Psychosocial barriers to well-being and quality of life among type 2 diabetes patients in Ghana

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Abstract
Introduction: Managing type 2 diabetes can cause psychosocial distress, which can negatively impact patients’ well-being and quality of life. This study investigated how psychosocial barriers and clinical variables may be associated with general well-being and quality of life of people with type 2 diabetes.

Method: One hundred sixty-two patients from four interdisciplinary hospital-based diabetes clinics in Accra, the capital of Ghana, were studied by assessing psychosocial barriers (e.g. diabetes-related distress, family support), clinical variables (e.g. duration of diabetes, diabetes control), general well-being and quality of life using standardised measures.

Result: Results showed that increased levels of psychological distress (diabetes distress, depressive symptoms) were associated with poorer general well-being and reduced quality of life in the different domains (physical health, psychological health, social relationships, environment), whereas social distress (as measured by non-supportive family behaviours) was positively correlated with only general well-being and physical health but not the other dimensions of quality of life. Analysis of clinical variables showed that higher glycaemic levels were associated with poorer physical, psychological and environmental quality of life, but longer duration of diabetes diagnosis was associated with better psychological quality of life. In addition, increased adherence to dietary regimen was associated with better general well-being and environmental quality of life, whereas increased adherence to exercise regimen was associated with better physical, psychological and environmental quality of life.

Conclusion: Psychosocial support and education/adherence counselling are needed in the treatment of type 2 diabetes to reduce or eliminate psychosocial distress and to improve self-care management, thereby improving diabetes control and ultimately, quality of life of patients.

KEYWORDS
behaviour change, diabetes, metabolic disease

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1 | INTRODUCTION

Living with type 2 diabetes can be stressful as a result of the frustration, anger and discouragement that come with the demanding and complex self-management directives patients have to adhere to, in optimizing glycaemic control and preventing long-term complications. An important aspect of diabetes treatment is lifestyle medicine which requires patients and care providers to focus on optimising lifestyle. Lifestyle management for type 2 diabetes includes nutritional therapy, physical activity, sleep, smoke cessation counselling, diabetes self-management education, diabetes self-management support and psychosocial care. Studies have shown that these lifestyle modifications have a positive impact on the management of type 2 diabetes. For instance, a randomised 6 months exercise intervention study found both structured and unstructured exercises were beneficial to reduce glycaemic levels in people with type 2 diabetes. However, supervised structured exercise training (combination of aerobics and resistance exercise) was more effective in achieving decreased glycaemic levels than unstructured activities (increased physical activities). In addition, Gracia Molina et al. in a systematic review to analyse the role of nutritional intervention in glycaemic control of type 2 diabetes concluded that lifestyle intervention (particularly when there was weight loss) was more effective than standard care regarding glycaemic control.

The need for psychosocial care for people with type 2 diabetes has also been recognised. Young-Hymen et al. have recommended the need for psychosocial care with collaborative, patient-centred medical care, monitoring psychosocial factors that may be affecting a person’s self-management and performance of self-management behaviours, as well as assessing symptoms of diabetes distress, depression, anxiety and disordered eating, for optimal health outcomes and health-related quality of life. Lifestyle modification, though beneficial to the treatment of type 2 diabetes, may be difficult to achieve. Even when knowledge and attitude toward lifestyle modification have been found to be good, practicing these lifestyle modifications has been poor. Diabetes self-management can therefore prove challenging and frustrating for both patients and practitioners. People with diabetes are therefore at increased risk of low level of adherence to self-care plans, decreased psychological well-being and poorer quality of life.

Quality of life is a major health outcome and a key goal of all health interventions. Thus, it is important that treatment for diabetes is optimised to achieve control of glycaemic levels and other cardiovascular risk factors to prevent or delay long-term complications and ultimately attain and maintain optimal quality of life. Diabetes-related clinical variables such as duration of diabetes diagnosis, diabetes complications and self-care management have been reported to impact quality of life. For example better medication adherence has been shown to positively affect diabetes-specific quality of life and to predict better quality of life. Increase in physical exercise and frequent glucose monitoring are also associated with better quality of life, whereas hypertension, duration of diabetes and diabetes complications have been associated with worse quality of life. Indeed, having fewer or less severe diabetes complications predicts a better quality of life.

Psychosocial factors also have an association with the quality of life of people with type 2 diabetes. Diabetes distress and depression constitute psychological problems that affect patients. Emotion-related diabetes distress is also common in patients with diabetes and has been linked to depressive symptoms which, in turn, can contribute to decreased physical and mental quality of life. High diabetes emotional distress is associated with decreased quality of life, whereas good psychosocial well-being is a predictor of better quality of life. Depression in patients with diabetes has also been found to negatively impact the various domains of quality of life. Social and emotional support from spouse and family members can further influence diabetes care. For instance, being married has been related to higher levels of diabetes-related satisfaction and less diabetes-related distress, whereas increased satisfaction with social support has been related to improved diabetes quality of life. In spite of these, diabetes care in Ghana does not commonly take into account the psychosocial barriers that may hinder good glycaemic control and hence, improved quality of life.

This study therefore determined how psychosocial barriers (diabetes distress, depressive symptoms and family support) and clinical variables (duration of diabetes, glycaemic control, self-management activities and complications) may be associated with general well-being and quality of life. This study is part of a bigger study that investigated psychosocial barriers to diabetes self-management and care pathways for type 2 diabetes in Ghana. The bigger study, in addition to the present study, focused on psychosocial barriers and diabetes self-management activities, clinical observations of diabetes education and patient–physician consultations, as well as interviews to explore living with diabetes.

2 | MATERIALS AND METHODS

2.1 | Participants

Participants were individuals who had been diagnosed with type 2 diabetes for at least 1 year and who were receiving care at multidisciplinary diabetes clinics at four hospitals in Accra, the capital of Ghana. Exclusion criteria included the following: (a) none (≤6 months) change in diabetes treatment such as transfer from tablet to insulin or additional injection of insulin, (b) having co-existing major co-morbidities (e.g. cancer, chronic pain, end-stage renal disease) other than diabetes and (c) having emotional problems or having had a traumatic experience in the past 6 months, such as loss of a loved one, tragic accidents, diagnosis with terminal illness and so forth. One hundred eighty participants were conveniently sampled and recruited. Of these, 162 patients were included in the study, whereas 18 participants were excluded for not meeting recruitment criteria (provided false information) or on account of incomplete data. The use of convenient sampling therefore
2.2 Measures

In addition to demographic and clinical assessments (age, sex, occupation, marital status, age of diabetes onset, diabetes treatment and diabetes complications and HbA1c level), the following measures were administered to participants.

The World Health Organization Quality of Life scale (WHOQOL-BREF\(^{26}\)) was used to assess quality of life. It comprises 26 items measuring four domains: physical health, psychological health, social relationships and environment, on a 5-point Likert scale ranging from 1 (very dissatisfied) to 5 (very satisfied). It yields total scores for each domain and an overall quality of life score. The social relationships subscale was omitted from further analysis due to its low internal consistency.

The WHO-5 Well-Being Index (WHO-5\(^{27}\)) was used to assess psychological well-being. This five-item questionnaire relates to positive mood, vitality and general interest, rated on a 6-point Likert scale from 0 (at no time) to 5 (all of the time). A total score of 0 indicates the ‘worst possible quality of life’, whereas 25 indicates the ‘best possible quality of life’.

The Diabetes Self-Care Activity Scale (DSCA\(^{28}\)) assesses four areas of diabetes self-care (diet, exercise, blood glucose monitoring and medication intake) over a retrospective 7-day period, using a 7-point rating scale for exercise and a 4-point and 5-point scale for the other subscales. The blood glucose monitoring subscale was excluded because participants did not self-test at home due to the high cost of testing strips.

The Diabetes Distress Scale (DDS \(^{17,29}\)) assesses diabetes distress using 17-items which individuals rate on a 6-point scale ranging from 1 (not a problem) to 6 (a very serious problem), indicating their degree of distress during the past month. The DDS yields a total score and four sub-scale scores: Interpersonal Distress, Regimen-related Distress, Physician-related Distress and Emotional Burden. High scores indicate greater levels of distress. In this study, the total score was used.

The Beck Depression Inventory (BDI-II\(^{30}\)) is a 21-item questionnaire assessing depression, with each item consisting of four statements, indicating different levels of severity of a particular symptom. Respondents choose one statement from each item that best describes the way they have been feeling during the past 2 weeks ‘including today’. Items score from 0 to 3 and are summed to yield a single depression score.

The non-supportive family behaviour subscale of the Diabetes Family Behaviour Checklist (DFBC\(^{31}\)) was used to assess family support, after pilot testing recorded a low Cronbach alpha for the supportive family behaviour subscale. This subscale measures the frequency of non-supportive family behaviours that may influence adherence to treatment regimen on a 4-point scale, ranging from 1 (never) to 4 (several times a week). Higher scores indicated more non-supportive family behaviours.

2.3 Procedure

Ethics approval was obtained from the Ethics Committee of Humanities at the University of Ghana (ECH 064/15-16) and Ghana Health Services Research and Development (GHS-REC 01/07/16); permission was also obtained to conduct the study at each study site. Data collection took place at diabetes clinic sessions at the outpatient departments of the health facilities. Research assistants administered the questionnaires to selected participants electronically using Samsung Galaxy A6 Tablets. Participants’ blood samples were then taken by finger prick, to test their HbA1c using the PTS A1c+ kits (PTS Diagnostics, Whitestown, USA) which yield results in 5 min.

2.4 Data analysis

The Statistical Package for Social Sciences (SPSS) version 21 was used to analyse the data obtained. The Spearman Rank Coefficient was used for analysis with confidence levels of 0.05 and 0.01.

3 RESULTS

3.1 Demographic and clinical characteristics of participants

Demographic and clinical characteristics of participants are presented in Table 1. These include the mean (SD) age of participants, their level of education, employment and marital status, duration of diabetes diagnosis, type of medication, diabetes complications and glycated haemoglobin.

3.2 Scores for measure obtained

One hundred sixty-two people with type 2 diabetes completed questionnaires to assess how psychosocial barriers and diabetes-related clinical variables correlate with psychological well-being and quality of life. Mean (SD) value of variables assessed are presented in Table 2. Median and interquartile range are also presented, as data for these variables were not normally distributed.

3.3 Psychosocial barriers, general well-being and quality of life

Correlations of psychosocial variables, general well-being and quality of life are presented in Table 3. Diabetes distress and depressive symptoms correlated with general well-being and the different...
Correlations of clinical variables, well-being and quality of life are presented in Table 4. Diabetes duration correlated positively only with psychological quality of life, indicating longer duration of diabetes diagnosis was associated with better psychological quality of life ($r_{(162)} = .16, \ p < .01$). Higher glycaemic level (HbA1c) was also associated with poorer physical ($r_{(162)} = -.32, \ p < .01$), psychological ($r_{(162)} = -.18, \ p < .01$), environmental ($r_{(162)} = -.22, \ p < .01$) and overall ($r_{(162)} = -.30, \ p < .01$) quality of life but glycaemic level had no association with general well-being. Having more diabetes complications (more than one) was associated with poorer general well-being ($r_{(162)} = -.18, \ p < .01$), poorer physical ($r_{(162)} = -.33, \ p < .01$), psychological ($r_{(162)} = -.17, \ p < .01$) and overall ($r_{(162)} = -.25, \ p < .01$) quality of life of participants. With respect to diabetes self-management activities, maintaining dietary regimen (as recommended by their healthcare provider) was associated with better general well-being ($r_{(162)} = .18, \ p < .01$) and better environmental quality of life ($r_{(162)} = -.16, \ p < .01$) but not the other dimensions of quality of life. Maintaining exercise regimen was associated with better physical ($r_{(162)} = .25, \ p < .01$), psychological ($r_{(162)} = .23, \ p < .01$), environmental ($r_{(162)} = .24, \ p < .01$) and overall ($r_{(162)} = .31, \ p < .01$) quality of life but not with general well-being. However, medication regimen had no significant association with general well-being and quality of life.

4 | DISCUSSION

In this study, we provide a comprehensive assessment of the association of psychosocial barriers and clinical variables with general well-being and quality of life in a sample of type 2 diabetes patients. Most of the psychosocial and clinical variables were associated with well-being and quality of life.

4.1 | Psychosocial barriers, well-being and quality of life

Psychological variables (diabetes distress and depression) correlated negatively with general well-being and the three domains of quality of life, that is physical health, psychological health and environment quality of life. Increased diabetes distress and depressive symptoms were associated with poorer general well-being and poorer physical health, poorer psychological health and poorer environmental quality of life. Therefore, diabetes and its management impaired well-being and different domains of quality of life, highlighting a negative impact of diabetes on
TABLE 2  Median and interquartile range value of psychosocial variables, clinical variables, well-being and quality of life measures

| Variable       | Median | Interquartile range 25th percentiles | Interquartile range 75th percentiles |
|----------------|--------|--------------------------------------|--------------------------------------|
| DDS (overall)  | 22.0   | 19.0                                 | 30.3                                 |
| BDI            | 7.0    | 3.0                                  | 13.0                                 |
| DFBC           | 23.0   | 20.0                                 | 24.0                                 |
| HbA1c          | 7.2    | 6.5                                  | 9.1                                  |
| DSCA diet      | 51.1   | 46.0                                 | 54.8                                 |
| DSCA exercise  | 49.2   | 43.0                                 | 56.3                                 |
| DSCA medication| 53.8   | 53.8                                 | 53.8                                 |
| Well-being     | 20.0   | 17.0                                 | 24.0                                 |
| WHOQOL physical| 14.9   | 13.1                                 | 16.1                                 |
| WHOQOL psychological| .24** | .20**                               | .13                                 |
| WHOQOL environment| .24** | .20**                               | .13                                 |
| WHOQOL (overall)| 15.4  | 14.3                                 | 16.7                                 |

Abbreviations: BDI, Beck Depression Inventory; DDS, Diabetes Distress Scale; DFBC, Diabetes Family Behaviour Scale; DSCA, Diabetes Self-Care Activities; HbA1c, glycated haemoglobin; WHOQOL, WHO Quality of Life.

TABLE 3  Spearman Rank Coefficient correlations of psychosocial variables, well-being and quality of life (n = 162)

| Variables | Well-being | WHOQOL physical | WHOQOL psychological | WHOQOL environmental | WHOQOL (overall) |
|-----------|------------|-----------------|----------------------|----------------------|------------------|
| 1. DDS    | −.39**     | −.44**          | −.43**               | −.43**               | −.53**           |
| 2. BDI    | −.47**     | −.48**          | −.45**               | −.39**               | −.53**           |
| 4. DFBC   | .24**      | .20**           | .13                  | .07                  | .14              |

Abbreviations: BDI, Beck Depression Inventory; DDS, Diabetes Distress Scale; DFBC, Diabetes Family Behaviour Scale; WHOQOL, WHO Quality of Life. *p < .05; **p < .01.

patients’ lives. Our findings are consistent with previous studies that have reported impaired quality of life among people with type 2 diabetes and the negative effect of psychological distress on quality of life. For example, Tavakkoli and Dehghan found that compared with healthy individuals, type 2 diabetes patients scored lower on the psychological domain of quality of life.

General well-being assesses dimensions of positive general well-being such as being in good spirit, feeling relaxed, feeling active and rested and engaging in things of interest. Our findings therefore suggest that the presence of psychological barriers (diabetes distress and depression) resulted in participants experiencing less of these positive feelings. In addition, a trend in the literature indicates the susceptibility of diabetes patients to developing depression or exhibiting depressive symptoms. Patients who become depressed have the double burden of dealing with that as well as living with a chronic illness. When patients are distressed and/or depressed, they may pay less attention to their illness; hence, self-care management may be compromised, resulting in poor diabetes control and subsequently a decrease

TABLE 4  Spearman Rank Coefficient correlations of clinical variables, well-being and quality of life (n = 162)

| Variables       | Well-being | WHOQOL physical | WHOQOL psychological | WHOQOL environmental | WHOQOL (overall) |
|-----------------|------------|-----------------|----------------------|----------------------|------------------|
| 1. Diabetes duration | −.03      | −.05            | .16*                 | .11                  | .05              |
| 2. HbA1c        | −.09       | −.32**          | −.18*                | −.22**               | −.30**           |
| 3. Complications| −.18*      | −.33**          | −.17*                | −.13                 | −.25**           |
| 4. DSCA diet    | .18*       | .10             | .04                  | .16*                 | .11              |
| 5. DSCA exercise| .12        | .25**           | .23**                | .24**                | .31**            |
| 6. DSCA medication| .09       | .06             | .03                  | .13                  | .06              |

Abbreviations: DSCA, Diabetes Self-Care Activity Scale; HbA1c, glycated haemoglobin; WHOQOL, WHO Quality of Life. *p < .05; **p < .01.
in their quality of life. Studies by Jannoo et al.\textsuperscript{34} and Lim\textsuperscript{35} showed that patients who reported higher levels of diabetes-related distress had poorer general health and diabetes-specific quality of life, whereas Dhillon et al.\textsuperscript{16} reported lower quality of life scores among patients with depression, anxiety and stress. Patients with undiagnosed and untreated depression have also shown decreased quality of life, scoring low in all aspects of quality of life.\textsuperscript{23} Juarez-Rojop\textsuperscript{23} therefore concluded that depression decreases quality of life of people with type 2 diabetes and negatively affects self-management.

Although our results established associations (positive and negative) amongst our variables of study, it is worth noting that these associations do not indicate directionality amongst the variables. Depression, well-being and quality of life are all multifactorial and thus, although there was a negative correlation amongst these variables, correlation does not establish causality. This means that other factors other than well-being and quality of life could be influencing depressive symptoms reported by participants. Alternatively, other factors other than depressive symptoms and diabetes distress may be influencing the well-being and quality of life of participants.

On the contrary, we found that the social variable, non-supportive family behaviour (DFBC), was positively associated with general well-being and the physical health domain of quality of life, suggesting, the more non-supportive family members were, about participants’ adherence to treatment regimen (nagging, arguing and criticizing), the better participants’ well-being and physical health. This is contrary to studies that have associated non-supportive family behaviour with poorer outcomes for people with type 2 diabetes.\textsuperscript{25,36} Thus, although non-supportive family behaviour has been reported to negatively affect diabetes care (such as self-care management and glycaemic levels) in this sample of Ghanaians with type 2 diabetes, family members’ negative behaviours impacted positively on their well-being.

As we have recently reported,\textsuperscript{37} it is probable that what the DFBC labelled as non-supportive (or negative) behaviour was not perceived as such by these participants. They may have perceived these communications of nagging, arguing and criticizing as prompts to pay attention to or stay focused on their self-management activities. This is likely especially if these were the only attention behaviours they got from family members. Thus, what Schafer et al.,\textsuperscript{31} Karlsten and Bru,\textsuperscript{25} and Karlsten et al.\textsuperscript{36} labelled as non-supportive family behaviour may have had a different meaning for our study participants. Another possible explanation is that perhaps the non-supportive behaviours pushed participants to maintain good self-care management, and hence experienced better well-being. Thus, culturally what was labelled as non-supportive behaviours produced positive outcomes for diabetes care rather than the anticipated negative outcome. This may warrant confirmation in a larger multi-site study in Ghana.

4.2 Clinical variables, well-being and quality of life

In our study, longer diabetes duration was only associated with better psychological health. This is contrary to findings by Tavakkoli and Dehghan,\textsuperscript{32} who reported no significant relationship between diabetes duration with all the domains of the WHOQOL. Poor glycaemic control was, however, associated with poorer quality of life for all three domains corroborating finding by Dhillon et al.\textsuperscript{16} that good glycaemic level (≤6.5%) was a strong indicator of good to excellent quality of life among Malaysians with type 2 diabetes. It is possible that our participants with longer duration of diabetes had adjusted to the illness and therefore may not have been distressed with living with the illness, which results in better psychological health. Longer exposure to diabetes education and self-management from nurse educators at participants’ clinics (where care providers have been trained in multi-disciplinary diabetes care) may also be helping improve psychological health. This finding is worth exploring with further studies.

Well-being had no relationship with diabetes duration and glycaemic levels perhaps because well-being assesses general feelings rather than specific domains such as the WHOQOL. For instance, the physical health domain of the WHOQOL assesses pain and discomfort, sleep and rest, energy and fatigue, all of which may directly be affected by diabetes. In like manner, psychological health can relate directly with glycaemic levels because patients may experience positive or negative feelings, depending on how well their diabetes is controlled (glycaemic levels) and their self-esteem can also be impacted depending on their diabetes control. Safavi et al.\textsuperscript{38} have concluded that improving quality of life has positive effect on patients’ self-esteem and may help reduce diabetes complications.

In this study, having more than one diabetes complications was associated with poorer well-being and poorer physical and psychological health, corroborating reports that certain diabetes complications (retinopathy and neuropathy) and increasing severity of complications were associated with low quality of life scores.\textsuperscript{16,39} Presence of complications poses a double burden of dealing with the existing complications and attempts at maintaining good glycaemic levels to prevent further complications. These complications are likely to worsen patients’ physical conditions and in addition cause psychological distress, and this can explain the results we obtained.

Of the self-management activities assessed, medication intake was not associated with general well-being and all the domains of quality of life. This is contrary to findings of severely impaired health-related quality of life among patients and an association of increased health quality of life with medication adherence.\textsuperscript{40} Increased dietary maintenance was, however, associated with better general well-being and better environmental quality of life, whereas increased exercise adherence was associated with better physical, psychological and environmental quality of life. It must be pointed out that dietary adherence here refers to adherence to dietary recommendations made by diabetes care providers. Perhaps participants feel once they adhered to their dietary intake, their glycaemic levels will be controlled and that may have given them the increased positive feelings (well-being). In terms of exercise, it is probable that when participants exercised, they felt fitter and felt positive about themselves because they anticipated exercising was going to positively impact their glycaemic level, resulting in the association with increased physical and psychological health. Again, it must be noted that these associations reported do not
establish directionality between the variables. Well-being and quality of life are multifactorial and thus other factors besides participants’ glycaemic levels, diabetes complications, dietary intake and exercising could influence their well-being and quality of life. Perhaps, medication intake did not influence well-being and quality of life because, among the diabetes regimen, medication maintenance is the easiest to adhere to, whereas diet and exercise are the most challenging with the worse being exercising. Medication intake could thus be automatic and therefore have no appreciable relationship to well-being.

The above findings suggest that in addition to standard interdisciplinary care comprising medical treatment, diabetes and self-management education and nutrition therapy, including psychological care may benefit individuals with type 2 diabetes. Thus, in order to achieve optimal glycaemic control, good biopsychosocial outcomes are required for people living with diabetes. The present findings suggest healthcare providers should incorporate psychological care in their interventions. When patients exhibit signs of distress, they should be referred for psychological support in order to identify and alleviate their distress and prevent depression, thereby improving diabetes control and their well-being and quality of life. In this sample of Ghanaians with type 2 diabetes, glycaemic levels, diabetes complications and self-management activities had relationships with well-being and quality of life. Therefore, intensifying efforts to improve diabetes management to reduce complications have the potential to enhance well-being and the quality of life of patients.

4.3 Limitations

This study has some limitations that need to be acknowledged. First, it must be noted that the glycaemic levels of participants tested were relatively well controlled which is typical of the population tested and not because the researchers specifically recruited such patients. The trained diabetes teams at the study sites may be contributing to the relatively better diabetes control, so assessment of the variables tested in this study may be different at other sites without trained teams. Thus, testing poorly controlled patients may produce different results. Second, this is a correlational study and therefore the researchers cannot establish a cause–effect relationship between the variables tested. Future studies can investigate the cause–effect relationship among the variables tested and perhaps assess any mediating or moderating variables. In spite of the above limitations, the present study provides useful information that can benefit people with type 2 diabetes, their family members and healthcare providers.

5 CONCLUSION

This study provides information in a setting where psychosocial barriers are not commonly the focus of diabetes treatment. We found that experiencing more diabetes distress and depressive symptoms meant experiencing poorer quality of life and well-being. Interestingly, non-supportive family behaviour had a positive association with quality of life and general well-being indicating the negative behaviours of family members towards participants rather related to better quality of life and well-being. Thus, what is labelled as negative family behaviour in the literature seems to have a culturally different meaning for the sample tested. Diabetes clinical variables such as participants’ glycaemic levels, diabetes complications and self-management activities are also related positively or negatively to their well-being and quality of life. Our findings suggest the need to address psychosocial barriers and enhance adherence to self-management activities. Healthcare providers should focus on psychosocial factors in their care delivery to improve the well-being and quality of life of patients.

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AUTHOR CONTRIBUTIONS

MAP conceptualised the research and developed the initial designed. AGBA, JA and AS made input as collaborators to refine the design. MAP collected the data while in consultation with AGBA and JA. MAP analysed the data and wrote the first draft of the manuscript. MAP, AGBA, JA and AS reviewed and edited the manuscript. All authors read and approved the submitted manuscript.

CONFLICT OF INTEREST

The authors declare no conflict of interest.

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DATA AVAILABILITY STATEMENT

The data sets generated during the current study are not publicly available because the data form part of a bigger study from which other manuscripts are being written. Thus, all data and supporting materials will be made available from the corresponding author (on agreement with the co-authors) on reasonable request.

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