patients' medical records, administrative barriers, lack of time or staff, lack of facilities, patients' and doctors' attitudes.

Table 2 Pharmacist's level of comfort in discussing standards of care with physicians (n =50)

Statement (Criteria)	Extremely uncomfortable % (95 % CI) (a)	Uncomfortable % (95 % CI) (b)	Neutral % (95 % CI) (c)	Comfortable % (95 % CI) (d)	Extremely comfortable % (95 % CI) (e)	p value (d+e vs a+b+c)	Median (IQR)
1. Target blood pressure is not achieved	8.0 (2.2–19.2)	22.0 (11.5–35.9)	8.0 (2.2–19.2)	50.0 (35.5–64.4)	12.0 (4.5–24.3)	0.03*	4.0 (2,4)
2. Smoking cessation advice not given	10.0 (3.3–21.8)	22.0 (11.5–35.9)	24.0 (13.1–38.2)	28.0 (16.2–42.5)	16.0 (7.2–29.1)	0.32	3.0 (2, 4)
3. Statin not prescribed for patients >40 years	2.0 (0.1–10.7)	20.0 (10.0–33.7)	28.0 (16.2–42.5)	34.0 (21.2–48.8)	16.0 (7.2–29.1)	0.84	3.0 (2, 4)
4. Metformin not discontinued when estimated glomerular filtration rate <30 ml/min	6.0 (1.3–16.6)	20.0 (10.0–33.7)	20.0 (10.0–33.7)	34.0 (21.2–48.8)	20.0 (10.0–33.7)	0.54	3.0 (2, 4)
5. Sublingual nitroglycerin not prescribed for patients with coronary heart disease	8.0 (2.2–19.2)	32.0 (19.5–46.7)	26.0 (14.6–40.4)	26.0 (14.6–40.4)	8.0 (2.2–19.2)	<0.01**	3.0 (2, 4)
6. Annual screens of HbA <sub>1c</sub> /renal/eye/foot/neurological symptoms not undertaken	12.0 (4.5–24.3)	16.0 (7.2–29.1)	10.0 (3.3–21.8)	32.0 (19.5–46.7)	30.0 (17.9–44.6)	0.03*	4.0 (2, 5)
7. ACEI and beta blocker not prescribed for patients with coronary heart disease	2.0 (0.1–10.7)	22.0 (11.5–35.9)	28.0 (16.2–42.5)	38.0 (24.7–52.8)	10.0 (3.3–21.8)	0.84	3.0 (2.5, 4)
8. ACEI target dose not achieved	6.0 (1.3–16.6)	16.0 (7.2–29.1)	34.0 (21.2–48.8)	36.0 (22.9–50.8)	8.0 (2.2–19.2)	0.32	3.0 (2.5, 4)
9. ACEI or ARB not used in patients with microalbuminuria	6.0 (1.3–16.6)	26.0 (14.6–40.4)	26.0 (14.6–40.4)	32.0 (19.5–46.7)	10.0 (3.3–21.8)	0.16	3.0 (2,4)

CI confidence interval, IQR interquartile range, ACEI angiotensin converting enzyme inhibitor, ARB angiotensin receptor blocker

\*(d) + (e) significantly greater than (a) + (b) + (c)

\*\* (a) + (b) + (c) significantly greater than (d) + (e)

## Discussion

Although this study only included pharmacists from lists provided by the KPA, the number of respondents was adequate for such an exploratory study. Sampling in qualitative research, including focus group methodology, does not seek to be fully representative of a large population because the number of participants is relatively small (6–8) [28]. Therefore, theoretical sampling in which participants with specific characteristics are selected to represent a range of the total population is used in most focus group studies [29]. The criteria chosen for this were based on the results of a previous study performed by the same authors that identified criteria from diabetes guidelines that prescribers' were not adhering to and thus pinpointed gaps in practice.

The present results showed that pharmacists were more comfortable in discussing patients' blood pressure target and annual screening with physicians rather than discussing specific medication-related care issues or smoking cessation advice. This may be due to their lack of training in both these areas. The current findings related to the clinical activities suggested pharmacists' desire to deliver a comprehensive pharmaceutical care service to patients with type 2 diabetes. This demonstrates a developing self-confidence among

Kuwaiti pharmacists in their ability to handle and interpret clinical data while accepting greater responsibility for basic pharmaceutical care services.

Pharmacists in this study had mixed feelings and experiences towards interprofessional interaction, with some participants stating that physicians at their practices were open to discussions due to a friendly relationship that has grown or due to closeness in age. This is consistent with a study conducted in Kuwait, which indicated that physicians were generally comfortable with pharmacists carrying out patient-directed roles, such as providing patient education and suggesting prescription of drugs, but were not very comfortable with them treating minor illnesses or with prescribing [30]. In Canada, it was reported that physicians were more comfortable with pharmacists monitoring and checking for interactions [31]. Our findings highlight the need for efforts to improve the relationship between pharmacists and physicians to expand the diabetes care team. The Europharm forum has emphasized that pharmacists need to collaborate with other healthcare professionals to define and set clear goals and responsibilities for each profession [32]. Pharmaceutical care requires a strengthening of the professional relationship between pharmacists and physicians to offer mutually beneficial partnerships in which both share responsibility for patient

Table 3 Pharmacists' level of comfort in undergoing different clinical activities (n =50)

Clinical activity	Extremely uncomfortable % (95 % CI)	Uncomfortable % (95 % CI)	Neutral % (95 % CI)	Comfortable % (95 % CI)
	(a)	(b)	(c)	(d)
10. Share and verify with patients and other team members the following				
a. The patient's drug history	4.0 (0.5–13.7)	8.0 (2.2–19.2)	8.0 (2.2–19.2)	38.0 (24.7–52.8)
b. Individualised targets for HbA <sub>1c</sub>	–	8.0 (2.2–19.2)	24.0 (13.1–38.2)	36.0 (22.9–50.8)
c. Blood pressure	–	4.0 (0.5–13.7)	16.0 (7.2–29.1)	38.0 (24.7–52.8)
d. Cholesterol	–	4.0 (0.5–13.7)	18.0 (8.6–31.4)	48.0 (33.7–62.6)
e. Stability of blood glucose/frequency of hypoglycaemia	2.0 (0.1–10.7)	6.0 (1.3–16.6)	16.0 (7.2–29.1)	40.0 (26.4–54.8)
11. Motivate the patient to adhere to advice in achieving treatment goals	–	8.0 (2.2–19.2)	6.0 (1.3–16.6)	42.0 (28.2–56.8)
12. Motivate the patient in smoking cessation	–	24.0 (13.1–38.2)	14.0 (5.8–26.7)	26.0 (14.6–40.4)
13. Motivate the patient in controlling their body weight	–	16.0 (7.2–29.1)	12.0 (4.5–24.3)	30.0 (17.9–44.6)
14. Help to individualise the patient's antidiabetic treatment by:				
a. Checking and following up the drug/dose regimen	2.0 (0.1–10.7)	6.0 (1.3–16.6)	18.0 (8.6–31.4)	42.0 (28.2–56.8)
b. Identify unsatisfactory treatment	–	8.0 (2.2–19.2)	18.0 (8.6–31.4)	46.0 (31.8–60.7)
c. Monitoring for adverse drug reactions	2.0 (0.1–10.7)	8.0 (2.2–19.2)	16.0 (7.2–29.1)	46.0 (31.8–60.7)
15. Assess the suitability of medication in the presence of renal impairment	4.0 (0.5–13.7)	10.0 (3.3–21.8)	22.0 (11.5–35.9)	42.0 (28.2–56.8)
16. Routine patient consultation and review of medication to identify and address care issues (drug related problems)	2.0 (0.1–10.7)	8.0 (2.2–19.2)	24.0 (13.1–38.2)	36.0 (22.9–50.8)
17. Identifying interactions between co-prescribed/purchased medicines with antidiabetic treatment	–	6.0 (1.3–16.6)	20.0 (10.0–33.7)	44.0 (29.9–58.8)
18. Monitoring the patient and referring to physician when failure to reach personalised treatment goals including, HbA <sub>1c</sub> , blood pressure, lipid levels and body mass index	–	10.0 (3.3–21.8)	20.0 (10.0–33.7)	46.0 (31.8–60.7)
19. Maintain a pharmaceutical care plan for patients with type 2 diabetes in respect of the following items of information:				
a. Choice of antidiabetic medication	–	18.0 (8.6–31.4)	14.0 (5.8–26.7)	42.0 (28.2–56.8)
b. Identify the suitability of medication for preventing cardiovascular disease	–	18.0 (8.6–31.4)	24.0 (13.1–38.2)	32.0 (19.5–46.7)
c. General advice on the use of oral antidiabetic therapy	–	6.0 (1.3–16.6)	18.0 (8.6–31.4)	40.0 (26.4–54.8)
d. General advice on the use of insulin therapy	4.0 (0.5–13.7)	8.0 (2.2–19.2)	18.0 (8.6–31.4)	34.0 (21.2–48.8)
e. Advice on self-monitoring of glucose control	–	8.0 (2.2–19.2)	12.0 (4.5–24.3)	42.0 (28.2–56.8)
f. Records of individualised target including HbA <sub>1c</sub> , blood pressure, lipid levels, body mass index	2.0 (0.1–10.7)	8.0 (2.2–19.2)	20.0 (10.0–33.7)	42.0 (28.2–56.8)
20. Support the multidisciplinary team's use of a patient-held diabetes record booklet with respect to changes in prescribed medication, self-reporting of symptoms, episodes of hypoglycaemia and the record of achievement of individualised treatment goals	–	12.0 (4.5–24.3)	34.0 (21.2–48.8)	28.0 (16.2–42.5)

CI confidence interval, IQR interquartile range

\* (d) + (e) significantly greater than (a) + (b) + (c)

Table 4 Overview of the main themes and sub-themes that emerged from qualitative analysis

Main theme	Sub-themes
1. Interprofessional interaction	Positive/negative relationship with physicians Physicians' attitude
2. Pharmacists' confidence issues	Increased scientific knowledge in certain disease states Lack of knowledge decreases confidence Need for continuing education Improve communication skills Provide incentives
3. Prioritisation of care issues	Some issues more "critical" than others
4. Pharmacists' image	Physicians still see pharmacists solely as dispensers Patients believe pharmacists are only "drug experts" Pharmacists' job description not defined formally by authorities
5. Perceived barriers	Pharmacists' attitudes Administrative factors -defining pharmacists' job description Lack of access to patients' medical records Physicians' attitude Lack of facilities Patients' attitude Lack of time/staff

care. Closer pharmacist-physician collaboration in the drug therapy improves patient outcomes [33–35].

The study participants reported that increasing their clinical therapeutic skills would increase their confidence in approaching and discussing pharmaceutical care issues with physicians. They believed that by attending continuing education workshops, or undertaking postgraduate studies, their knowledge would improve. The concept of continuing professional development (CPD) needs to be fully implemented and facilitated in Kuwait in order to foster a culture of lifelong learning amongst pharmacists. Thus, a joint sustained collaboration between the Ministry of Health, the Pharmaceutical and Medical Associations and Kuwait University can promote and implement the CPD.

Participants in our study claimed that pharmacists are seen by some doctors and patients in Kuwait as simply dispensers, with no additional clinical skills. This is consistent with a study conducted in Northern Ireland that showed that general practitioners were still seeing pharmacists as merely shopkeepers [36]. This image needs to be changed by shifting the pharmacist's role from dispensing to more focused services to improve quality of patient care, such as the introduction of pharmacists' prescribing, pharmacist-led medication review clinics and chronic medication schemes.

The present findings revealed that pharmacists were comfortable in undertaking clinical activities as part of a multidisciplinary team for the care of patients with type 2 diabetes. However, several barriers have been encountered by them. A study reported that lack of time and staff were the first and second top barriers that pharmacists believed were delaying the implementation of pharmaceutical care [13]. This could be due to the increase in pharmacy graduates from Kuwait University, where the pharmaceutical care concept is comprehensively covered in the undergraduate curriculum of the faculty of pharmacy. Pharmacists in our study rated the pharmacist's attitude as the top barrier. This reveals that pharmacists are now less blameful on external factors.

Pharmacists also reported administrative factors as the second barrier; they claimed that the pharmacy administration legally prohibited pharmacists from undertaking clinical pharmacy on medical wards until a proper job description had been set. This was not mentioned in any published study before, however, a European study mentioned that one of the least important barriers identified by pharmacists in Europe was legal problems [37]. Lack of access to patients' medical records was ranked as the third barrier. This was consistent with two similar studies in the Middle East [9, 12], and other studies in New Zealand [11] and Thailand [10], where pharmacists ranked the lack of access to patient medical records as one of the top barriers.

The lack of facilities was also reported as a barrier. Most healthcare facilities in Kuwait are now fully refurbished, with vast spaces available. However, pharmacists are still located in closed pharmacies with small windows for dispensing medication, and no space is available for counselling. Thus, there is need for the inclusion of proper counselling rooms in the architectural design of pharmacies, which proved to help pharmacists provide new and expanded services without the addition of personnel [38]. Further research to elucidate the understanding of barriers and facilitators will help in the adoption and implementation of consistent, evidence based and integrated pharmaceutical care practice for patients with type 2 diabetes in Kuwait.

### Strengths and limitations

The strength of this study is the use of a mixed research methodology, which provides better understanding, a fuller picture and better description [27]. The quantitative part provided data on each participant's attitudes prior to the focus group interview, allowing for comparison between individual and group responses and maximising subsequent debate during the focus group interview. Focus group interviews have been the preferred method of data collection in several diabetes studies in order to explore patients' as well as health professionals needs, and have been used to design specific educational and clinical

interventions [22, 24, 27]. However, they have mainly been used to provide insight into the contextual circumstances of an interventions' implementation, delivery and evaluation rather than tailoring and improving the design of the interventions for a better fit with daily practice. Disadvantages of focus group interviews are that the group's nature might have prevented participants from engaging and disclosing some of their personal concerns; and their tendency to introduce response bias, as only respondents who are interested in the subject studied will participate. Focus groups can be influenced by social desirability, whereby group members say things in an attempt to comply with what they perceive to be what the moderator, researchers or other participants want to hear.

On a whole, this study fill in an important gap in literature and provides useful information for pharmacists' contributions and barriers to the delivery of pharmaceutical care to patients with type 2 diabetes in Kuwait. A major limitation of this study is the low response rate despite the use of online method as a way of distribution of the questionnaire, which is considered to be more cost-effective, and quicker [39], and all the steps designed to promote responses including sending a reminder to non-respondents, assuring respondents of confidentiality, and making the survey short, clear and simple were implemented. A further limitation of the study is the cross-sectional nature of the data that represented one point in time and, therefore, do not reflect any changes in respondents' beliefs over time.

## Conclusion

The development of the pharmacist's role in the care of patients with type 2 diabetes in Kuwait requires extension through improved partnership between pharmacists and physicians in both primary and secondary care settings. This is only possible with the acknowledgment of the changing role of the pharmacist in the delivery of patient care by members of the healthcare team, the administration, patients and pharmacists themselves.

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