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Complementary and Alternative Medicine Use in Diabetes Mellitus

Complémentaires et recours à la médecine alternative dans le diabète sucré

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ABSTRACT

BACKGROUND: **Complementary and alternative medicine (CAM), an emerging aspect of the management of chronic diseases worldwide is not widely studied in Nigerian patients with diabetes mellitus (DM).**

OBJECTIVE: **To assess the frequency and pattern of CAM utilization in people with DM .**

METHODS: **This was a cross-sectional question-naire survey involving 263 patients with DM. Biodata, duration of DM, type and pattern of CAM utilization and adherence to prescribed medications were documented. The prevalence and possible determinants of CAM utilization were evaluated by determining the odds ratio for independent variables.**

RESULTS: **There were 263 respondents with a mean age of 60 (10.7) years and with ages ranging from 28–80 years. The prevalence of CAM usage was 46% and the female: male ratio was 2:1. Generally, CAM users were older than non-CAM users, (p= 0.006). The main forms of CAM used were biological based therapies and these included bitter leaf (Vernonia amygdalina), aloe vera, garlic, ginger, and "local herbs". Adherence to prescribed medications was observed by 94% of respondents.**

CONCLUSION: **We found that CAM usage is an important facet of management of DM among our patients with biological based therapies being the prevalent forms of CAM utilized. Despite CAM usage, adherence to prescribed medications was high. Further evaluation of the impact of CAM on glycaemia is needed. WAJM 2010; 29(3): 158–162.**

Keywords: **Complementary and alternative medicine, diabetes mellitus, adherence, glycaemia**

RÉSUMÉ

CONTEXTE: *complémentaires et parallèles (CAM), un aspect émergent de la gestion des maladies chroniques le monde de maladies ne sont pas largement étudié chez les patients nigérians atteints de diabète sucré (DM).*

OBJECTIF: *Pour évaluer la fréquence et la répartition de la CAM l'utilisation chez les personnes atteintes de DM.*

MÉTHODES: *Il s'agissait d'une enquête par questionnaire transversale impliquant 263 patients avec le SM. Des données biographiques, la durée de DM, type et le schéma d'utilisation des CAM et le respect des médicaments prescrits ont été documentés. La prévalence et déterminants possibles de l'utilisation des CAM ont été évalués par déterminer le rapport de cotes pour les variables indépendantes.*

RÉSULTATS: *il y avait 263 répondants ayant un âge moyen de 60 (10,7) ans et avec des âges variant de 28 à 80 ans. Le la prévalence de l'utilisation des CAM est de 46% et la femelle: mâle ratio était de 2:1. Généralement, les utilisateurs MAC étaient plus âgés que la non-utilisateurs CAM, (p = 0,006). Les principales formes de la CAM ont été utilisés biologiques et de thérapies à base de ces feuilles amères inclus (Amygdalina Vernonia), aloe vera, l'ail, le gingembre et "local herbes ". Respect des médicaments prescrits a été observée par 94% des répondants.*

CONCLUSION: *Nous avons constaté que l'utilisation CAM est un important facette de la gestion des DM chez nos patients par des agents biologiques thérapies à base étant les formes prévalentes de CAM utilisé. Malgré l'utilisation CAM, le respect des médicaments prescrits a été élevé. Une évaluation plus poussée de l'impact de la CAM sur la glycémie est nécessaires.* ***WAJM 2010; 29 (3): 158–162.***

Mots-clés: *médecine complémentaire et alternative, le diabète sucré, le respect, la glycémie*

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Abbreviations: CAM, Complementary and Alternative Medicine; **DM,** Diabetes Mellitus;

INTRODUCTION

Diabetes mellitus (DM) is a chronic metabolic disorder that is assuming epidemic proportions world wide[1]. It is one of the prevalent non-communicable diseases in Nigeria with a reported prevalence rate of 2.2%[2]. It is also one of the commonest reasons for medical admissions and deaths in Nigerian hospitals.[3–4] The disease burden of DM in developing countries is unacceptably high[3] thus necessitating an in-depth look at management techniques and patients' self care habits. Evaluation of the management techniques of DM should be all embracing and include an in-depth assessment of the usage of not only proprietary and non-proprietary drugs but also health care practices that are not usually recommended by medical doctors. These non proprietary drugs and health care practices are often referred to as complementary and alternative medicine (CAM).[5] Complementary and alternative medicine is defined as a group of diverse medical and health care systems, practices, and products that are not generally considered part of conventional medicine.[5] In the context of this study, CAM refers to the use of non proprietary drugs which include herbal products, vitamins and minerals. There are however varying definitions of CAM,[5–7] but consistent features of the various definitions include the non practice of these health care approaches/ treatments by medical doctors. There is an increasing use of CAM in DM and this cuts across the two main types of DM as CAM usage has been reported in types 1 and 2 DM.[8–9]

In the African setting, for most chronic ailments there are often underlying explanations which are founded on cultural and spiritual beliefs thus necessitating the use of traditional medicines which are often of a herbal nature. Traditional medicine is said to provide 80–90% of health care in Africa.[10]

It is not certain if CAM usage affects adherence to prescribed medications. Adherence to medications is defined as the extent to which patients take medications as prescribed by their health-care providers.[11] For effective management of DM, it is imperative that a holistic approach be adopted taking into consideration all CAM usage, and adherence to prescribed medications. The merits and demerits of the utilization of CAM in the management of DM are not known especially with little information available on the scope and pattern of usage of CAM.

The objective of this report was the evaluation of the pattern of usage of CAM in DM subjects and possible deter-minants of its usage. We also set out to determine adherence to prescribed medications.

SUBJECTS, MATERIALS, AND METHODS

This was a cross-sectional study carried out at the Diabetes Clinic of the Lagos State University Teaching Hospital, lkeja and the General Hospital Gbagada in Lagos State of Nigeria. Two hundred and sixty-three consenting outpatients with DM irrespective of DM type were recruited randomly for the study which took place over a period of four months (September 2008–December 2008). Approval was obtained from the Ethics committee of the LASUTH and General hospital Gbagada, Lagos State.

The Study Instrument: This was a questionnaire with structured and open ended questions that was designed by the authors. The questionnaire design was based on previous studies on CAM usage in Nigerians[12–13] and also from informal interviews conducted by the authors for patients attending the DM clinic of the aforestated hospitals. Information sought for in the questionnaire included biodata, anthropometric measurement, duration of DM and type of glucose lowering agents used. Biodata referred to age, sex, educational status, marital status and occupational status. Information on duration of DM and drug type for treating DM was obtained from the participants and also from the Medical records which were made available to the interviewers. Listed as CAM in the administered questionnaires were local herbs, garlic, ginger, aloe vera, vitamins and bitter leaf. (Local herbs are usually prepared by traditional healers and are a mixture of varied herbs usually preserved in alcohol and sold in bottles). Patients who used at least one of the above stated agents more than once for any period of time were said to be CAM users.

Optimal glycaemic control in this context referred to glycosylated haemoglobin values (HbA1c) $\leq$7%.[14] Pattern of usage of glucose lowering medications was documented from Medical records. Medication adherence was however self reported upon questioning. Possible reasons for CAM usage were also sought out for from the respondents.

A total of six medical doctors and a clinical assistants handled the questionnaires which were interviewer-administered. The respondents and when needed, accompanying persons were interviewed. The response rate was 100% as all respondents completed the study.

Anthropometric measurements referred to the body mass index which was derived from the formula weight(kg)/ height(m^2).[15] The body weight was measured to the nearest 0.1kg and the height to the nearest centimeter using a stadiometre made up of a standard weight scale and a standard graduated height scale.

The glycosylated haemoglobin values were determined by using fasted capillary samples tested with Biorad equipment for assessing HbA1c.

Statistical Analysis

The prevalence of CAM users was determined and the clinical characteristics and biodata. The proportions of respondents using various forms of CAM were calculated.

Student's t test was used to compare the mean HbA_{1C}, BMI, duration of DM and age in years between CAM and non CAM users. Chi square test was used to compare the proportion of CAM users who attained optimum blood glucose control with non CAM users. Adherence to medications was also assessed using chi square and making comparisons between CAM and non CAM users in this regard.

The possible determinants of CAM usage were evaluated using a logistic regression model. CAM usage was entered in the model as the dependent variable and the independent variables included age, sex, marital and occupational status, insulin usage and educa-

tional status. This evaluation gave the 95% confidence intervals (CI) and the p values.

RESULTS

Demographic and clinical characteristics of the subjects

The mean (SD) age of the study subjects was 60 (10.7) years with an age range from 28–85 years. Over half [165 (63%)] of the study subjects were females and the majority (90%) of the study subjects were married. The mean weight was 75.5 (16.5) kg and the mean BMI of the respondents was 29.5 (7.2) kg/m^2.

The mean duration of DM was 6.4 (5.6) years with a range of 0.1–34 years. The pattern of educational status showed that 90 (35%) were illiterates, 63 (24%) attained primary school education, 66 (25%) attained secondary school education while 43 (16%) had some form of post secondary school education. Less than half–118 (45%) of the subjects were still working either self employed or otherwise.

Complementary and Alternative Medicine Usage

A total of 122 (46%) of our study subjects used CAM. The female: male ratio of CAM users was 83:38.Vitamin usage was the commonly documented CAM used in the respondents as its usage was noted in 100(38%) of the study subjects. Vitamins were used solely or in combination with other forms of CAM. The second commonly used form of CAM was herbal products (bitter leaf (*Vernonia amygdalina*), aloe vera and a mixture of local herbs) .

All CAM users (apart from the use of vitamins) admitted that they have not disclosed the use of these methods of therapy to their doctors and that their caregivers did not ask about their usage. They also believed that these drugs are meant to help their condition and often their use was suggested by well meaning family members or neighbours, or other people that had DM and used same methods.

The pattern of utilization of CAM for management of DM is shown in Figure 1. It is pertinent to note that CAM usage was not documented in young insulin requiring DM respondents.

Predictors of Complementary and Alternative Medicine usage

Apart from age and literacy status, other clinical parameters shown in Table 1 are comparable between CAM and non CAM users.

Table 1:Comparison of some Clinical Parameters of non-CAM and CAM users

Variable	CAM users	Non-CAM users	p value
Age	61.6 (9)	58.3 (11)	0.006
Sex (F:M)	83:39	82:58	>0.05
DM Duration	6.73 (5.9)	6.2 (5.9)	>0.05
Family HX of DM	45	51>0.05	
Mean FBS	147.4 (64.9)	140.8 (78.9)	>0.05
Insulin Usage	14	11>0.05	
HX of Hypertension	75 (61%)	75 (53%)	>0.05
BMI	29.3 (6.5)	29.7(7.8)	>0.05
Literacy	49(40%)	41(29%)	0.000001

Although logistic regression evaluation for possible determinants for CAM usage showed high odds ratio value for non-literate status, being elderly and insulin usage, statistically significant values were obtained only with age. These results are shown in Table 2.

Table 2: Predictors of Complementary and Alternative Medicine usage

Variable	Odds ratio	95% Confidence interval	p value
Age	0.9	0.94 – 0.99	0.008
Literacy	1.27	0.43 – 1.008	0.16
NWS	0.7	0.45 – 1.29	0.2
Sex	0.3	0.5 – 2.52	0.3
Being married	0.6	0.8 – 6	0.7
Insulin usage	0.9	0.4 – 2.5	0.9

NWS-non working status

Pattern of Proprietary Drug usage (Glucose lowering lowering agents)

There was 243 (92%) of the subjects on oral hypoglycaemic agents, 6(3%) on insulin and 14 (5%) on a combination of insulin and oral hypoglycaemic drugs. The pattern of glucose lowering agents in CAM utilizers was such that insulin, combination of insulin and oral hypogycaemic agents and sole usage of oral hypoglycaemic drugs were used in the following proportions: 1(1%): 7(6%): 114(93%). In non CAM users the proportions were 5(4%), 7(5%), 128(91%). The biguanides were the commonly used OHAs as 231(88%) of the respondents used the biguanides either solely or in combination with insulin or the sulfonly ureas. A total of 172 (65%) respondents used sulfonylureas either solely or in combination with the biguanides. The sulfonylureas used included, gliclazide, glibenclamide and glimeperide. For respondents who used sulfonylureas, Glibenclamide, Gliclazide and Glimeperide were used in the following frequency respectively, 137 (79%), 22 (13%) and 13(8%). The number of people that used fixed combinations of metformin and sulfonylureas was 40 (15%). Of the thiazolidinediones, only pioglitazone was used and its usage was noted in 36 (14%)of the respondents. Insulin usage did not differ between CAM users from non-CAM users (14:11). The proportion of CAM users that reported adherence to medications was higher than non CAM users but this difference was not statistically significant (94% vs 92%, p>0.05). Adherence to prescribed medications was attested to by 244 (94%) of the respondents and the ratio of CAM and non CAM users who adhered to prescribed medications was 115:129.

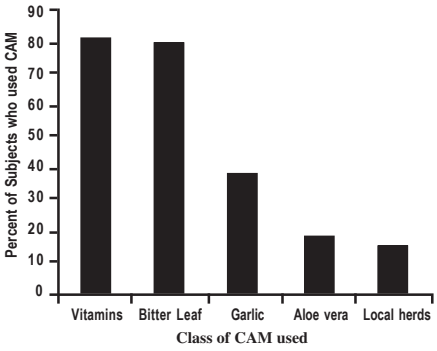

Figure 1: Pattern of Complementary and Alternative Medicine in Diabetes.

CAM usage and Glycaemic Targets.

The mean A1c of the respondents was 5.9±1.6 with a range of 4%-11%. The mean HbA_{1C} of CAM users was comparable to that of non-CAM users (6.14±1.5 vs 5.8 ±1.6, p>0.05). The proportions of CAM and non CAM users respectively that achieved good glycaemic control was comparable (73% vs 77%, p>0.1).

DISCUSSION

Complementary and alternative medicine is increasingly becoming an important aspect of the management of chronic diseases but unfortunately is largely neglected by health care providers. In their report on CAM usage, Saydah *et al* [16] noted that adults suffering from chronic diseases are more likely to use CAM than those without chronic diseases. They documented a prevalence rate of 41.4% for CAM usage in DM and this figure is comparable to the 46% CAM usage rate noted in our report. The reported prevalence rate of CAM usage in DM in the USA range from 8%–52%[8,16–17]. It is pertinent to note that much higher prevalence rates of CAM usage in DM are reported in Asian countries as Mehrotra and Lee *et al*[18–19] reported prevalence rates of 67.8% and 65% respectively.

CAM is usually classified into five categories which include alternative medicine systems, mind-body interventions, biologically based therapies, manipulative and body based therapies and energy therapies. Biologically based therapies which refer to substances found in nature such as herbal products, vitamins and dietary supplements are the forms of CAM commonly used in our setting.[8] Of the biological therapies, used by our study subjects, vitamins and *Vernonia amygdalina* were the prevalent CAM therapies used for the purposes of blood glucose lowering. Of increasing importance in the Nigeria scenario is the use and claims of the glucose lowering effects of bitter leaf also known as *Vernonia amygdalina. Vernonia amygdalina,* a small shrub with a dark green stem that grows widely in tropical and sub-tropical Africa is widely used for its medicinal properties.[20–21] Nigerian studies in alloxan induced diabetic rats have demonstrated the glucose lowering effects of this herb.[22–23] The efficacy of this herb in lowering of glucose in man is yet to be ascertained despite its widespread use by patients with DM. One reason commonly adduced for its usage stems from the fact that it is bitter tasting and thus is able to neutralize the "sweetness present in the blood" ' of people with DM. In this report, we did not find CAM usage to be have beneficial effect of blood glucose lowering since the proportions of CAM users who attained good glycaemic control was comparable to non CAM users.

Local herbs are usually prepared by traditional healers and are a mixture of varied herbs usually preserved in alcohol. The nature of these herbs is shrouded in mystery and the makers of these herbs are often reluctant to disclose the nature of the herbs used as they insist it is a family secret that has been handed over from ages past and also that disclosure would rob them of their business. Adverse effects of these herbs are not known but hence were not even sought for in this report.

The Asian and American reports in comparison used in addition to biological therapies, mind body interventions and body based therapies.[8,17–19]

In a USA study on why CAM usage is adopted by its users, determinants of CAM were found to include more education, poorer health status , a holistic orientation to health, classification in a cultural group identifiable by their commitment to environmentalism, commitment to feminism, and interest in spirituality and personal growth psychology. We found in our study that being elderly was predictive of CAM usage and also that significantly higher proportions of CAM users were literate and tended to use insulin compared to non-CAM users.

CAM usage however did not affect adherence to glucose lowering drugs in our study subjects as the proportion of CAM users who adhered to their medication was comparable to that of non CAM users. Astin *et al*[24] had noted that patients who used CAM also adhered to prescribed medications. Although not assessed in this report, possible factors that have been reported as determinants of non adherence to medication in DM include female, gender not understanding the drug regimen well and affordability.[25] It is pertinent to note that prior to this study, the use of CAM was not disclosed to the health care providers by the users.

From the foregoing, it is evident that CAM is an emerging aspect of the management of chronic disorders like DM and hypertension. However some questions that remain unanswered about CAM usage include issues of proven efficacy, adverse effects and contra-indications. It is thus imperative that further studies and clinical trials be carried out to explore the benefits and risks associated with the usage of CAM so that proven efficacious and safe therapies are legalized for usage. This will be of immense help in curbing harmful health practices especially in developing countries were as a result of ignorance and poverty, people tend to seek non conventional health therapies and practice for management of chronic ailments.

Conclusion

There is widespread use of complementary and alternative medicine in our patients with DM and its usage is largely complementary as adherence to prescribed medication is unaffected. Age, being literate and usage of insulin are possible determinants of CAM usage in DM. There is a need for health care providers to keep lines of communication open for free discussion of this aspect of management with their patients.

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