Knowledge, Attitude, and Practices of Physicians in Ambulatroy Care towards Clinical Pharmacist Educational Sessions of Diabetes Mellitus Management in Saudi Arabia

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Abstract

Diabetes mellitus (DM) is one of the commonest chronic noncommunicable diseases which has been related to high morbidity, mortality and poor quality of life. Its prevalence is rising in Saudi Arabia. The aim of the study was to determine the impact of the intervention by clinical pharmacists and their Knowledge, Attitude and Practices (KAP) in the management of diabetes and its complications. The study was a longitudinal survey (questionnaire) and interventional quasi uncontrolled trial in outpatient clinics of King Abdulaziz Medical City in Riyadh Saudi Arabia. The participants were involved in the study using convenience sampling. Physicians responded and attended the workshops, upon the first lecture they completed a KAP questionnaire; before the education sessions. Lectures and workshops kept being conducted twice a week as a fixed schedule for six months. Upon the last lecture, they attended the final educational session and filled the KAP questionnaire again. 105 physicians responded to the invitation and attended the workshops, upon the first lecture they completed a KAP questionnaire Gender distribution was almost 1:1 (49.5% male, 50.5% female). The study showed a significant improvement in pharmacists' and physicians' KAP in managing diabetes following educational sessions provided by a clinical pharmacist in an ambulatory care setting. A significant increase in the KAP of physicians was noticed after getting teaching from the pharmacist hence showing the importance of continuous education. Therefore, regular CME programs and surveillance studies should be conducted so as to remain updated with new evidence-based guidelines and practices

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Introduction

The Ambulatory Care Services are organised to provide safe and efficient care in an outpatient setting. The Ambulatory Care Services are coordinated with hospital departments and allied health services. Pharmacy is one of the crucial departments that link the diagnosis with the treatment of patients. With the advent of clinical pharmacy services and the focus on its role in inpatient setting, shifting the gears towards outpatient setting is eminent. As chronic diseases such as diabetes, hypertension and dyslipidaemia are mainly managed in ambulatory care services. Several studies were conducted to assess the efficiency and effects of pharmaceutical care on the health outcomes of patients with diabetes mellitus or several chronic diseases. The clinical pharmacist role at ambulatory care is yet to be defined and needs to be taken care of. Hence, the current study tried to explore knowledge, attitudes, and practices of both pharmacists and doctors in the coexistence of the clinical pharmacists.

Couple of hospital pharmacies pioneered pharmacy practices and clinical pharmacy services and he clinical pharmacy services in Saudi have

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long way to flourish and reach an optimum level.(Al-Wazaify, Matowe, Albsoul-Younes, & Al-Omran, 2006; Aljadhey, Asiri, Albogami, Spratto, & Alshehri, 2017; Alomi, 2015; Asiri, 2011; Moustafa, 2014) (Alomi, 2015). Studies indicated the growing rate of diabetes, quoting a prevalence of 4.3%, and showing, in addition, high obesity rates among the diabetic subjects (42%) compared to controls (28%). It also showed that diabetes was more common among affluent subjects as reported by Naeem et al. in 2015. (Naeem, 2015)

Methodology

This study was conducted in the Ambulatory Care Departments of King Abdul Aziz Medical City (KAMC), in Riyadh, the capital of Saudi Arabia. The outpatient department of KAMC involves five centres, each one of them located in a different area and serving different purposes. The current study involved three of them, as they serve the purposes of the current study in which it is a clinic that patients with chronic diseases are attending. The clinics were Eskan Al-Yarmouk, the National Guard Comprehensive Specialized Clinic (NGCSC) at Umm-AlHamam, and the Health Comprehensive Specialized Clinic (HCSC) at Khashm Al-Aan. The study was a longitudinal survey (questionnaire) and interventional quasi uncontrolled trial. Participants were included in the study using convenience sampling.

The survey involved self-administered questionnaires for all doctors and pharmacists in Ambulatory care department of National Guard Hospital. A minimum sample size has been calculated. With assistance of Raosoft (sample size calculator) a trademark owned by Raosoft Inc. A confidence level 95%, margin of error of 5%, and response of distribution 50% were used to yield a population size of 264 including pharmacists and physicians at the outpatient clinics. Based on that, the researcher invited all pharmacists and physicians at the three ambulatory centres of King Abdul Aziz Medical City. The invitation explained the purpose of attend lectures and workshops and the schedule to educate them about diabetes.

Data collection

The physicians filled a questionnaire that contained questions regarding the problems of adherence to medication, common laboratory parameters checked for diabetes, and the availability of clinical practice guidelines and whether they were followed. The questionnaire was adopted from Oja (2005) and approved to be used by its author. However, the questionnaire was amended to suit the current study setting then was reviewed by pharmaceutical care experts and family medicine department for face validity.

Educational sessions

The physicians and pharmacists were given educational sessions by the researcher (the researcher is a clinical pharmacist at National Guard Comprehensive Clinic. The educational sessions were regarding diabetes and its management, latest guidelines, adherence to medications, patients' follow up, pharmaceutical care optimization. The lectures were validated by the research advisor and the research committee in KAMC. Lectures were being conducted twice a week for six months, the following lectures were being delivered:

• Distribution of pre education questionnaire + Ambulatory care pharmacy lecture
• Role of clinical pharmacists in Ambulatory care
• Role of clinical pharmacist in diabetes management
• Improving patient understanding of type 2 diabetes and benefits of multidisciplinary team approach
• Diabetes managements, and new trends
• Difference in ADA and AACE guidelines
• Managements of hypertension in diabetic patients
• Management of dyslipidemia in diabetic patients
• Comparison between basal and premixed insulin
• Update guidelines in management of diabetes
• Cases studies about management of type 2 diabetes

Results

Knowledge, attitudes and practices of physicians in managing diabetes

Based on the invitations, 105 physicians responded to the invitation and attended the workshops, upon the first lecture they completed a KAP questionnaire; before the education sessions. While 97 of them attended the final educational session and filled the KAP questionnaire again. Gender distribution was almost 1:1 (49.5% male, 50.5% female) physicians completed the pre KAP questionnaire while almost similar number, however, female physicians were more comply with attending lectures. Most of the physicians belonged to 36-45 age group. Table 1 shows the characteristics of physicians.

Characteristics and differences		Pre-education		Post-education	
		n	%	n	%
Gender	Male	52	49.5	50	51.5
	Female	53	50.5	47	48.5
	Total	105	100%	97	100%
Age groups	25–35	17	16.7	16	16.5
	36–45	40	38.0	36	37.11
	46–55	34	32.4	31	31.95
	>55	14	13.33	14	14.43
Location	Urban	99	94.2	93	95.8
	Rural	6	5.7	4	4.12
Specialty	Paediatrics	8	7.6	0	0.0
	Internal medicine	15	15.46	41	42.26
	GP or FM	68	70.1	53	54.6
	Other	12	12.37	3	3.09
	Refer to endocrinologist	2	2.06	0	0.0

Table 1: Characteristics and differences of the physicians

Most physicians were general practitioners (70.1%) followed by internal medicine specialists (15.9%) and then paediatricians (7.6%). A similar pattern was noted in the post-education phase. The average number of years in practice was 13.3 ± 7.4 years. Similar rates of daily patient turnover were found before and after the intervention. When the patients were diagnosed with diabetes, 98.2% of the physicians started treatment by themselves before the study-related education, while 100% did afterwards; however, a minimal number (2.06%) referred their patients to endocrinologists.

Less than half (47.6%) of the physicians at pre-education had nurses in their facilities who had received specialised education in diabetes cases in the previous three years, while post-education, 100% of the physicians requested to hire such nurses for their health facility. In 92.7% of cases, a phone consultation with an endocrinologist was possible for physicians before receiving the study-related education, while 100% of physicians availed themselves of this opportunity afterwards. A statistically significant relationship was found between the presence of associated facilities and knowledge of physicians about diabetes. Physicians were asked about the important indicators which, according to their knowledge, carried significance when assessing the success of the treatment.

Treatment goals	Responses	Pre-education		Post-education		P-value
		n	%	n	%	
Elimination of symptoms	Very Important	44	41.9	58	56.9%	0.065
	Important	57	54.28	43	42.2%	
	Rather unimportant	4	3.81	1	1.0%	
	Not important	0	0.0	0	0.0%	
Absence of glycosuria	Very Important	42	40	43	44.32	<0.05*
	Important	56	53.3	59	60.8	
	Rather unimportant	7	6.66	0	0	
	Not important	0	0	0	0	
Keeping blood glucose in normal range	Very Important	52	49.5	45	46.4	<0.01*
	Important	40	38.1	52	53.3	
	Rather unimportant	11	10.47	0	0	
	Not important	2	1.9	0	0	
Achieving and maintenance of body weight	Very Important	41	39	55	53.9	<0.01*
	Important	51	48.5	46	45.1	
	Rather unimportant	13	12.3	1	1	
	Not important	0	0	0	0	
Absence of ketones in urine	Very Important	61	58	63	64.9	<0.01*
	Important	31	29.5	34	35.5	
	Rather unimportant	13	11.4	0	0	
	Not important	0	0	0	0	

Table 2: Importance of treatment goals among physicians in assessing the efficiency of treatment for diabetes patients

* P < 0.05: statistically significant

Thoughts regarding the common factors that are problematic for the adherence to the guidelines for T2B were also evaluated. Table 3 summarizes the responses by the physicians.

Problems	Options	Pre-education		Post-education		P-value
		n	%	n	%	
Lack of clear care guide-lines	Never	27.00	0.26	63.00	0.65	<0.01*
	Seldom	42.00	0.40	31.00	0.32	
	Often	31.00	0.30	3.00	0.03	
	Very often	5.00	0.05	0.00	0.00	
Patients' low awareness about diabetes and its complications	Never	12.00	0.11	2.00	0.02	<0.01*
	Seldom	31.00	0.30	90.00	0.93	
	Often	37.00	0.35	4.00	0.04	
	Very often	25.00	0.24	1.00	0.01	
Lack of patient motivation to change lifestyle	Never	13.00	0.12	0.00	0.00	<0.01*
	Seldom	25.00	0.24	25.00	0.26	
	Often	41.00	0.39	68.00	0.70	
	Very often	26.00	0.25	4.00	0.04	
Irregular consumption of medications	Never	10.00	0.10	4.00	0.04	<0.01*
	Seldom	33.00	0.31	90.00	0.93	
	Often	48.00	0.46	2.00	0.02	
	Very often	14.00	0.13	1.00	0.01	
Patients' limited financial means	Never	23.00	0.22	61.00	0.63	<0.01*
	Seldom	40.00	0.38	11.00	0.11	
	Often	34.00	0.32	25.00	0.26	
	Very often	8.00	0.08	0.00	0.00	
Patients' lack of interest in their disease	Never	9.00	0.09	1.00	0.01	<0.05*
	Seldom	37.00	0.35	40.00	0.41	
	Often	51.00	0.49	52.00	0.54	
	Very often	8.00	0.08	4.00	0.04	
Patients not following treatment scheme pre-scribed by the doctor	Never	7.00	0.07	1.00	0.01	<0.05*
	Seldom	34.00	0.32	43.00	0.44	
	Often	51.00	0.49	51.00	0.53	
	Very often	13.00	0.12	2.00	0.02	
Physician's lack of time	Never	10.00	0.10	0.00	0.00	<0.01*
	Seldom	41.00	0.39	11.00	0.11	
	Often	43.00	0.41	44.00	0.45	
	Very often	11.00	0.10	42.00	0.43	
Lack of special diabetes education among nurses	Never	11.00	0.10	2.00	0.02	<0.01*
	Seldom	33.00	0.31	68.00	0.70	
	Often	44.00	0.42	25.00	0.26	
	Very often	17.00	0.16	2.00	0.02	
Lack of support from specialists	Never	14.00	0.13	3.00	0.03	<0.01*
	Seldom	36.00	0.34	77.00	0.79	
	Often	41.00	0.39	16.00	0.16	
	Very often	14.00	0.13	1.00	0.01	
Lack of feedback from specialists	Never	12.00	0.11	37.00	0.38	<0.01*
	Seldom	33.00	0.31	45.00	0.46	
	Often	49.00	0.47	14.00	0.14	
	Very often	11.00	0.10	1.00	0.01	

Table 3: Factors regarded as problematic in adherence to the guidelines for Type 2 diabetes
* P < 0.05: statistically significant

The attitude of physicians towards gaining and updating their knowledge about T2D was also assessed by asking them about the availability of clinical practice guidelines for diabetes mellitus, for which 65.7% of physicians said that they had such guidelines; this increased to 94.1% post-education. When asked whether they adhered to such practice guidelines, 35.2% of practitioners in the pre-education phase said that they followed these guidelines, while 84.3% declared that they regularly followed them. The applicability of these clinical practice guidelines for T2D was found to be very applicable by 65.7% of physicians before the education, whereas by 94% afterwards. These factors were also found to be statistically significant in understanding the point of view of study participants regarding diabetes mellitus.

Physicians were also asked about the importance of the indicators that they routinely assess to monitor diabetic patients in daily practice. Pre-education questionnaires showed low percentages compared to post-education. Which suggests that the educational sessions were of influence on their answers. These changes of practice were found to be statistically significant.

Discussion

The study showed a significant improvement in physicians' KAP in managing diabetes following educational sessions provided by a clinical pharmacist in an ambulatory care setting. The importance of primary healthcare and family medicine arises from their position, as most patients seek their healthcare before meeting an endocrinologist or diabetes specialist. Hence, the current study aimed at investigating the KAP of primary healthcare physicians towards diabetes management. FPs act as the foundation for healthcare systems and serve as a central cohesion that can improve access, connect and create bridges between primary, secondary and tertiary care, along with continuous support and follow-ups (Hilts et al., 2012).

Most physicians were reluctant to start treating a patient with suspected diabetes and only referred the patient to an endocrinologist. This increases the burden on other physicians and makes the family physician appear to have no role but to refer to others. The lack of clear guidelines from their perspective was one of the most important factors that affected their KAP. Shera et al. (Shera, Jawad, & Basit, 2002) conducted a similar type of study in Pakistan with GPs having a mean level of experience of 13.41 years, the majority working in urban areas, and found that more than 90% of the FPs were treating diabetics, which was similar to the current study. On the other hand, a negative linear but significant relationship has been found between practice scores and increasing years of practice or specialised professional degree; hence concluding that FPs had unsatisfactory levels of knowledge about DM (Peimani, Tabatabaei-Malazy, Heshmat, Sanjari, & Pajouhi, 2010).

For diabetes control, the most common recommendation given by the physicians were to escalate physical activity, adopt a balanced diet, consult with a dietitian, have counselling regarding weight loss and decrease total calorie intake. Almost all GPs (97%) reported that they favour lifestyle change as well as counselling, although 60% reported a lack of knowledge concerning various nutritional issues. Around 58% responded appropriately about the effect of the antidiabetic drugs. Those FPs that were certified by the Board exhibited greater knowledge about diabetes and related practices compared to those who were not Board-certified. The vast majority of them were used to managing their patients' diabetes and associated issues by themselves, and were not in the habit of referring them to diabetes specialists (Fogelman, Goldfracht, & Karkabi, 2015).

Mabrouk et al., (2013) presented that a detailed analysis of the KAP of a group of FPs who had their KAP assessed. The study identified the necessity for improvement in the practices of family medicine physicians for the treatment and education of diabetics, and suggested that educational programmes and awareness sessions are mandatory to update FPs on topics such as screening, prevention and effective treatment of diabetes and prevention of DN. However, these outcomes were better than a study by (Peimani et al., 2010), which revealed that 29% of physicians had good knowledge in the field of diabetes and its problems, whereas 36.2% had acceptable practice in its prevention and control.

In line with the current study, a review from Estonia (Oja, 2005) reported that 76% of the study FPs had clinical practice guidelines. However, 96% of them stated that low levels of knowledge of diabetes and related complications, financial constraints and noncompliance, as well as a lack of interest and motivation among diabetic patients, were considered the biggest hurdles in treatment adherence. Moreover, a lack of educational material for patients, specialised diabetic nurses and underfunding for carrying out studies on diabetes were quoted as other barriers by 79% of the FPs. In another study conducted in Saudi Arabia, physicians did not know the prevalence of DM in the country, and more than 25% were unaware of its diagnostic criteria. Given the rising frequency of diabetes in Saudi Arabia, and that previous evidence has shown that DM is mostly diagnosed by FPs, it therefore becomes mandatory for all FPs to have sufficient knowledge about the disease (Khan et al., 2011).

Conclusion

The study demonstrates the knowledge, attitudes and practices of pharmacist and physicians working in ambulatory care in regards of diabetes management. This study reveals that clinical pharmacists working as valuable member of interdisciplinary primary care teams in ambulatory care.

Inferences achieved recognises the favourable influence of the clinical pharmacist in practising PC to attain therapeutic goals, in addition to the overall control of their patients' diabetes, along with the routine care offered by the physician. Also, when pharmacists and physicians were evaluated for their KAP regarding PC and diabetes. Satisfactory results were accomplished. This shows the effectiveness of regular updates and educational sessions that should be imparted to healthcare providers to keep their KAP up to date. Such improvements noticeably indicate the need to incorporate the input from clinical pharmacists with routine care in hospital as well as in outpatient settings to maximise the benefits for diabetic patients. Moreover, these strategies can also be applied to various chronic illnesses so that the maximum number of patients can experience beneficial effects in controlling and managing their respective illnesses.

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