

Knowledge and Practice of Community Pharmacy Personnel on Counselling Patients with Type 2 Diabetes Mellitus in Mwanza, Tanzania

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ABSTRACT

Introduction: Community pharmacy personnel are regarded to be the most accessible health care professionals with highest level of patient contact. This study aimed to determine the level of knowledge on type 2 diabetes mellitus and level of involvement in the provision of counselling services among community pharmacy personnel in Mwanza region.

Material and Methods: This was a cross section study conducted in Ilemela and Nyamagana Districts, Mwanza-Tanzania, involving 91 community pharmacies. Data were collected using self-administered pretested structured questionnaires. Knowledge was measured using scores ranging from 0 to 14, classified into good knowledge (11-14), moderate knowledge (7-10) and poor knowledge (0-6). Practice was measured using score range (0-10), categorized into positive practice (7 – 10) and negative (0-6). Data were entered into Microsoft excel and then exported to STATA version 14 for further analysis.

Results: A total of 91 participants were interviewed in this study, among them 58 (63.7%) had moderate knowledge, 9 (9.9%) had good knowledge and the remaining had poor knowledge. Only 5 (5.5%) of the respondents had a positive practice on type 2 diabetes mellitus management. Pharmacists had high mean knowledge score i.e 9.09 (\pm 1.51) compared to other pharmacy personnel.

Conclusion: This study has shown that, majority of community pharmacy personnel had moderate knowledge and negative practice in counseling patients with type 2 diabetes. These findings highlight the importance of training to all pharmacy personnel which should include type 2 diabetes mellitus management and counseling in community pharmacies and promote their involvement in public health activities.

Keywords: Community pharmacy personnel, Diabetes mellitus, Tanzania

(6.28%) individuals were affected by T2DM worldwide, and over 1 million deaths per year were attributed to T2DM alone, making it the ninth leading cause of mortality.⁴ Previous studies conducted in Tanzania reported the prevalence of T2DM between 11.9% to 14.8%.^{5,6} The risk factors for T2DM include those associated with obesity, family history, and sedentary lifestyle, as well as genetic factors.⁷ Diabetes can be managed pharmacologically or and non-pharmacologically. The cornerstone of non-pharmacologic therapy is lifestyle modifications, including nutrition modifications, physical activity, avoidance of other conventional diabetes mellitus risk factors such as smoking.⁸

Community pharmacy personnel are regarded to be the most accessible health care professionals, as no appointments are required to see them, and to have the highest level of patient contact.⁹ As such, their collaboration with other health care workers is vital in identifying patients with diabetes through regular screening procedures, assessment, education, referral, continuous monitoring and dispensing of anti-diabetics.^{10,11} However, lack of policies, poor recognition within the health care system, lack of knowledge and skills, lack of confidence and adequate training and inadequate number of pharmacy personnel are among barriers that hinder the provision of diabetic services in community pharmacy settings.¹² Contrary to high income countries, community pharmacy personnel in low resource countries such as Tanzania have poor practice and inadequate knowledge on counselling of patients with T2DM, rather, they tend to focus more on their traditional role of dispensing medication.¹³ Thus, the aim of this study was to determine whether the community pharmacy personnel in Mwanza region have adequate knowledge about T2DM and evaluate their level of involvement in the provision of counselling services.

MATERIAL AND METHODS

This was a cross section study conducted in Ilemela and

INTRODUCTION

Diabetes mellitus is described by chronic hyperglycemia and impaired carbohydrates metabolism caused by complete or partial insufficiency of insulin secretion and/or insulin action.¹ There are two primary forms of diabetes, insulin-dependent diabetes mellitus (type 1 diabetes mellitus) and non-insulin-dependent diabetes mellitus (type 2 diabetes mellitus (T2DM)).² The T2DM has emerged as one of the most challenging public health problems in terms of morbidity and complications. Rapid economic development and urbanization have led to a rising burden of T2DM in many parts of the world.³ In 2017, approximately 462 million

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How to cite this article: Mwita S, Kajugusi J, Katabalo D, Malindisa E. Knowledge and practice of community pharmacy personnel on counselling patients with type 2 diabetes mellitus in Mwanza, Tanzania. International Journal of Contemporary Medical Research 2022;9(1):A1-A5.



Nyamagana Districts, Mwanza-Tanzania. This study was approved by the Catholic University of Health and Allied Sciences and Bugando Medical Centre's Joint Ethics and Research Review Committee. The consent was taken from each pharmacy personnel. We included all pharmacy personnel (i.e., Accredited Drug Dispensing Outlets (ADDO) dispensers, pharmaceutical dispensers, pharmaceutical assistants, pharmaceutical technicians and pharmacists) working in community pharmacies. Pharmaceutical

personnel with less than three months working experience in community pharmacies were excluded in this study.

Sample size and sampling procedure

The minimum sample size of study participant was obtained by using Taro Yamane formula

$$n = \frac{N}{1 + N(e^2)}$$

N = The population size (118)

e = The margin error (0.05)

n = The sample size (91)

The minimum sample size of study participant obtained by using Taro Yamane was 91 pharmaceutical personnel from respective pharmacies. Convenient sampling was used to include a community pharmacy. One pharmacy personnel was conveniently involved from each pharmacy.

Data collection

Self-administered questionnaires were distributed to pharmacy personnel working in community pharmacies in Ilemela and Nyamagana Districts. Considering the relevance as per study settings, the questionnaire was created by modifying items in previous studies regarding the knowledge and practice of community pharmacy personnel on counselling of patients with type 2 diabetes mellitus.^{12, 13} The information on social demographics characteristics collected were variables to be collected were sex, age and educational status. Questions on knowledge had only one right answer. One point was given for each right answer and the knowledge score was calculated by tallying the points for each question. The total knowledge score was 14. Scores were classified into good knowledge for score ranging (11-14), moderate knowledge for (7-10) and poor knowledge for (0-6). Questions on practice were scored as never, rarely, frequently and always. The always option was considered as good practice and other options were considered as negative practice. One score was given to each always option and the practice score were calculated by tallying the points for each always answer. Practice was categorized into positive practice for score range (7 – 10) and negative practice for

Variable	Frequency	Percent
Sex		
Female	41	45.0
Male	50	55.0
Age		
20-29	57	62.6
30-39	26	28.6
40-49	7	7.7
50 and above	1	1.1
Education status		
*ADDO dispensers	13	14.3
Pharmaceutical dispensers	12	13.2
Pharmaceutical assistants	6	6.5
Pharmaceutical technicians	49	53.9
Pharmacists	11	12.1

*ADDO= Accredited Drug Dispensing Outlets

Table-1: Socio-Demographic Characteristics of study participants (n=91)

Score category	Frequency (Percent)
Knowledge (N = 91)	
Good knowledge	9 (9.9)
Moderate knowledge	58 (63.7)
Poor knowledge	24 (26.4)
Practice (N = 91)	
Positive practice	5 (5.5 %)
Negative practice	86 (94.5 %)

Table-2: Knowledge and Practice regarding T2DM management

Variable		Total knowledge score		Total Practice score	
		Mean (SD)	P Value	Mean (SD)	P Value
Sex ^a	Female	7.24±2.24	0.09	2.24±2.02	0.23
	Male	7.96±1.81		2.86 ±2.69	
Age ^b	20-29	7.72 ±1.89	0.77	2.44 ± 2.38	0.13
	30-39	7.65±2.31		3.27 ± 2.55	
	40-49	6.86 ± 2.41		1.00 ± 1.53	
	50 and above	8.00 ± 0.00		4.00 ± 0.00	
Education status ^b	ADDO dispensers	6.31 ±2.75	0.007	2.61 ± 3.12	0.55
	Pharmaceutical dispensers	7.50 ± 2.02		1.83 ± 1.53	
	Pharmaceutical assistants	6.50 ±1.87		2.17 ± 1.83	
	Pharmaceutical technicians	7.84 ± 1.71		2.59 ± 2.24	
	Pharmacists	9.09 ± 1.51		3.54 ± 3.29	

Note: aIndependent t-test performed; b One-way ANOVA employed

Table-3: Mean score of community pharmacy personnel on counselling of patients with type 2 diabetes mellitus

Diabetic care service	Frequency (Percent)			
	Never (%)	Rarely (%)	Frequently (%)	Always (%)
Counselling on method of using blood glucose meter?	6 (6.6)	17(18.6)	30 (33.0)	38 (41.8)
Counselling about symptoms of hypoglycemia?	6 (6.6)	30 (33.0)	33 (36.2)	22 (24.2)
Counselling on matters of stress and tension?	5 (5.5)	31 (34.1)	34 (37.4)	21 (23.0)
Counselling on the cautions of over-the-counter drugs use?	10 (11.0)	32 (35.2)	33 (36.2)	16 (17.6)
Provide education on regular screening?	17 (18.7)	23 (25.3)	32 (35.1)	19 (20.9)
Counselling on good foot care techniques?	9 (9.9)	32 (35.1)	27 (29.7)	23 (25.3)
Stress the importance of weight control in diabetes management?	9 (9.9)	23 (25.3)	39 (42.8)	20 (22.0)
Stress the importance of diet in diabetes management?	10 (11.0)	19 (20.9)	31 (34.0)	31 (34.1)
Stress the importance of regular exercise in diabetes management?	8 (8.8)	25 (27.5)	29 (31.9)	29 (31.8)
Promote smoking cessation (where applicable)?	37 (40.6)	18 (19.8)	20 (22.0)	16 (17.6)

Table-4: Levels of community pharmacy professionals in counselling Diabetes care services

score range (0-6).

Data Management and Analysis

Descriptive statistical data were entered into Microsoft excel and then exported to STATA version 14 for further analysis. The results are presented in frequencies, percentages and means \pm SD. Where appropriate, we employed independent *t*-test or one-way ANOVA to determine differences in knowledge and practice score between groups. The *p*-value < 0.05 was considered significant.

RESULTS

Socio-demographic characteristics

We enrolled a total of 91 participants, of which 50 (55%) were males. Majority of the respondents 57 (62.6%) had 20–29 years of age and were pharmaceutical technicians 49 (53.9%) (Table 1).

Knowledge and practice of community pharmacy

Majority of the respondents 58 (63.7%) had moderate knowledge on T2DM management and only 9 (9.9%) had good knowledge. Further, only 5 (5.5%) of the respondents had a positive practice on T2DM management (Table 2). The overall mean score of knowledge was 7.64 ± 2.04 and the mean score of practice was 2.58 ± 2.42 . This analysis showed that only education status was significantly associated with knowledge of community pharmacy personnel; pharmacists having high score i.e., 9.09 ± 1.51 while ADDO dispensers had lowest score i.e., 6.31 ± 2.75 , *P*=0.007. However, all study variables (sex, age and education status) were not associated with counseling practice of patients with T2DM (Table 3).

Frequency of Diabetes Care Counseling Services

Counselling on method of using blood glucose meter and importance of diet in T2DM control was always practiced by 38 (41.8 %) and 31 (34.1%) of the respondents respectively. Similarly, 29 (31.8%) of respondents always practiced counseling on importance of regular exercise in T2DM control. Majority of respondents i.e., 37 (40.6%) never promote smoking cessation. However, 39 (42.8%) of respondents frequently emphasize the importance of weight control in T2DM management (Table 4).

DISCUSSION

In this study, the majority of the community pharmacy

personnel (63.7%) had moderate knowledge on T2DM management with mean score of knowledge of 7.64 ± 2.04 . This is inconsistent with the findings of similar studies conducted in Nepal, Ethiopia and Libya which reported poor knowledge in majority of respondents.^{13,15,17} The reasons of poor level of knowledge reported in these studies were absence of continuing professional education on T2DM. Conducting continuing education programs among community pharmacy personnel for enhancing the ability to perform pharmaceutical care in T2DM management has been shown to increase their knowledge.^{18,19}

Community pharmacy personnel can play a key role beyond medication dispensing in T2DM management such as patient identification, assessment, education, referral, monitoring and behavioral counseling.¹⁶ As T2DM patients visit pharmacies regularly for their medicine refill; this is a best chance for the pharmacy personnel to advice and counsel the patient concerning their illness more professionally. However, majority of respondents (94.5%) in our study had negative practice on counselling of patients with T2DM with mean practice score of 2.58 ± 2.42 . The reported negative practice might have been due to less involvement of community pharmacy personnel in public health activities such as counselling of patients with chronic illnesses. Previous studies revealed that community pharmacy personnel mainly are involved in activities concerning to the dispensing of medications and are not likely to be involved in public health activities.^{20–22} Design of the pharmacy premises, lack of knowledge or clinical skills, lack of clinical tools, lack of coordination with other health care professionals, lack of time, inadequate human resources are the reasons reported in previous studies for the high rates negative practice.^{13,22,23} In order to optimize the involvement of community pharmacy personnel, interventions to overcoming these barriers are priority. Future studies in Tanzania, a low resource country are needed to identify more barriers in these settings.

Our analysis showed that only education status was significantly associated with knowledge of community pharmacy personnel; pharmacists having high score while ADDO dispensers had lowest score. However, none of the study variable was not associated with counselling practice of patients with T2DM. This is expected as community pharmacists have extensive training with four years

pharmacy degree program and one internship year. ADDO dispensers have five weeks pharmacy training only with medical background such as nursing and diploma in clinical medicines. The goal of the ADDO program was to improve access to affordable, quality medicines and pharmaceutical services in rural and peri-urban areas where there are few or no registered pharmacies.²⁴ Tanzania has two levels of retail pharmaceutical outlets—full-service pharmacies and ADDOs. The ADDO dispensers are supposed to work in ADDOs only,²⁵ however in this study 14 (i.e 14.3% of all participants) of them were found in community pharmacies. To the best of our knowledge, this is the first study to examine knowledge and practice of community pharmacy personnel on counselling of patients with T2DM in Tanzania. However, this study has some limitations. One major limitation to be considered while interpreting the result of the findings is the generalizability of the result. Since the study was conducted in only two districts it is not actual representation of community pharmacy practice in Tanzania. Also, the small sample size of the community pharmacies studied may have not permitted detection of significant differences where expected. Moreover, our study is prone to information bias due to use of self-administered questionnaire, which depends on honesty and faith of the respondents.

CONCLUSION

Community pharmacy personnel in our study had a moderate knowledge and showed negative practice in counseling patients with T2DM patients. These findings highlight the importance of evidence-based training to all pharmacy personnel which should include T2DM management and counseling in community pharmacies and promote their involvement in public health activities.

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Source of Support: Nil; **Conflict of Interest:** None

Submitted: 02-10-2021; **Accepted:** 29-12-2021; **Published:** 31-01-2022