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ASSESSMENT OF DIABETES KNOWLEDGE AMONG PHARMACISTS AND NURSES IN A NIGERIAN TERTIARY HOSPITAL

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ABSTRACT

Inadequate knowledge of diabetes among health professionals can jeopardise the management of diabetes among patients. A Cross-sectional study was conducted to assess the knowledge of Diabetes among Pharmacists and Nurses in a Nigerian tertiary Health care centre. Knowledge of the effects of exercise on blood glucose level had a positive score of 92.3% among Pharmacists. About 100% of Pharmacists had knowledge of Diabetes and its complications. The causes of low blood glucose had a frequency score of about 96.2% among pharmacist. The result in relation to diabetes as a disease and its complications showed that more than 50% of Nurses exhibited sound knowledge. The knowledge of the complications of diabetes had also a good frequency score of about 88.1% and the causes of low blood glucose had the highest   score of about 89.1% among Nurses. Diabetes is a serious and growing health problem in the world and broad diabetes knowledge is necessary to ensure excellent care of this growing population.

Keywords: Knowledge, Health Care, Pharmacists, Nurses, Professionals

INTRODUCTION

Diabetes mellitus is a complex, chronic illness requiring continuous medical care with multi-factorial risk reduction strategies beyond glycemic control. Ongoing patient self-management education and support are critical to preventing acute Complications and reducing the risk of long-term complications[1]. The manifestations of diabetes cause considerable human suffering and enormous economic costs. Both acute and late diabetic complications are commonly encountered. The long-term complications represented by cardiovascular and cerebro-vascular diseases, nephropathy, retinopathy, and neuropathies are already major causes of morbidity, disability, and premature death in countries of the Eastern Mediterranean region[2].The number of people with diabetes is increasing due to population growth, aging, urbanization, and increasing prevalence of obesity and physical inactivity. Quantifying the prevalence of diabetes and the number of people affected by diabetes, now and in the future, is important to allow rational planning and allocation of resources [3]

The International Diabetes Federation (IDF) estimated in 2011 that 366 million adults, aged 20–79 years, of the world's 7 billion population have diabetes. This gives a comparative prevalence of 8.5%. Since more than 90% of the global cases of diabetes are type 2, it is evident that the epidemic is mainly due to the escalation of the causes of type 2 diabetes, Also; up to 50% of cases of gestational diabetes may end up as type 2 diabetes. Secondary causes of diabetes and type 1 diabetes present with features that require treating the cause and insulin therapy respectively [4].

In Africa, the estimated prevalence of diabetes is 1% in rural areas, up to 7% in urban sub-Sahara Africa, and between 8-13% in more developed areas such as South Africa and in population of Indian origin. The prevalence in Nigeria varies from 0.65% in rural Mangu (North) to 11% in urban Lagos (South) and data from the World Health Organization (WHO) suggests that Nigeria has the greatest number of

people living with diabetes in Africa.[5] It has been reported that poor diabetic care is due to prevalent and misguided attitude of both healthcare professionals and diabetic patients. Improvement in the attitude of healthcare professionals and the patients toward their disease is essential to achieve good control of their blood glucose levels and hence prevent the development of diabetes-related complications [6]

The disease requires the skill and talents of multiple health care providers, and as such, interprofessional teamwork is extremely important for diabetes care [7] All health care professionals, including neurologists, pharmacists, nutritionists, health educators, nurses and other specialists, play significant roles in diabetes management [8]. The improvement noted in patient knowledge on diabetes and its management has been shown to depend on the instructions received from health care professionals [9], Therefore education of the health care team on the management of diabetes and on how to educate people with diabetes is one major area that requires strengthening [10]. Education is another area in which the pharmacist can become involved. People with diabetes must be made aware of the implications of having diabetes and the need to take control of their condition. [11]

In addition to the desired qualities of a good counselling pharmacist, the pharmacist should also have adequate knowledge about diabetes. Such a pharmacist is a vital member in a diabetes management program [12]Among all the members of the health care team, staff nurses spend the longest time with the patients [13] and they also serve as the resource person for diabetic patients seeking information on their disease.[11] This study aims to assess the Knowledge of diabetes mellitus amongst Pharmacists and Nurses who are expected to counsel and educate diabetic patient appropriately on how to improve on their quality of life through good glycemic control.

METHOD AND SETTING

METHOD
This Cross-sectional study was carried out at Abubakar Tafawa Balewa University Teaching Hospital Bauchi, Nigeria to evaluate the knowledge of diabetes among pharmacists and nurses using the Michigan Diabetes Research and Training Centre's Brief Diabetes Knowledge Test questionnaire. The questionnaire had 23 questions but was modified and reduced to 18 questions and each correct answer was given a score of 'one' and each wrong answer was given a score of 'zero'. A total of 200 questionnaires

were distributed and only 127 were returned completed and a convenient purposeful random sampling method was employed to distribute the questionnaires among pharmacists and nurses. The data was analyzed by using IBM SPSS statistics 20. A descriptive analysis was conducted to determine the mean positive score of each respondent and results were presented as Mean ± Standard Error Mean at 95% confidence interval. The study protocol was approved by the Research ethics committee of Abubakar Tafawa Balewa University Teaching Hospital Bauchi, Nigeria. The researchers did not record any information that may disclose the identity of the respondents.

SETTING

Abubakar Tafawa Balewa University Teaching Hospital, Bauchi was established as a leprosarium in 1918 became a General Hospital in 1966 and a Specialist Hospital in 1978. Following a memorandum of understanding between the Federal government and the Bauchi State Government in 2008, the hospital became the 18th Teaching Hospital, the second Teaching Hospital in the North-East geopolitical zone in 2010. The hospital has a capacity of 700 beds with 21 wards and offers full services of a teaching hospital which includes health care services, research and training. It is a major health facility in Bauchi state. Non emergency services are available from Monday to Friday through the General Outpatient Department, Paediatric Outpatient Department, NHIS clinic, and various sub-speciality clinics such as Paediatrics, Medicine, Surgery, Dentistry, Obstetrics and Gynaecology, ear nose and throat, Ophthalmology and Psychiatric clinics. Emergency services are attended to on 24 hours basis at the trauma centre.

RESULT

The general research questions has 3 sections which include diabetic diet/diabetic care and Glucose testing methods (Questions 1-8), Diabetes and its complications(Question 9-12) and the use of insulin and its reactions(Question 13-18).

Table 1 showed that Pharmacists had above 50% general knowledge of diabetic die, diabetic care and glucose testing methods, however only 30.8% of pharmacists had knowledge of Glycosylated haemoglobin testing method and only 26.9% of pharmacists know what effect unsweetened fruit juice has on blood glucose level. The knowledge of the effects of exercise on blood glucose level had the highest positive score of 92.3% among pharmacists.

Pharmacists had excellent knowledge on diabetes as a disease and its complications. About 100% of Pharmacists had knowledge of Diabetes and its complications, while only 30.8% of Pharmacist had knowledge of the sign of ketoacidosis. In relation to the use of insulin, its administration and complications, Pharmacists also exhibited excellent knowledge with more 50% of the respondents scoring positive however only 46.2% of Pharmacist had knowledge of measures to be taken when a patient is experiencing insulin reaction and only 34.6% 0f pharmacist had knowledge on what is the possible cause of insulin reaction. The cause of low blood glucose had the highest level of score of about 96.2%

Table 2 showed that Nurses had above 50% general knowledge of diabetic diet/diabetic care and glucose testing methods, however only 43.6% of Nurses have general knowledge of what a diabetic patient's diet should constitute, 20.8% of Nurse have knowledge of Glycosylated haemoglobin testing method and only 12.9% of Nurse know what effect unsweetened fruit juice has on blood glucose level. The food with the most fats content had the highest level of scores of about 81.2% among Nurses. The result in relation to diabetes as a disease and its complications showed that more than 50% of Nurses on the average exhibited sound knowledge. The knowledge of the complications of diabetes had the highest level of score of about 88.1% among nurses, while only 27.5% of nurses had knowledge of the sign of ketoacidosis. In relation to the use of insulin, its administration and complications, nurses exhibited good knowledge with more 50% of the respondents scoring positive however only 49.5% of Nurses have knowledge of measures to be taken when a patient is experiencing insulin reaction and only 28.7% of Nurses have knowledge on what is the possible cause of insulin reaction. The cause of low blood glucose had the highest level of score of about 89.1%

DISCUSSION

The recognition that diabetes management is a concern in hospitals is of utmost importance in order for resource allocation and proper management. Improving diabetes care, requires competent providers to be actively involved in quality improvements in order to build a system capable of translating their knowledge into optimal outcomes for people with diabetes [14]. Given the increasing prevalence of diabetes and the lack of patients reaching recommended therapeutic goals, novel models of team-based consist of physicians, nurses, case managers, pharmacists, and community-based peer health promoters has emerged [15]. In Africa

diabetes prevalence stood at 4.5% ideally, people with diabetes should receive intensive education on diet, drugs, and insulin, close adjustments if indicated, self-monitoring, risk factor avoidance, and foot care. Patient groups and local or national organisations are helpful. At a national level, policy and guidelines are required to provide direction for the management of diabetes to medical personnel at the grass roots [4]. Knowledge of efficacious Diabetes mellitus components is desirable both for the efficient and effective design of new Diabetes mellitus programs and for the expansion of existing ones [16], thus Education and awareness about the diabetes is essential as it correlates with better outcomes leading to improved quality adjusted life years. The education of the patient is most important for the prevention of the morbidity and mortality associated with diabetes [17], Therefore the quality of information the patients receives will largely depend on the knowledge and experience of the medical staff in diabetes care [18].

High carbohydrate low fats diets were generally considered to comprise the best strategy for weight reduction, particularly because epidemiological evidence from population studies indicated that High carbohydrate low fats diets were associated with low diabetes-related mortality and a low prevalence of diabetes [19]. Aerobic exercise is well known to improve vascular function in ageing adults it will also improve the metabolic profile in people with insulin resistance [20]. Studies have shown that patients care provided by trained nurses and pharmacists under supervision of physicians gave rise to decrease in mean Glycosylated haemoglobin levels to about three times the initial value [21]. In another study trained registered nurse rendered health services to 331 minority patients and decreased mean Glycosylated haemoglobin from 8.8% to 7.0% was observed [22], similar studies Among 71 patients with longstanding diabetes had mean Glycosylated haemoglobin decreasing in levels of 1.7 percentage points than with usual care [23]. Pharmacists focused on clinical goals, established patient-specific self-management goals, and worked with other health professionals to recommend adjustments in patient treatment plans. Among patients who were in the program for 1 year and saw the pharmacist an average of 4.6 times, Glycosylated haemoglobin levels decreased from 7.6% to 7.2%, , eye examinations increased by 17%, and foot examination rates rose from 38% to 68% . For patients with diabetes, care delivered by specially trained nurses, nurse practitioners, and pharmacists has been shown in randomized controlled trials and systematic reviews to be superior to usual care [21].

This study showed that the nurses had low knowledge of questions relating to diabetic diet, measurement of glucose levels and diabetic ketoacidosis although the pharmacists had a better knowledge on diabetic care on a general note than the nurses , they still had low knowledge in questions relating to measurements of glucose levels and diabetic ketoacidosis.

Over the past several years, health professionals and health educators have learned that the treatment of diabetes is much more than the prescription of drugs, insulin, and meal plans; it is largely an educational process, in which goals and objectives are the critical elements, particularly in the prevention of acute and chronic complications. In the ideal world, the preference is for a network of highly skilled people to be identified [24].

It is inevitable that the use of insulin a potent, life saving medication to treat diabetes is also increasing in hospitals to particularly manage in-patients, However if prescribed or administered inappropriately has the potential to cause harm 25. It is apparent that insufficient knowledge of diabetes and insulin therapy on the part of healthcare providers can contribute to errors in insulin management [14], since Insulin is frequently cited as one of the medications commonly implicated in medication errors in hospitals. It was reported that insulin-related medication errors caused harm in 24% of patients and death in 33% of patients. The final recommendation calls for education of all hospital-based health professionals who are responsible for the use of insulin. These include physicians, pharmacists, and nurses who are responsible for ordering, dispensing, compounding, and administering insulin and monitoring its effects [26-28]. The study showed that Pharmacists had better knowledge of diabetes and the use of insulin than the Nurses however both professionals lacked adequate knowledge on Cause of insulin reaction and measures to be taken when diabetic patients experience insulin reaction.

CONCLUSION

Diabetes is a serious and growing health problem in the world and broad diabetes knowledge is necessary to ensure excellence in the care of this growing population, therefore responsible authority must provide more basic and ongoing training in diabetes for all health care workers.

Table 1: Showed the Diabetic knowledge test mean score for Pharmacist
N = 26

QUESTION	Frequency(%)	Mean±SEM
1. The diabetic diet is	13(50.0)	1.50+0.100
2. which of the following is highest in fats	23(88.5)	1.12+0.064
3. Glycosylated Haemoglobin test measures	8(30.8)	1.69+0.092
4. Which is the best method for testing blood glucose	18(69.2)	1.31+0.092
5. What effect does Unsweetened fruit juice has on blood glucose	7(26.9)	1.73+0.089
6. What effect does exercise have on blood glucose	24(92.3)	1.08+0.053
7. Infection is likely to cause	20(76.9)	1.23+0.084
8. The best way to take care of your feet is to	14(53.8)	1.46+0.010
9. Eating foods lower in fats decreases your risk for:	24(92.3)	1.08+0.053
10. Numbness tingling may be symptoms	24(92.3)	1.08+0.053
11. Complications associated with diabetes?	26(100)	1.00+0.000
12. Signs of ketoacidosis include:	8(30.8)	1.69+0.092
13. You realize just before lunch time that you forgot to take your insulin before breakfast	14(53.8)	1.46+0.100
14. If you are beginning to have an insulin reaction, you should	12(46.2)	1.54+ 0.050
15. Low blood glucose may be caused by:	25(96.2)	1.04+0.038
16. If you take your morning insulin but skip breakfast your blood glucose level will usually:	22(84.6)	1.15+0.072
17. High blood glucose may be caused by:	23(80.2)	1.12+0.604
18. Which one of the following will most likely cause an insulin reaction?	9(34.6)	1.65+0.095

Table 2: Showed the Diabetic knowledge test mean score for Nurses
N=101

QUESTION	Frequency (%)	Mean±SEM
1. The diabetic diet is	44(43.6)	1.50±0.100
2. which of the following is highest in fats	82(81.2)	1.12±0.064
3. Glycosylated Haemoglobin test measures	21(20.8)	1.69±0.092
4. Which is the best method for testing blood glucose	67(66.3)	1.31±0.092
5. What effect does Unsweetened fruit juice has on blood glucose	13(12.9)	1.73±0.089
6. What effect does exercise have on blood glucose	73(72.3)	1.08±0.053
7. Infection is likely to cause	64(63.4)	1.23±0.084
8. The best way to take care of your feet is to	71(70.3)	1.46±0.010
9. Eating foods lower in fats decreases your risk for:	88(87.1)	1.08±0.053
10. Numbness tingling may be symptoms	86(85.1)	1.08±0.053
11. Complications associated with diabetes?	89(88.1)	1.00±0.000
12. Signs of ketoacidosis include:	28(27.7)	1.69±0.092
13. You realize just before lunch time that you forgot to take your insulin before breakfast	72(71.3)	1.46±0.100
14. If you are beginning to have an insulin reaction, you should	50(49.5)	1.54± 0.050
15. Low blood glucose may be caused by:	90(89.1)	1.04±0.038
16. If you take your morning insulin but skip breakfast your blood glucose level will usually:	79(78.2)	1.15±0.072
17. High blood glucose may be caused by:	81(80.2)	1.12±0.604
18. Which one of the following will most likely cause an insulin reaction?	29(28.7)	1.65±0.095

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