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Effectiveness of traditional and conventional medicine in the treatment of diabetes: A comparative study of south-east, Nigeria

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Abstract
Background: Nigeria is facing a serious and fast growing challenge of a diabetes epidemic. Objective: This study is to estimate the men and women experience and perception in use on conventional and traditional medicine in the treatment of diabetes. It intends to explore quality and utilization of diabetes care in Imo State. Materials and Methods: A multifaceted approach is adopted in this research. It uses qualitative semi-structured questionnaire and interviews to explore the similarities and differences between traditional medicine and conventional therapy users, beliefs and behaviors in outpatient care. Results: The Diabetes choice of treatment in this study was higher in conventional medicine users with 85% compare to traditional medicine 15%. With regards to the age of respondents, 55-65 years had 35% more than other age range. From the results, 80% found it very effective to use conventional medicine than traditional medicine. Conclusion: In conclusion, diabetes care is far from being satisfactory because the problem is further complicated by the use of traditional medicine. A greater proportion of respondents use conventional medicine for the treatment of diabetes. There should be more emphasis in establishing training programmes and funding for conventional health practitioners for the management of diabetes

1. Introduction

Diabetes mellitus (DM) is a group of metabolic disorders characterized by hyperglycaemia resulting from a variable interaction of hereditary and environmental factors due to defects in insulin secretion, insulin action, or both.

It is a chronic disorder that affects the metabolism of carbohydrates, fats, proteins and electrolytes in the body, leading to severe complications which are classified into acute, sub-acute and chronic (Kumar & Clark, 2002). Diabetes is a costly disease, placing a high financial burden on the patient and the healthcare system. If poorly managed or left untreated, it can cause blindness, loss of kidney function, and conditions that require the amputation of limbs or digits. The United Nations (UN) defines diabetes as a chronic, debilitating, and costly disease associated with severe complications which pose severe risks for families, member states, and the entire world; and serious challenges to the achievement of the internationally agreed developmental goals, including the Millennium Development Goals (MDGs). Centre for Disease Control (CDC,2013), reports this as a major cause of heart disease and stroke and the seventh leading cause of death in the United States, the bottom line is that diabetes can be bad news but the intervention can prevent or delay the disease in people with pre-diabetes. The diabetes prevention program (DPP), is a large study of people at risk of diabetes. It was established for preventive plan that is both feasible and cost effective in management of diabetes. The DPP showed that weight loss and increased physical activity reduced the development of type 2 diabetes by 58% during a three-year period.

Type 2 diabetes mellitus (T2DM) makes up about 90% of the diabetic population in Nigeria. Relevant abnormalities include chronic hyperglycaemia, dyslipidaemia and insulin resistance (Alberti, 1995). Insulin resistance, is an important factor in type 2 diabetes mellitus, leading to excess liberation of free fatty acids from adipose tissue which activates the signaling enzyme protein kinase, which inhibits phosphatidylinositol-3 (PI-3) kinase (an eNOS agonist pathway), and increases the production of reactive oxygen species. This mechanism directly impairs nitric oxide (NO) production or decreases its bioavailability once produced (Libby, 1998).

The incidence and prevalence of diabetes mellitus (DM) has continued to increase in Nigeria, despite a great deal of research and resources (Wild, 2004). With the current trend of transition from communicable to non-communicable diseases, it is projected that the latter will equal or even exceed the former in developing nations, like Nigeria, thus culminating in double burden of disease. In Nigeria today, modern and traditional medicine are practiced though independently, and the government allows that, but not equal weight is given to both (Priya, 2010). People with diabetes have been advised and encouraged by herbalists to collect their urine overnight and drink it to cure diabetes. This practice has not been adopted by many. However, the efficacy of this practice is yet to be investigated.

1.1. Traditional Medicine

Traditional medicine (TM) according to the World Health Organization (WHO) "is the sum total of the knowledge, skills, and practices based on the theories, beliefs, and experiences indigenous to different cultures, whether explicable or not, used in the maintenance of health as well as in the prevention, diagnosis, improvement or treatment of physical and mental illness (WHO, 1985). Traditional Medicine (TM) refers to health practices, approaches, knowledge and beliefs incorporating plant, animal and mineral based medicines, spiritual therapies, manual techniques and exercises, applied singularly, or in combination to treat, diagnose and prevent illnesses or maintain well-being (WHO, 2003). In industrialized countries, adaptations of traditional medicine are termed Complementary and Alternative Medicine (CAM). Traditional medicine in Africa typically views sickness as the failure of complex social and spiritual relationships, and begins diagnosis with an examination of both human and supernatural interactions (Pearce, 2000). Traditional practitioners are also responsible for re-establishing social and emotional equilibrium based on traditional community rules and relationships.TM as practiced in Nigeria and other African countries is involved in the management of diseases such as diabetes, HIV/AIDs, malaria, tuberculosis, Diabetes, hypertension, fungal infections, cancerous growths among others.

Traditional medicine could be Herbal medicines or phytomedicines refer to herbs, herbal materials, herbal preparations, and finished herbal products that contain parts of plants or other plant materials as active ingredients (WHO, 2008). The plant materials include seeds, berries, roots, leaves, bark or flowers. Many drugs used in conventional medicine were originally derived from plants such as Salicylic acid which is a precursor of aspirin that was originally derived from white willow bark and the meadowsweet plant (Filipendulaulmaria Maxim.). Quinine and Artemesinin are antimalarial drugs derived from Cinchona pubescensVahl bark and Artemisia annua L. plant, respectively (Covella, 2008). Traditional medicine has developed in various communities in Nigeria in response to the health needs of the people. The British colonial masters brought in orthodox medicine and today, both systems of healthcare exist in the country; both have the primary objective to cure, manage or prevent diseases and maintain good health (Adesina, 2007). In Africa and Asia, 80% of the population still uses traditional remedies rather than modern medicine for primary healthcare (WHO, 2005).

1.2. Conventional Medicine

Conventional medicine is system in which medical doctors and other healthcare professionals (such as nurses, pharmacists, and therapists) treat symptoms and diseases using drugs, radiation, or surgery. It is also called allopathic medicine, biomedicine, mainstream medicine, orthodox medicine, and Western medicine (Lippincott & Wilkins, 2006). Conventional medicine (also known as empirical medicine, scientific medicine and western medicine) is medicine which has been shown to work under

strict scientific tests, has known mechanisms, and has usually been developed after years of extensive research. Conventional therapy includes use of medication, meal planning, and exercise, along with regular visits to healthcare providers. Insulin and prescription drugs are available for diabetics. Intensive insulin therapy is a must for type 1 diabetes, whose pancreas cannot produce insulin. Consulting a doctor and registered dietician will help to understand the best diet and exercise regimen diabetic patients (Melissa & William, 2013).

For some diabetics, insulin produced by their pancreas is not properly utilized by their body. For such patients, there is one class of medicine that makes the body more sensitive to insulin, such as metformin, Actos and Avandia. The second class of diabetes medication belongs to those drugs that stimulate beta cells to produce more insulin. Such drugs are Amaryl, Diabeta, Glucotrol, Micronase and Glynase. The third class of diabetes medication that helps slows the breakdown of sugar and starches in the body such as miglitol and acarbose. All of these classes of drugs are significantly popular with diabetes; however, these have side effects on different persons. Therefore, these should not be taken without a doctor's prescription. Some medications in combination with other drugs or insulin can cause hypoglycemia, causing low blood sugar levels. Each class of medicine has one or more drugs. Some of these drugs are taken orally, while others must be injected. And some type 2 diabetes pills contain a combination of two classes of drugs.

All diabetes medications sold today are members of five classes of drugs, which work in different ways to lower blood glucose levels: Sulfonylureas, Meglitinides, Biguanides,Thiazolidinediones, Alpha-glucosidase inhibitor.

1.3. Patronage of Traditional Medicine for Diabetes in Africa

In tropical Africa, for example, more than 4,000 plant species are used for medicinal purposes and 50,000 tons of medicinal plants are consumed annually (Non-timber forest product (NTFP), 2006). These are concentrated in the global biodiversity hot-spots such as the Amazon rainforest of South America, the eastern Himalayas and Western Ghats in South Asia, and the Eastern Arc Mountains and Coastal Forests of East Africa.

Countries in Africa, Asia and Latin America use traditional medicine (TM) to help and meet some of their primary health care needs. In Africa, Up to 80% of the population uses traditional medicine for primary health care. Diabetes U.K. have also predicted that the National Health Service (NHS) could be spending as much as 16.9 billion pounds on diabetes mellitus by 2035, a figure that means the NHS could be spending as much as 17% of its budget on diabetes treatment by 2035. India has more diabetics than any other country in the world, according to the International Diabetes Foundation (Gale, 2010). Although more recent data suggest that China has even more. The disease affects more than 50 million Indians - 7.1% of the nation's adults and kills about 1 million Indians a year. The high incidence is attributed to a combination of genetic susceptibility plus adoption of a high-calorie, low-activity lifestyle by India's growing middle class (Kleinfield, 2006).

1.4. Traditional Medicine Combined with Conventional Medicines

Since traditional medicine in Africa generally views sickness as the failure of complex social and spiritual relationships, and begins diagnosis with an examination of both human and supernatural interactions unlike conventional medical doctors, who are expected to restore their patients' physical health only. Traditional practitioners are also responsible for re-establishing social and emotional equilibrium based on traditional community rules and relationships (Pearce, 2000).

Traditional anti-diabetic plants might provide a useful source of new oral hypoglycemic compounds for development as pharmaceutical entities, or as simple dietary adjuncts to existing therapies. Sulfonylureas and metformin are valuable treatments for hyperglycemia in non-insulin dependent diabetes mellitus (NIDDM), but they are often unable to lower glucose concentrations to within the normal range, or to reinstate a normal pattern of glucose homeostasis (Bailey, 1988). Use of these therapies is restricted by their pharmacokinetic properties, secondary failure rates, and accompanying side effects. Whereas their modes of action partially compensate for the metabolic disturbances in diabetic states, they do not necessarily correct the fundamental biochemical lesions. Even insulin therapy does not reinstate a normal pattern of glucose homeostasis in most NIDDM patients, and over vigorous insulin treatment may carry an increased risk of atherogenesis and hypoglycemia (Ginsberg, 1981).

In the Alma Ata Primary Health Care Delivery Declaration of 1978, which called for health for all by the year 2000, the World Health Organization (WHO) acknowledged the importance of traditional medicine in providing primary health care and encouraged countries to develop official policies on traditional medicine (Saleh, 1993). The WHO General Guidelines for Methodologies on Research and Evaluation of Traditional Medicine (2000) provide a strategy for assessing the safety and the efficacy of traditional medicine.

2. Results

Among 200 patients that have been on diabetes treatment, 170 patients (85%) were using only conventional medicine (CM) while 15% were using traditional medicine as figure 1 indicated.

The survey results show that the greater proportion of conventional medicine users (35%) were above 50 years followed by 26% found in the age above 45-55 years, 18% for age between 36-45 years, 13% were seen in 25-35 years whilst only 8.5% were within the ages of 65 years and

above as tablet 1 indicated. The age mean duration of diabetes mellitus on the studied patient was 50 ± 1.90. Table 1 also shown higher percentage on male 120(60%) than female 80(40%) in use of conventional medicine. The primary level (40%) was the most frequent users, followed by the secondary level (30.5%); the tertiary level (28.5%) and none had 1% as table 1 shown.

From the survey, the majority of patients were civil servant, 33.5%, followed by trading (32.5%), farming were 27.5% while none of the occupation had 6.5% as seen in table 1. The religion aspect of diabetes treatment practice, Christianity 170(85%), Muslims 5(2.5%) while none had 25(12.5%); it was found that large respondents were Christians as table 1 shown.

Table 2 indicated majority of patients reported very effective (80%) used of conventional medicines (CM) compared traditional medicine. A small proportion of the patients were at moderate level with their conventional medicines (17.5%) to traditional one for diabetes treatment and not effective (2.5%).

In table 2 of this section, all reference to Type 1 or Type 2 diabetes relates to this classification of probable diabetes based on these questions. Respondents were asked if they had Type 1 or Type 2 diabetes; 9.5% said Type 1, 90.5% Type 2. Using the classification of probable diabetes types, 9.5% of respondents were classed as having Type 1 diabetes and 90.5% classed as having Type 2 diabetes. This study revealed affordability of the conventional medicine to traditional medicine by the patients and 70% of patients stated very cheap,15% of the patient said moderate cheap, not cheap were 5% and the same was 10% in table 2

Prior to the use of CM in figure 2, more than 79.5% of the patients using CM were prescribed by medical doctor or other health care professionals, a friend 8%, family members 12.5%. Table 2 shows that 73.5% of TM was prescribed by native doctor, a friend 16% and family members 10%. The effects of the used medicine by the patients were recorded as follows: extreme thirst and frequency urination 10%, increased fatigue 7%, blurry vision 15%, weight loss 12% and others 56% as shown in figure 3.

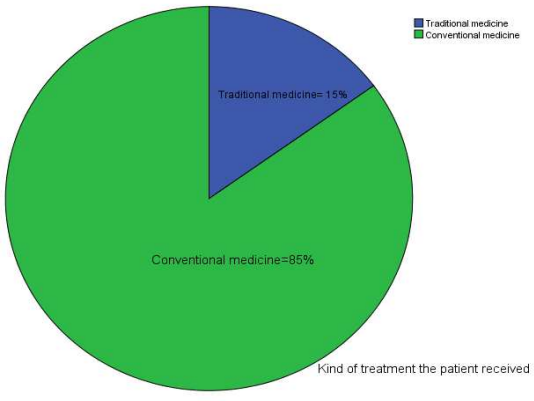

Figure 1. *show the kind of treatment the patients used.*

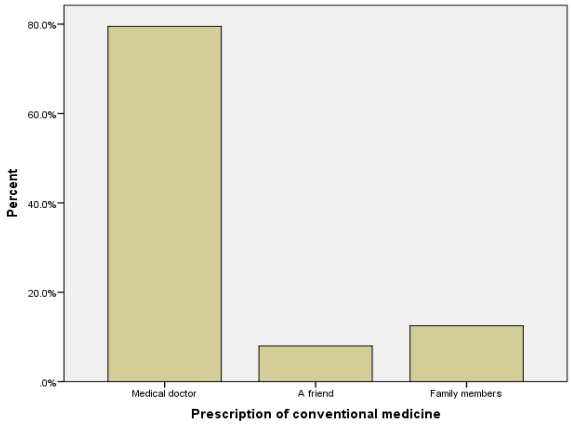

Figure 2.

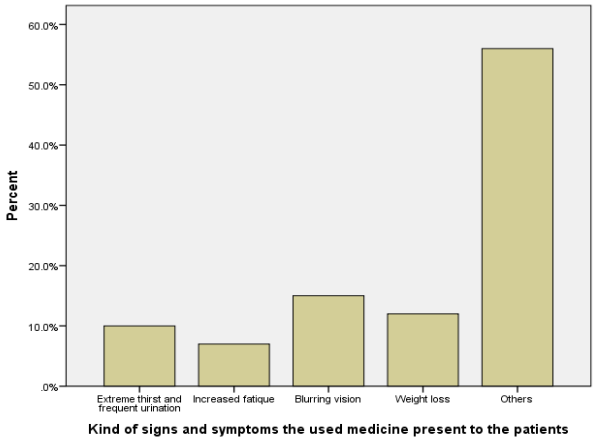

Figure 3.

The high percentage of respondents that used conventional medicine with spiritual method, 7% stated it works better while those said no was 93% as shown in table 2. This religion aspect of diabetes treatment practice involved the following: Faith in prayer 70%, Incantation 17.5%, and Others 12.5% as shown in table 2.

Respondents were asked what period they check urine test for presence of protein or glucose to ascertain the effectiveness of the choice of treatment. The test conducted on daily basis was 2%, weekly basis 2.5%, monthly basis 44%, and yearly basis 51% to test for the effective medicine usage. Over two third (75%) of medicine users said they were moderate on personal physical activity levels, high on personal physical activities recorded (10%) while low had 15% in table 2.

180(90%) of respondents did not agreed that their community do organized training programmes on diabetes. Overall, when compared the respondents (10%) of yes who participated with education of the patients about the management and prevention with medication for last one year in table 2. Frequency for the health workers in educating the patients on the drug dosage regimen for the treatment of diabetes in last one year; majority of respondents (85%) who stated that the educational health training was on yearly basis as table 2 indicated. Some of

the respondents said on monthly basis was 9%, and 6% was found on weekly basis.

Table 1. *Variables Frequency (N=200) Percentage (%).*

Age of respondents		
25-35	26	13.0
36-45	36	18.0
46-55	51	25.5
56-65	70	35.0
65-above	17	8.5
Total	200	100.0
Sex of respondents		
Male	120	60
Female	80	40
Total	200	100
Educational level of the respondents		
Primary	80	40
Secondary	61	30.1
Tertiary	57	28.5
None	2	1.0
Total	200	100
Occupation of the respondents		
Farming	55	27.5
Trading	65	32.5
Civil servant	67	33.5
None	13	6.5
Total	200	100
Religion of the respondents		
Christianity	170	85.0
Muslims	5	2.5
None	25	12.5
Total	200	100.0

Table 2. *Variables Frequency (N=200) Percentage (%).*

Reasons for the patients used of medicine		
Very effective	160	80
Moderate	35	17.5
Not effective	5	2.5
Total	200	100
Type of diabetes the patients were diagnosed of		
Type 1	19	9.5
Type 2	181	90.5
Total	200	100
Affordability of the CM to TM by the patients		
Very cheap	140	70
Moderately cheap	30	15
Not cheap	10	5
The same	20	10
Total	200	100
Prescription of traditional medicine		
Native doctor	147	73.3
A friend	33	16.5
Family members	20	10.0
Total	200	100
Combination of conventional medicine with spiritual method for diabetes treatment		
Yes	14	7.0
No	186	93.0
Total	200	100
Type of spiritual method of healing		
Faith in prayer	140	70
Incantation	35	17.5
Others	25	12.5
Total	200	100
Period of checking blood/urine glucose level of the patients to know the effectiveness of the treatment		
Daily basis	4	2.0
Weekly basis	5	2.5
Monthly basis	88	44.0
Yearly basis	103	51.5
Total	200	100
Physical activity level of the patients		
High	20	10.0
Moderate	150	75.0
Low	30	15.0
Total	200	100
Organization of health program on diabetes prevention and management for last one year		
Yes	20	10.0
No	180	90.0
Total	200	100.0
Frequency of the health workers in educating the patients on the dosage regimen for the treatment		
Weekly basis	12	6.0
Monthly basis	18	9.0
Yearly basis	170	85
Total	200	100

3. Discussion and Conclusion

This study is one of the few studies so far that examine men and women's perceptions of Traditional medicine and conventional medicine usage in Owerri West, Imo State. Result of this research suggests generally that Conventional Medicine (CM) users are largely than Traditional Medicine (TM) users in the studied communities. The survey results show that the greater proportion of conventional medicine users (35%) were above 50 years followed by 26% found in the age above 45 years. This research has pointed out some important aspects of conventional medicine despite some factors that promote traditional medicine use in the study area such as poverty, cheap price and no sophistication on drug dosage among the users. In general, highest percent (60%) of respondents were males compared to females (40%) that use conventional medicine in place of traditional medicine. It may be attributed to the fact that the act of either CM users for diabetes healing is dominated by male in the study communities. The respondents supported the fact that poor quality of traditional medical services and failure of the traditional medicine to meet the expectations of user and patients cause some to start making use of conventional medicine.

The result on gender usage was not in line with work done by Hasniza et al, (2000) in the Klang Valley area where the Chinese female patients were the most frequent users of TM compared to CM. Most of the patients that used CM and TM in this study had only attained different levels of education but highest percentage found in primary level as reported 40% and secondary level of education had 30%. This was not the case in other studies where more educated patients seemed more likely to use TM than CM among individuals with diabetes (Egede et al, 2002). This particular group of patients may be the target of appropriate health education as more information is needed prior to TM usage.

From the survey it was evident that majority of patients

were civil servant (33.5%) and traders (32.5%). The civil servant recorded highest because they were educated about the use of conventional medicine compared to traditional medicine. The religion aspect of diabetes treatment practice, Christianity had highest compared to others. The reason from the respondents stated that Christian churches help in public health enlightenment campaign on conventional medicine usage.

Among the interviewed patients on diabetes treatment, (85%) were using only conventional medicine (CM) while 15% were using traditional medicine. The traditional medicines used by the patients were as follow eagle cleanser, boost 777 and others. Some were on dietary supplements such as unripe pawpaw, avocado pea, unripe plantain etc. Majority of patients reported very effective (80%) use of conventional medicines (CM) because they needed more control on their diabetes. The term conventional medicine is mostly used in Western countries whereas complementary or traditional medicine is commonly used in Asian countries (WHO, 2001). According to the study conducted by Egede et al. 2002, that estimate of conventional medicine (CM) use in Malaysia differ considerably from those in the Western countries due to the diversity of types of complementary and alternative medicine(CAM) used. The estimate of CM use will vary based on the type of country, ethnicity and beliefs. That was in consistent with other recent studies found that CM use is common among diabetic patients (Yeh et al, 2003). In view of the type of diabetes the patients diagnosed of. Respondents with Type 2 diabetes were more than those with Type 1. When compared with a study conducted by Jenny et al (2007), where various 'check' questions to ascertain diabetes type, nearly a quarter (24%) of respondents with Type 2 diabetes (compared with 20% of those with Type 1) either did not know what type they were, or classified themselves incorrectly. The result proportion of this study is similar to the estimate by Diabetes UK that up to 69% of people with diabetes have Type 2.

Prior to the use of CM in this study, more than 79.5% of the patients using CM were prescribed by medical doctor or other health care professionals compared to a prescription by friend and family members. In the same vein, the finding shows that 73.5% of TM used was prescribed by native doctor. In this study, it was found that family and friends had some influencing power on the decision of the patients to use TM/CM. Family members and friends have a close relationship with the patients and they always communicate with each other. Therefore, it is necessary to cooperate with not only patients, but also with relatives and friends when discussing the problems or treatment for diabetes. On the other hand, this study still retained highest prescription of medicine use by either trained medical or traditional doctor. Those whose rely on others may be due to the lack of reliability of the information found through the doctors.

This study revealed affordability of the conventional medicine to traditional medicine by the patients and 70% of patients stated very cheap compared to moderate cheap and not cheap. This study showed non use of CM without a valid reason as 5% indicated not cheap. This may indicate that they did not afford CM, after all, they rely too much on the TM use for treating their diabetes or some patients initiated TM usage just because they want to have a try. The patients will choose to give up the use of TM if no significant effect was noted.

The effects of the used medicine by the patients were recorded as follows; higher percentage was on the other reasons (56%) followed by blurry vision and weight loss etc. Majority of them did not give any reasons of the usage. Some of the reasons were that: no significant effects were found after the CM.

From the survey, 93% treat diabetes through the combination of conventional or traditional medicine with spiritual means. The high percentage of respondents that used conventional /traditional medicine with spiritual method stated it works better which could be due to the mode of operation since in some cases the healing process involves consulting the gods or ancestors for the cause of the ailment and invoking the spirits to heal the patient while those said no was 7%, because they have never tried the usage. Although traditional beliefs vary from one ethnic group to the other, the belief in ancestral spirits is common to all. This religion aspect of diabetes treatment practice involved the following: Faith in prayer has the highest percentage (70%). All these makes traditional medicine practice unattractive to researchers and also poses a threat to the survival of the practice as far as transfer of knowledge to the younger generation who may be less interested in traditional religion is concerned. According to Esenam et al (2000) who stated that development workers who are aware of the contribution of the traditional medicine sector to health and socioeconomic development of people especially the rural majority, it is imperative to identify ways of improving upon the practice as well sustain the raw materials used in the sector.

Diabetes is the most common cause of kidney failure. Respondents stated, the period they check urine test for protein or glucose level. The test conducted on yearly basis (51%) was higher compared to others for the effective medicine usage. The medicine users said they were moderate on personal physical activity levels. More than ninety percent respondents said they practice personal physical activities.

From the result of this research study, (80%) of respondents did not agreed that their community do organized training program on diabetes and most of the respondents had never participated educational training course on how to manage their diabetes. However, respondents who took part in an educational training course on how to manage their diabetes in either normal or complication were asked whether their community health workers understand the training course. High frequency for In regard to educating the patients on the drug dosage regimen for the treatment of diabetes by the health workers in last one year; majority of respondents (85%) stated that

the educational health training was on yearly basis that justified the understanding of community health workers in management of diabetes.

4. Conclusion

In conclusion, a high proportion of Type 2 diabetic patients use conventional medicine for the treatment of diabetes. More than half of the patients found that traditional medicine did not really improve their diabetes conditions. TM was one of the alternative treatments considered by Type 2 diabetes patients to complement with the conventional treatment for their diabetes control.

There should be more emphasis in establishing training programmes and funding for conventional health practitioners for the management of diabetes

References

[1] Kumar P & Clark M (2002). Textbook of Clinical Medicine. Saunders; London, Fifth Edition, pp.1099-1121.

[2] Center for Disease Control and Prevention (CDC),(2013). CDC/24/7: Saving Lives, Protecting people.TM

[3] Alberti KG, Zimmet P, Shaw J. (2007). International Diabetes Federation (IDF): a Consensus on Type 2 Diabetes Prevention. *Diabetes Med; 24: 451–68*.

[4] Libby, P; Paul M.R & Attilio M.(1998). Clinical Cardiology: New Frontier. Inflammation and Atherosclerosis.

[5] Wild S, Roglic G, Green A, Sicree R, King H (2004). Global prevalence of diabetes, estimates for the year 2000 and projections for 2030. Diabetes Care, 27: 1047-1053.

[6] Priya S. (2010) Integrating modern and traditional medicine: Facts and figures, 2010.Available from: http://www.scidev.net/en/features/integratingmodern-and traditional-medicine-facts-and-figures.html. Accessed on Feb 3, 2013.

[7] WHO, (1985). Diabetes mellitus: Report of a WHO Study Group. WHO Technical Report Series, p. 727.

[8] WHO (2003). Fact sheet No. Revised May 2003.

[9] Covella,(2008). ARCHIVED-Paving the way to a better malaria cure. National Research Council Canada

[10] Pearce, T.O. (2000). Death and Maternity in Nigeria. In: Turshen, Meredith (ed.), African Women's Health, Trenton, NJ: Africa World Press, Inc.

[11] Adesina, S.K (2007). Traditional Medical Care in Nigeria. Available from: http://www.onlinenigeria.com/health/?blurb. Accessed on Feb10, 2013.

[12] WHO, (2005).National Policy on traditional Medicine and regulation of Herbal Medicines: Report of a global WHO survey. Geneva

[13] Lippincott, W. & Wilkins (2006). Stedman's Medical Dictionary. Wolters Kluwer Company, 28th edt.

[14] Melissa N & Williams H, (2013). MedicineNet.Com

[15] Non-Timber Forest Products (NTFPs),(2006). An economic study of Tribal economy in Western India

[16] Gale, J (2010). "India's Diabetes Epidemic Cuts down Millions Who Escape Poverty". Bloomberg. Retrieved 8 June 2012.

[17] Kleinfield, N. R. (2006). "Modern Ways Open India's Doors to Diabetes". New York

[18] Pearce, T.O. (2000). Death and Maternity in Nigeria. In: Turshen, Meredith (ed.), African Women's Health, Trenton, NJ: Africa World Press, Inc.

[19] Bailey C. J & Day C (1989). Traditional plant medicines as treatment for diabetes.Diabetes Care, 12: 553-564.

[20] Gingber H.N & Michael H.(1998). Triglycerides and cardiovascular disease. A Scientific Statement from the America Heart Association.

[21] Saleh, A.A. (1993). WHO/EMRO: Politique Sur la Medicine Traditionelle. In: Grancher, Michel (ed.), La Plante Medicinale: de la Tradition a la Science, Paris: Jacques Grancher.

[22] Hazmiza Z.H., Grace T.P.L., Samsinah H, Rokiah P, Riyanto Y. &Widodo. (2000). A survey amongst Complementary Alternative Medicine (CAM) users with Type2 diabetes. International Journal on diabetes and metabolism 17:9-15.

[23] Egede L.E., Yex, Zheng D & Silverstein MD (2002). The Prevalence and pattern of Complementary and Alternative medicine use in Individuals with diabetes. Diabetes care 25:324-329.

[24] Yeh G.Y, Eisenberg D.M, Kaptchuk T.J & Phillips R.S (2003). Systematic reviews of herbs and dietary supplements for glycermic control in diabetes. Diabetes care 26:1277-1294

[25] Jenny H, Alice M, Fioma A, John d & kerry s (2007). The National Survey of people with diabetes health care commission.

[26] Esenam k., Rudolf A.A., Phyllis A.K., Emmanuel M (2000). Survey on the practice of Traditional Medicine in the operational area of eight ACDEP-member primary health care in upper East and Northern regions of Ghana.association of church based development NGO, (ACDEP) and catholic organization for relief and development aid (Cordaid)