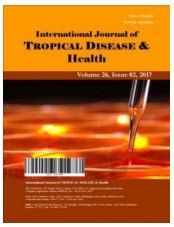

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Attitudinal Disposition and Management Perception among Diabetes Mellitus Patients in Selected Hospitals in Ibadan, Oyo State, Nigeria

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Authors' contributions

This work was carried out in collaboration among all authors. Author FO designed the study and wrote the protocol. Authors AA and OO supervised the data collection. Authors AA and CEU performed the statistical analysis and authors AA and FO wrote the first draft of the manuscript together with author CEU. All authors read and approved the final manuscript.

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ABSTRACT

Background: Diabetes mellitus is an emerging metabolic disorder of the 21st century and has continued to attract the attention of health practitioners, as it continues to decrease the efficiency of its victims without any promise of change in the near or far future if more is not done to avert the progressing chronic condition.
Aim: To determine the attitudinal disposition and management perception among diabetics Mellitus patients in selected hospitals in Ibadan, Nigeria.
Study Design: The study was a cross sectional survey design guided by a behavioral theory.
Place and Duration of Study: using purposive sampling, the study was carried out among diabetic patient attending University College Hospital, Ring-Road State Hospital and Oluyoro Catholic Hospital, Ibadan, Oyo State.

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Materials and Methodology: A systematic random sampling was used to select 600 out of 2,115 diabetes patients receiving treatment at University College Hospital, Ring-Road State Hospital and Oluyoro Catholic Hospital. A semi-structured questionnaire was used for data collection on respondents' socio-demographic characteristics, attitudinal disposition and management perception. Descriptive statistics was used for data analysis.
Results: Mean age of the respondents was 63.9 ± 8.6 years, 75.3% were married and 62.7% were females. Majority (94.0%) of the respondents had a positive attitude towards compliance with management of DM. Majority (91.5%) were of the attitude that it is not necessary for people living with DM to do regular exercise as exercise will not make them to breakdown and 97.0% were of the attitude that diabetic patients cannot take any amount of alcohol beverages he/she wants. Respondents' mean perception score was 21.8 ± 4.8 and 69.2% had a positive perception to management of DM. most (69.2%) of the respondents were of the perception that DM is a lifelong disease and can only be controlled but cannot be cured.
Conclusion: Many of the respondents had appropriate perceptions needed to cope with the disease. However, the positive attitude sustenance demonstrated by the respondent should be promoted if compliance with the management of DM must be ensured.

Keywords: Diabetes mellitus; attitudinal disposition; perception; management of diabetes mellitus.

1. INTRODUCTION

Diabetes continues to be a serious public health, social and economic concern for individuals and the society. As at the end of 2013, about 282 million people globally were diagnosed to have diabetes, while the number of diabetics is projected to increase to about 582 million by 2035(Chukwunonso, Nnamdi & Stella [1]. According to WHO [2], the number of people with diabetes has risen from 108 million in 1980 to 422 million in 2014 and by 2030, diabetes will be the seventh leading cause of death in the world. Sadly, majority of the people suffering from DM are within the age range of 45–64 years, this group are expected to drive the economic engines of their countries in order to achieve development goals. Diabetes further imposes a high economic burden in terms of healthcare expenditure, lost productivity, and foregone economic growth, even as the country strives toward development.

In 2011, IDF [3] reported that 14 million people in Africa had diabetes and 80% of the diabetics live in low and middle income countries. This shows that the burden of diabetes is high in low and middle income countries of which Nigeria is one. Kolawole, Abodunde, Ikem, Fabiyi [4] have commented that, food exchanges, home blood sugar monitoring and other modern therapies that are routinely employed in the care of diabetics are only for a privileged few in a developing nation like Nigeria. In a situation where diabetic patients visit clinics regularly and their blood glucose levels still remain high despite the treatment they receive is a problem that calls for attention. In Nigeria, adherence to drugs and diets by diabetic patients has remained a major setback in the management of diabetes. There is need for diabetic patients to stay away from some habits that can trigger their blood sugar resulting to complications that may even lead to death. The reasons for poor glycemic control among Nigerian diabetic patients are multi-factorial. Financial constraint is a key factor as most patients have to pay out-of-pocket for their drugs and for blood glucose tests, and at a price which has been found to be much higher than the cost of these drugs in other parts of the world (The diabetes declaration and strategy for Africa 2006). In Nigeria a substantial portion of health care costs (74.5%) is borne by the patient, as the government provided only 25.5% of health care expenditure in 2009 according to a WHO report. The WHO report estimated that 90.2% of Nigerians lives below the poverty level of $2 per day; this among other factors makes accessing health care a challenge for people living with diabetes in Nigeria. This difficulty is evident by reports showing a high prevalence of complications due to diabetes [5]. Patients' adherence to therapy is an important factor. Culturally, Nigerians are averse to accepting that the disease is incurable and requires life-long management. They continue searching for permanent cure, a process that often results in poor control [6].

Coker and Fasanmade [7], documented that poor glycaemic control amongst persons with diabetes in Lagos, Nigeria is attributed to poor health seeking behavior, low level of literacy, poverty, poor compliance with follow up visits

and medications amongst others. Many people in Nigeria also make use of alternative medicines like roots and herbs in treating their ailments. A noncompliant diabetic patient may not check his/her blood glucose levels regularly and may take medication incorrectly or not at all. He/she may fail to lose weight, stop smoking or exercise. His/her diet may contain too much fat and too many carbohydrates to control blood glucose levels, and visits to the doctor for check-ups amy be irregular. Diabetics who are noncompliant do not realize or accept that proper self-care will have a positive effect in the long-term. As a result, they are in danger of developing complications that affect the eyes, kidneys, heart, nerves, feet and more [8]. Over time, uncontrolled diabetes will lead to permanent damage of these areas as well as stroke, heart disease and blindness. This study therefore designed to document attitudinal disposition and perception towards compliance with Diabetes Mellitus management.

2. METHODOLOGY

2.1 Study Design and Scope

This study is a descriptive cross-sectional survey among the diabetes patients who are attending the diabetic clinic at University College Hospital, Ring Road State Hospital and Oluyoro Oke Offa Catholic Hospital for treatment. The study is limited in scope to the determination of attitude, perception and illness experiences related to diabetes mellitus among patients receiving care at the aforementioned hospitals.

2.2 Description of the Study Settings

The study settings consist of the following major health care facilities in Ibadan: University College Hospital, Ring-road State Hospital and OluyoroOke Offa Catholic Hospital. The University College Hospital (UCH), which was founded in November 1952, is located at Oritamefa in Ibadan North Local Government Area (LGA). It is the first teaching hospital in Nigeria and provides both in-patients and out-patients health care services. The Diabetic clinic runs mainly every Monday and the number of patients that visit the clinic ranges from 65 to 70 patients.Ring-Road State Hospital founded in 1971 is located in Challenge Area along Ibadan South West LGA. The diabetic clinic runs once a week every Wednesday andrecords 30-50 diabetic patients daily. Oluyoro Catholic Hospitalis the biggest private hospital in Ibadan founded in May12, 1959. The hospital is located between Agodi Gate and Agugu area in Ibadan North East LGA. The diabetic clinic in the hospital runs five days in a week (Monday-Friday) attending to 10-20 patients daily, approximately 50 patients per week and having approximately 155 patients.

2.3 Study Population

The study populations were diabetic patients that attended the out-patient diabetic clinic of UCH, Ring-Road State Hospital and Oluyoro Oke – Offa Catholic Hospital within the study period. The target population comprises of the registered patients of diverse social-demographic characteristics that were already on diabetes management and were willing to participate in the research.

2.4 Sample Size Determination

The sample size was determined using the following Lwanga and Lemeshow (1991) sample size formula.

$$\frac{Z^2\, p\, q}{d^2}$$

Where,

Z is standard normal deviation at 5% (Standard value of 1.96).

p is the assumed number of compliance to treatment among the diabetic patients.

p is 41%

q = 1-p

d is the level of precision at 5%

Z = 1.96
p = 41%
q = 1-p
d = 5% which is the level of precision

$n = (1.96^2 \times 0.41 \times (100-41) / 5^2)$

$= (1.96^2 \times 0.41 \times 59 / 25) = 378$

n = 378

Allowing for 20% non- response rate

n = 478

The calculated sample size of 478 was taken as minimum. However in the view of the poor compliance behavior of diabetic patients with the specific reference to appointment keeping. (Shobhana, Begum, Snehalatha and Vijay, 1999) and in order to enhance the precision and generalizability of the results, the sample size was increased to 600.

2.5 The Inclusion Criteria

The inclusion criteria which must be met before a respondent was eligible for study were as follows;

1. History of diagnosis of being diabetic at the hospital where enlisted in the study.
2. Aged 18 years and above.
3. Attendance of the diabetic clinic during the period of the study.
4. Being coherent, healthy enough and willing to participate in the study after giving informed consent.

2.6 The Exclusion Criteria

The exclusion criteria included patients who were confused or too ill to communicate, those below 18 years of age, newly diagnosed patients (less than one month) and patients who were unwilling to give informed consent to participate in the study.

2.7 Sampling Process

Multi-stage sampling method was used in selecting respondents for the study.

Records were reviewed to document the population of diabetic patients registered at the Outpatient departments in UCH, Ring road and Oluyoro hospitals.

The results of the diagnosis showed that there were about 1825, 135, 155 diabetic patients receiving care at the UCH, Ring road and Oluyoro hospitals respectively.

2.7.1 Stage 1

Proportionate sampling technique was used to select the number of respondents from UCH, Ring-Road State Hospital and Oluyoro Catholic Hospital.The formula that was adopted was as follows;

(Number of diabetes patients / Total number of diabetes patients in the three institutions) X Calculated sample size

Sample sizes after calculation were 518, 38, and 44 respectively.

2.7.2 Stage 2

Selection of respondents was gender sensitive in each of the three (3) institutions.

The records revealed that ratios of males to females at UCH, Ring road and Oluyoro were 4:6 3:7 and 2:8 respectively. So the proportion of males and females selected in each of the institutions based on the aforementioned ratios were 207:311, 11:27 and 9:35 respectively.

2.7.3 Stage 3

Systematic random sampling was used in selecting respondents who chose to participate in the study using the list of males and females in the hospital register who were at the clinic on the day of interview as sampling frames.

2.8 Instruments for Data Collection

The questionnaire developed for the study was divided into sections labeled A, B, C. Section A contained questions on the socio-demographic characteristics of respondents, Section B focused on questions on attitude towards compliance with management of Diabetes Mellitus, and the final section, Section C included questions on perceptions relating to management of Diabetes Mellitus.

2.9 Validity and Reliability of the Instruments

The instrument went through a three level validation stage; Face validation was carried out by the senior supervisor and experts in the department of Health Promotion and Education. Content, construct and item validation was also carried out to ensure that the instrument measures accurately what it was intend to from the study. The instrument was pretested among 60 diabetes mellitus patients attending St Mary's Catholic Hospital Eleta, Ibadan. The pretesting was done to ensure the reliability of the questionnaire and to ensure that all the questions were relevant to the study and solicited the desired responses from the respondents. A Cronbach Alpha Model

technique was used to determine the reliability of the instrument and a value greater than 0.7 was reported.

2.10 Data Collection Process

The study was carried out with the assistance of four trained research assistants. Health facilities were identified and visits were made across the health facilities by the researchers in company of the research assistants, to intimate them of the study objectives and to obtain permission prior to the interview. Eligible participants were subsequently identified and self-administered questionnaire was administered to the respondents. The questionnaires were administered on diabetic clinic days of Mondays and Fridays in the morning till the close of work for each of the clinic days. Respondents consented to be interviewed after being duly informed about the study.

2.11 Data Management and Analysis

The quality of the information collected was checked by the researcher in the field. These entailed reviewing the pattern of responses of each respondent as recorded in the questionnaire. Problem discovered during data collection was resolved immediately in the field. A serial number was assigned to each of the questionnaires for easy identification and recall of any instrument with problems. Administered questionnaire was edited and coded by the investigator with the use of a coding guide. The data in each questionnaire was entered into a computer for analysis using the Statistical Package for Social Sciences (SPSS). A total of 10-point attitudinal scale was used to measure respondents' attitudinal disposition. A positive attitude attracted a scale of 1 point while negative attitude was zero. A score of 0 – 4 points and 6 points and above were considered negative and positive attitude respectively. Perceptions of respondents were determined using a 32-point perception scale. A positive perception attracted a score of 2 points while the score for a negative perception was zero. Scores of < 16 and ≥17 points were considered negative and positive perceptions respectively. The data was analyzed using descriptive statistics.

2.12 Limitation of Study

Since some of the questions relating to diabetes management are personal and sensitive, some of the respondents were not willing to give all the information required for the study, because of the fear of being penalized or rebuked. Efforts were however made to reduce this problem by assuring them of the confidentiality of all information provided. It is assumed therefore, that all responses were made in honesty. A number of variables used to measure compliance were inadvertently omitted. This limits the amount of data set that could be used to measure respondents' illnesses relating experiences to diabetes compliance. However some of the issues explored add some values to this understanding.

3. RESULTS

3.1 Socio-demographic Characteristics of the Respondents

The mean age of the respondents was 63.9 ± 8.6 years and majority (76.5%) were between the ages of 60 to 74 years. Many (62.7%) of the respondents were females, 75.3% were married and more than half (56.7%) of the respondents were Muslims. Most of the respondents were Yoruba (88.7%), 36.2% had primary education and 13.2% were retirees. More than half (54.0%) of the respondents relied on their children for supplementary source of income (Fig.1) (Table 1).

3.2 Respondents' Attitude towards Compliance with Management of Diabetes Mellitus

Majority (94.0%) of the respondent's attitude towards compliance with management of DM was positive (Fig. 2). Few (6.2%) of the respondents agreed with the notion that it was not necessary for people living with DM to do regular physical exercise as exercise will make them breakdown. Many (56.0%) of the respondents were of the belief that only special foods should be taken by people with diabetes. Majority (93.7%) disagreed that it is good to use traditional/ alternative medicine to treat diabetes, 17.1% agreed that urine test is not necessary if one takes his drugs regularly, 5.3% agreed that it is not compulsory for one to take his/her diabetic drugs every day and 4.2% agreed with view that routine blood sugar test is not necessary if one takes his or her drugs and eat only recommended foods (Table 2).

Table 1. Socio-demographic characteristics of respondents (N= 600)

Characteristics	n	%
Age*(in years)		
35-44	10	1.7
45-54	73	12.2
55-64	229	38.2
65-74	230	38.3
75-84	56	9.3
85-94	2	0.3
Sex		
Male	224	37.3
Female	376	62.7
Religion		
Christianity	254	42.3
Islam	340	56.7
Traditional Religion	6	1.0
Marital status		
Single	2	0.3
Married	452	75.3
Widowed	139	23.2
Divorced	7	1.2
Highest level of education		
No formal education	200	33.3
Primary education	217	36.3
Secondary education	124	20.7
OND/NCE	16	2.7
HND/BSC	37	6.2
Postgraduate	6	1.0
Ethnicity		
Hausa	9	1.5
Igbo	58	9.7
Yoruba	528	88.7
Niger Delta	5	0.8
Occupation		
Civil servant	64	10.7
Trading	415	69.2
Retired	79	13.2
Housewife	26	4.3
Driving	4	0.7
Farming	3	0.5
Clergy	7	1.2
Carpentering	1	0 .2
lawyer	1	0 .2

** Mean age = 63.93 ± 8.62 years; Age range =35-92 years*

3.3 Respondents' Perception Related to Management of Diabetes Mellitus

The overall perception score of the respondents was 21.8 ± 4.8. Most (94.0%) of the respondents had a positive perception score. The mean perception score of male and female respondents were 36.6 ± 5.5 and 36.5 ± 5.9 respectively ($p > 0.05$). Few (26.8%) of respondents did not perceive that diabetes is a lifelong disease which can be controlled but cannot be cured and 11.8% perceived that strict compliance with recommended drugs alone is necessary to prevent complications of diabetes

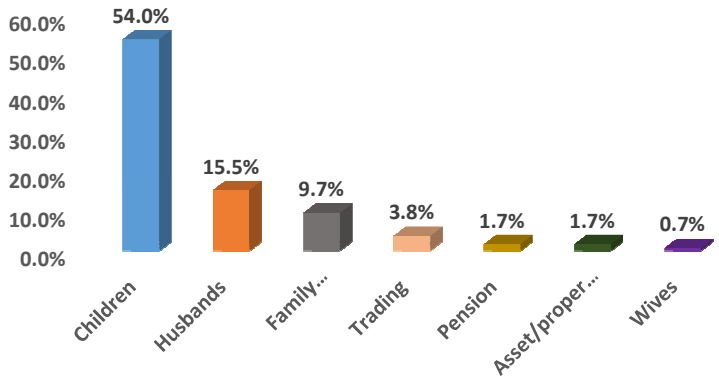

Fig. 1. Supplementary sources of income

Table 2. Respondents' attitude towards compliance with management of diabetes mellitus (N= 600)

Attitudinal statement	Agree (%)	Undecided (%)	Disagree (%)
It is not necessary for people living with DM to do regular exercise as exercise will make them breakdown	37(6.2)*	14(2.3)	549(91.5)**
Only special foods should be taken by people with diabetes.	336(56.0)*	11(1.8)	253(42.2)**
People living with diabetes should not eat all kinds of foods to get well.	20(3.3)	16(2.7)	564(94.0)**
Apart from the drugs prescribed at the hospital, it is good to use traditional alternative medicine to treat diabetes.	23(3.8)*	15(2.5)	562(93.7)**
Urine test is not necessary if one takes his drugs regularly	103(17.1)*	29(5.0)	468(78.0)**
Routine blood sugar test is not necessary if one takes his or her drugs and eat only recommended foods.	25(4.2)	25(4.2)	550(91.6)**
A diabetic patient can take any amount of alcohol beverages he/she wants	0(0.0)	18(3.0)	582(97.0)**
It is not compulsory for one to take his/her diabetic drugs every day.	32(5.3)*	10(1.7)	558(93.0)**
Going to the hospital regularly for follow up care is not necessary because one can always buy his /her drugs from pharmacy or chemist shop when they get finished.	15(2.5)*	10(1.7)	575(95.8)**
Regular blood sugar test is not necessary if one takes the recommended foods and drugs.	6(1.0)*	18(3.0)	576(96.0)**

The responses are in terms of positive or negative responses
*** Positive response *Negative response*

mellitus.The perception of 68.7% of the respondents was that it is usually the best type of food that health care providers said people with diabetes should not eat and the perception of 22.0% is that diabetes makes one a big burden in the family. The perception of 75.8% was that too much time is wasted in the clinic/hospital for check-up every now and then and 50.0% perceived that the recommended drugs are too expensive to purchase in the hospital (Table 3).

4. DISCUSSION

Most of the respondents were in their late adulthood (between the ages of 60 to 74); this affirms the work of Nguma [9] that diabetes is more common among people in the late

adulthood. Majority of respondents were married, and few of them were widowed. This situation could affect diabetes management and trigger of a number of psychological complications. Losing one's spouse has been implicated in health changes, such as depression, dismay and loss of the will to live. Most of the DM patients were adults of predominantly Yoruba origin. This was so because the study was conducted in Ibadan metropolitan city which consist mainly of Yoruba speaking residents.

Majority of the respondents' irrespective of the demographic characteristics demonstrated positive attitude towards diabetic management/control. Likewise, a large proportion had positive attitude to the use of physical exercise for instance. This study employed the constructs in the precede framework to measure the attitudinal disposition of the respondents which provided a strong platform to measurement. More so, lack of exercise has been reported to contribute to poor glycaemic control [10]. Although the research was not grounded on a behavioral theory, the result is still consistent with the findings of this research.

Positive attitude to prompt blood glucose monitoring was also noted. Only few of the respondents were interested in seeking for the alternative medicine for the management of diabetes. Some of them thought it was a waste of time going through routine investigations and health talks per clinic visit. While promoting sustenance of the positive attitude, effort should

Table 3. Respondents perception relating to management of diabetes mellitus (N = 600)

Perceptions	Agree (%)*	Not sure (%)	Disagree (%)**
Regular exercise cannot help to control diabetes mellitus	25 (4.2)	35 (5.7)	540 (90.0)
Recommended food/diet for people with diabetes is too expensive to prepare everyday	96 (16.0)	11 (1.8)	493 (82.2)
People with diabetes should eat all kinds of food to get well	24 (4.0)	17 (2.8)	559 (93.2)
Using only medicine prescribed at the hospital without sticking to recommended food is enough to control diabetes	22 (3.7)	28 (4.7)	550 (91.7)
Diabetes can be cured completely with western medicine.	41 (6.8)	24 (4.0)	535 (99.2)
Diabetes can be cured completely with traditional medicine	22 (3.7)	32 (5.3)	546 (91.0)
Checking ones urine every time is not feasible	261 (43.5)	39 (6.5)	300 (50.0)
Diabetes can be cured completely through spiritual deliverance	109 (18.2)	200 (33.3)	291 (48.5)
Diabetes is a lifelong disease and can only be controlled but cannot be cured	415 (69.2)	24 (4.0)	161 (26.8)
Strict compliance with recommended drugs alone is necessary to prevent complications of diabetes mellitus	71 (11.8)	36 (6.0)	493 (82.2)
The drugs usually prescribed in the hospital are too expensive to purchase	300 (50.0)	14 (2.3)	286 (47.7)
It is usually the best type of food that health care providers say people with diabetes should not eat	412 (68.7)	21 (3.5)	167 (27.8)
Too much time is wasted in the clinic/hospital for check up every now and then	455 (75.8)	17 (2.8)	128 (21.3)
It is expensive to prepare my food separately from that of my family members	174 (29.0)	30 (5.0)	396 (66.0)
Diabetic drugs cannot be readily available for purchase	64 (10.7)	42 (7.0)	494 (82.3)
Diabetes makes one a big burden or problem in the family	132 (22.0)	24 (4.0)	444 (74.0)

*Positive Perception** Negative Perception **

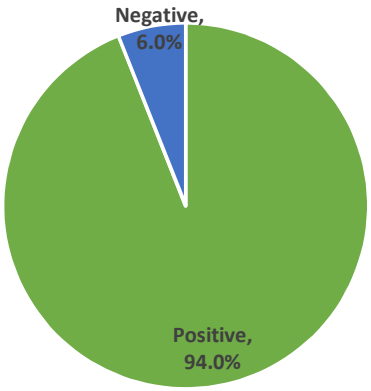

Fig. 2. Respondents level of attitude

be made to tackle the negative ones. It has been observed that patients who are satisfied with their relationship with their health care providers have better attitude to compliance to diabetes regimens [11]. A majority of respondents in this study were satisfied with the kind of support and services they receive from health personnel in their clinics. This might have also contributed to the positive attitude to medication and dietary treatment exhibited by many of the respondents.

Positive perception relating to management of diabetes mellitus was noted among majority of the respondents. People's perceptions of illness are complex and are influenced by traditional and cultural beliefs and attitudes. Muela et al. [12] have shown that in African societies, disease aetiology is the main element according to which illness are broadly classified. People distinguish between 'normal illness or 'illness of God' as opposed to illness caused by witchcraft and spirits, which is referred to as 'out of order illness' or 'abnormal illness'. 'Normal illnesses or 'illnesses of God' are a natural creation by God and are part of normal human life and suffering. Patient's understanding and perception of their illnesses is an important factor in ascertaining the level of self-care practiced and compliance to treatment. Educational background and previous knowledge also bridge the gaps of communication between the patient and the clinician. Despite the tremendous success at improving the lives of those living with diabetes with technological breakthrough in biomedical sciences, the management of diabetes lies largely with those with diabetes. It includes practices that must be carried out by the patients themselves. Such practices that are influenced by the patient's perception include eating a healthy diet, performing physical exercise, taking medication as prescribed, monitoring of blood glucose level, regular clinic visits, and managing stress, among other practices [13].

5. CONCLUSION

Most respondents had positive attitude to practices and lifestyles needed to ensure compliance with the management of DM. This is a predisposition that needs to be promoted, if compliance is to be sustained among the respondents. The overall perception of the respondents relating to DM is appropriate, which infers a potential for facilitating compliance with management of the disease as adoption of effective coping mechanism. However, this cognitive factors still needs to be explored using other relevant behavioral theories and in different geographical location. Likewise, factors that influence medication adherence among this group should also be considered so ad to design an appropriate intervention to improve the quality of life of people diagnosed with DM.

CONSENT AND ETHICAL APPROVAL

Ethical approval was sought from University college hospital Ethical Review Committee. The purpose for this was to ensure that the research conformed to accept scientific principles and international ethical guidelines needed for conducting human subjects. Informed written consent was sought before the administration of questionnaire on any respondent. The respondents were assured of the confidentiality of their responses and that participation in the study was voluntary. No names of respondents or any identifiers whosoever was written on questionnaires in order to ensure that it would

not be possible to link responses to any of the respondents.

COMPETING INTERESTS

Authors have declared that no competing interests exist.

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