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Nurses Understanding of Diabetes Mellitus in a New Teaching Hospital, Makurdi, Nigeria

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ABSTRACT

Background: Diabetes mellitus is gradually becoming a public health threat globally. The role of education in its care has been established, however, consensus has not been reached on the level of understanding of critical stake-holders involved in the care. Aim: The aim of this study was to determine the level of understanding of nurses in diabetes mellitus in a new teaching hospital, Makurdi, Nigeria. **Materials and Methods**: This was a cross-sectional descriptive study that was carried out at Benue State University Teaching Hospital, Makurdi. A total of 103 nurses were recruited for the study. **Results**: The nurses were aged 25-70years with the mean age of 38.5years, and a standard deviation of 9.6. Majority of the participants were females 76(73.8%), while the males were 27(26.2%). On the level of understanding of nurses in diabetes mellitus, about a third 40(38.8%) knew the fasting plasma glucose cut off for the diagnosis of diabetes. Majority of the nurses 101(98.1%) indicated that diabetes is secondary to insulin deficiency. Majority of the nurses 94(91.3%) identified diabetes as a chronic disease. Almost all the nurses 100(97.1%) indicated that polyuria is a clinical feature of diabetes, Polydipsia was identified as a clinical features of diabetes by 77(74.8%) of the participants. More than half 58(56.3%) of the participants identified polyphagia as a clinical feature of diabetes. About a third 36(35.0%) admitted that recurrent infection is a clinical feature of diabetes. Majority of the participants 93(90.3%) identified hypoglycaemia as a diabetic emergency. About two-third 61(59.2%) admitted that diabetic keto-acidosis is a diabetic emergency, Hyperglycaemia was identifies as a diabetic emergency by the majority 84(81.6%) of the participants, Only 13(12.6%) indicated that hyperosmolar non ketotic state is a diabetic emergency. only 14(13.6%) of the participants identified lactic acidosis as a diabetic emergency. Majority of nurse admitted that diabetes mellitus affect the kidneys 77(74.8%), eyes 83(80.6%) and the nerves 62(60.2%) .**Conclusion**: This study has shown that the overall understanding of nurses on diabetes mellitus is above average and therefore adequate. Nurses in our environment can be assigned specific role in diabetic education. In areas where gap in knowledge was observed, regular training is advocated.

Keywords: Diabetes mellitus, Nurses, Teaching hospital, understanding, Makurdi, Nigeria.

Introduction

Diabetes mellitus is a major public health problem and it is now one of the most common non-communicable diseases globally [1]. It is the fourth leading cause of death in most high-income countries and there is substantial evidence that it is epidemic in many low- and middle-income countries [1].Diabetes is recognized as a group of heterogeneous disorders with the common elements of hyperglycaemia and glucose intolerance, due to insulin deficiency, impaired effectiveness of insulin action, or both [1]. The prevalence is said to be on the increase due to reduced physical activity, obesity, unhealthy life style and increase in life expectancy[2][3][4]Presently, diabetes mellitus affects about 150million people world-wide and this number has been projected to increase to 300million by 2025[5][6]. In Nigeria evidence suggests increasing incidence and prevalence of non-communicable diseases (NCDs) including diabetes mellitus and the prevalence of NCDs has almost exceeded the prevalence of communicable diseases[7][8].Studies indicate that an aging population, coupled with rapid urbanization, is expected to lead to an increasing prevalence of diabetes in Africa[9], and it now constitutes the highest morbidity and mortality of all chronic NCDs in the

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continent[10].In Nigeria, it accounts for between 3.5% and 15% of medical admissions in most health facilities in the country[11]. The implication of this trend in developing countries is ominous because of the poor state of health services and associated high prevalence of communicable diseases. These bring the 'double' burden of disease, as emphasized by the World Health Organization (WHO), to the fore [8][12].Complications from diabetes, such as coronary artery and peripheral vascular disease, stroke, diabetic neuropathy, amputations, renal failure and blindness are resulting in increasing disability, reduced life expectancy and enormous health costs for virtually every society[1][13].However, diabetes is a largely preventable disease and this is where diabetes health education and public awareness becomes critically important[14]. Healthcare workers especially nurses constitute the major channel for the delivery of this important diabetes education both to the public and patients as studies have shown that ward nurses are the patients most frequent contact[15][16]. In Nigeria, nurses are in charge of most of the Primary Health Care Centers and few of the Secondary Health Care levels and they are often the first point of contact for people seeking information on many diseases including diabetes care[17][18]. Therefore, their opinions on health issues are often taken seriously by patients and members of the community. As a result attempts have been made by few experts in endocrinology and frontline medicine to identify the level of knowledge of nurses in diabetes mellitus. For example reports from studies in Niger-Delta Region of Nigeria and Tripoli indicate that the overall nurses' knowledge on diabetes mellitus was adequate [14][19][1]. The report concluded that nurses are knowledgeable enough to play an important role in diabetes health education and public awareness. However, this may not be applicable in our environment as no such study has been conducted. Considering the paucity of materials on nurses' understanding of diabetes in North central Nigeria, the present study will attempt to address this gap and lay the foundation for future research in Makurdi. The current study therefore set out to determine the level of understanding of nurses on diabetes in Benue State University Teaching Hospital, Makurdi, Nigeria.

Materials and Methods

The study area is Makurdi. Makurdi, the state capital of Benue State is located in middle-belt region of Nigeria. It lies between latitude 7.73^0 and $8.32^{0.}$ It has a population of about 300,377 people (NPC 2006)[13].The study was conducted in Benue State University Teaching Hospital, which is a 300-bed hospital located in Makurdi. It was commissioned in March 2012 and commenced clinical activities in May 2012. The hospital has 15 clinical departments with over seven hundred healthcare workers. It currently serves a population of over four million people in the middle-belt region of Nigeria. The present study was a cross-sectional study designed to determine the level of understanding of nurses in Benue State University Teaching Hospital, Makurdi, Nigeria. The study was carried out between January and March 2015. The nurses were recruited on work days using a well-structured self-administered questionnaire after a signed consent had been obtained from them. The instrument (questionnaire) was validated through a pretest conducted on 10 subjects."A total of 150 questionnaires were administered through simple random sampling technique. Out of this number, 103 were completely filled and returned, 17 were incompletely filled, 10 were non response and 20 were not returned. The incompletely filled and non-response questionnaires were excluded from the study. The questionnaire evaluated their socio-demographic characteristics (such as age, sex, marital status, residence, and religion, ethnic group and number of years of nursing experience). Other variables like the fasting plasma glucose diagnostic of diabetes mellitus, aetiology, clinical features, diabetic emergencies as well as complications were explored. The inclusion criteria for the participants include being a nurse and working at the Benue State University Teaching hospital as well as consenting to participate in the study. Approval for the study was obtained from the Research and Ethical Committee of Benue State University Teaching Hospital, Makurdi. Collated data were analyzed using Statistical Package for Social Sciences for Windows version 18.0 (SPSS, Inc., Chicago, Illinois).

Result

A total of 103 nurses were recruited for the study. These were aged 25-70years with the mean age of 38.5 years and a standard deviation of 9.6. The majority of the participants were between 26-30 years. Only one participant is above 60 years.

Table 1: Shows the age distribution of the subjects. The socio-demographic profile of participants showed that the majority of the participants were females 76(73.8%), while the males were 27(26.2%). Many of the participants 94(91.3%) resided in urban centers, while only 9(8.7%) resided in the rural area. Almost all the participants 101(96.1%) were Christians, while Muslims were 1(1.0%). The married participants were the majority 86(83.5%), while the single accounted for

17(16.5%). The Tiv accounted for the majority of the ethnic group 74(71.8%) while the participants from other ethnic groups were only 5(4.9%). Majority of the participants 31(30.1%) had clinical experience spanning between 6-10 years, while 12(11.7%) had the least experience.

Table 2: Shows the socio-demographic characteristics of nurses. On the level of understanding of nurses in diabetes mellitus, about a third 40(38.8%) knew the fasting plasma glucose cut off for the diagnosis of diabetes mellitus. Almost all the participants 101(98.1%) indicated that diabetes mellitus is secondary to insulin deficiency. Majority of the participants 94(91.3%) identified diabetes mellitus as a chronic disease. Almost all the participants 100(97.1%) indicated that polyuria is clinical features of diabetes mellitus, while 3(2.9%) said otherwise. Polydipsia was identified as a clinical features of diabetes by 77(74.8%) of the participants, while 26(25.2%) said otherwise. More than half 58(56.3%) of the participants identified polyphagia as a clinical feature of diabetes while 45(43.7%) said otherwise. Less than a quarter 20(19.4%) indicated that weight gain is a clinical feature of diabetes while the majority 83(80.6%) said otherwise. About a third 36(35.0%) admitted that recurrent infection is a clinical feature of diabetes while the majority 67(65.0%) said otherwise. Majority of the participants 93(90.3%) identified hypoglycaemia as a diabetic emergency 10(9.7%) indicated otherwise. About two-third 61(59.2%) admitted that diabetic keto-acidosis is diabetic emergency, while 42(40.8%) indicated otherwise. Hyperglycaemia was identifies as a diabetic emergency by the majority 84(81.6%) of the participants, while 18(18.4%) indicated otherwise. Only 13(12.6%) indicated that hyperosmolar non ketotic state is a diabetic emergency, the majority 90(87.4%) admitted otherwise. Similarly only 14(13.6%) of the participants identified lactic acidosis as a diabetic emergency, while the majority 89(88.4%) said otherwise. Majority 77(74.8%) admitted that diabetes mellitus affects the kidneys, while about a quarter 26(25.2%) indicated otherwise. Majority 83(80.6%) of the nurses indicated that eye is affected by diabetes mellitus, while 20(19.4%) indicated otherwise. About two-third 62(60.2%) of the nurses admitted that diabetes affect the nervous system while 41(39.8%) indicated otherwise. Table 3: shows the level of knowledge of nurses in diabetes mellitus.

Table 1: Age distribution of nurses

Variables	Frequency	Percentage
29-25	4	3.9
26-30	26	25.2
31-35	15	14.6
36-40	17	16.5
41-45	18	17.4
46-50	11	10.7
51-55	7	6.8
56-60	4	3.9
61 and above	1	1.0
Total	**103**	**100**

Table 2: Socio-demographic profile of nurses

Variables	Frequency	Percentage
Sex:		
Male	27	26.2
Female	76	73.8
Total	103	100
Residence:		
Urban	94	91.3
Rural	9	8.7
Total	103	100
Religion		
Christianity	101	98.0
Islam	1	1.0

Others	1	1.0
Total	103	100
Marital status:		
Married	86	83.5
Single	17	16.5
Total	103	100
Ethnic group:		
Tiv	74	71.8
Idoma	18	17.5
Igede	6	5.8
Others	5	4.9
Total	103	100
Years of Experience:		
0-5	21	20.4
6-10	31	30.1
11-15	14	13.6
16-20	12	11.7
21 and above	25	24.3
Total	103	100

Table 3: Shows the level of knowledge of nurses in diabetes mellitus.

Variables	Frequency	Percentage
Fasting plasma glucose for diagnosis of diabetes:		
>7	40	38.8
>8	24	23.3
>5	39	37.9
Total	103	100
Diabetes is secondary to:		
Insulin deficiency	101	98.0
Excessive weight gain	1	1.0
Excessive urination	1	1.0
Total	103	100
Diabetes is a chronic disease:		
Yes		
No	94	91.3
Total	9	8.7
Polyuria is a clinical features of diabetes:	103	100
Yes		
No	100	97.1
Total	3	2.9
Polydipsia is a clinical features of diabetes:	103	100
Yes		
No	77	74.8
Total	26	25.2
Polyphagia is a clinical features of diabetes:	103	100
Yes		
No	58	56.3
Total	45	43.7
Weight gain is a clinical features of diabetes:	103	100

Yes		
No	20	19.4
Total	83	80.6
Recurrent infection is a clinical feature of diabetes:	103	100
Yes		
No		
Total	36	35.0
Hypoglycaemia is a diabetic emergency:	67	65.o
Yes	103	100
No		
Total	93	90.3
	10	9.7
Diabetic keto-acidosis is a diabetic emergency:	103	100
Yes		
No		
Total	61	59.2
Hyperglycaemia is a diabetic emergency:	42	40.8
Yes	103	100
No		
Total	84	81.6
Hyper-osmolar non ketotic state is a diabetic emergency:	18	18.4
Yes	103	100
No		
Total		
Lactic acidosis is a diabetic emergency:	13	12.6
Yes	90	87.4
No	103	100
Total		
	14	13.6
	89	88.4
	103	100
Kidney is affected by Diabetes mellitus:		
Yes		
No		
Total		
Eye is affected by Diabetes mellitus:		
Yes	77	74.8
No	26	25.2
Total	103	100
Nerve is affected by Diabetes mellitus:	83	80.6
Yes	20	19.4
No	103	100
Total		
	62	60.2
	41	39.8
	103	100

Discussion

The increasing morbidity and mortality from diabetes mellitus especially in the developing countries has prompted experts in endocrinology to encourage diabetic education at all levels of health care. In Nigeria, Nurses play pivotal role in healthcare delivery. The determination of their level of understanding of diabetes will form the platform on which appropriate roles can be assigned. In the current study 38.8% of the studied population was able to identify the fasting plasma glucose cut off for the diagnosis of diabetes mellitus. This figure is higher than 26.7% reported in southern part of Nigeria, [14] but lower than 96% that was reported in Tripoli [19]. The finding in the current study is not encouraging considering the fact that proper diagnosis is the hallmark of medical management. As a result there is urgent need for regular training of nurses in our health facilities. The present study also observed that the majority of the nurses (98.1%) identified insulin deficiency as a cardinal aetiological component of diabetes mellitus. This is comparable to report from Tripoli [19] where 95% of nurses reported a similar trend. This is commendable as it will pave ways for appropriate diabetes education. Diabetes mellitus is a chronic medical disease. The majority of the participants in the current study identified it as been so. This is consisted with what Unadike *et al*., reported in University of Uyo Teaching Hospital, Nigeria[14] However, about 8.7% of the nurses thought otherwise. The common clinical features of diabetes mellitus include polyuria, polydipsia, polyphagia, weight loss and recurrent infections. In the current study more than two-third identified polyuria and polydipsia as clinical features of diabetes mellitus. This finding is similar to what Unadike *et al*., documented in the Niger-delta region of Nigeria [14]. However, more than two-third of them indicated that recurrent infection is not a clinical feature of diabetes mellitus. This observation is worrisome considering the fact that the study was conducted in a tertiary health facility where academic activities are often a recurring decimal. The common diabetic emergency in our environment are hypoglycemia, diabetic keto-acidosis, hyglycaemia, as well as hyperosmolar-non ketotic state. In the present study, more than two-third of the nurses were able to identify hypoglycemia, diabetic keto-acidosis as well as hyperglycemia as diabetic emergencies. However, the understanding of nurses in other areas was poor as only 12.6% and 13.6% were able to identify the other diabetic emergencies. Even though the overall nurses understanding on diabetes emergencies are above average, there is room for improvement. We therefore advocate for regular in-house training for this category of healthcare workers. The complications of diabetes mellitus are numerous, but the organs commonly affected are the kidneys, eyes and the neurons. Early diagnosis and management is known to remarkably reduce these complications. In the current study, more than two-third of the nurses were able to identify the kidneys and the eyes as organs affected by diabetes mellitus. Similarly, close to two-third of them also identified nervous system as one of the organs affected by diabetes. This finding is very encouraging considering the fact that the reported high mortality and morbidity are often associated with these organs

Conclusion

This study has shown that the overall understanding of nurses on diabetes mellitus is above average and therefore adequate. Nurses in our environment can be assigned specific role in diabetic education. In areas where gap in knowledge was observed, regular training is advocated.

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