

A survey of the knowledge and use of dietary supplements by some population settlements in Zaria, Kaduna State, Nigeria

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Abstract

A survey was made to assess the knowledge and use of the dietary supplements by some people in the population settlements, Samaru, Palladan, Jama'a, Hayi Shehu, Kwangila, Sabon Gari and Grace land in Zaria, Kaduna State, Nigeria. About 219 respondents participated in this survey and 165 respondents reported they had prior knowledge of dietary supplements. The results in this survey revealed that since more than 15 years ago, there has been a growing awareness of the importance of and use of dietary supplements among the people in the population settlements where the survey was carried out. About 98 respondents (90 %) out of the 109 respondents who had prior knowledge of and used the dietary supplements before experienced remarkable improvement in their health. The adverse effect on health experienced by one of the 11 respondents who used the dietary supplements before but did not find them beneficial suggests that the quality and safety use of the dietary supplements in Nigeria should be properly monitored by the National Agency for Food and Drug Administration and Control (NAFDAC).

The widespread use of dietary supplements for the improvement of human health is feasible in Nigeria provided adequate education and professional guidance are made available to the general population on the appropriate and safety use of the dietary supplements to reduce the possible risk of adverse effects on health to potential users of dietary supplements.

Keywords: dietary supplements; survey of knowledge and use of dietary supplements in some population settlements in Zaria

1. Introduction

For a large percentage of the population in Nigeria which is a developing country in the world, the standard of living is still poor and people do not eat diets that conform to the human dietary requirement which consists of a balanced diet from proteins, carbohydrates, fats (lipids), water, vitamins and mineral nutrients obtainable from plant and animal foods. This is therefore a primary factor in the development of chronic and degenerative diseases such as cardiovascular diseases, cancer, diabetes mellitus and obesity that are prevalent in Nigeria. For the prevention of diseases and promotion of good health, the eating of nutrient rich diets that include whole grains, fruits and vegetables, fish, adequate intake of water and the minimization of fats, sugars and salt is important. It is also important to ensure adequate intake of the vitamins and mineral element nutrients of which plant and animal foods are the best sources for the promotion of good health and the prevention of chronic diseases.

The mineral element nutrients are needed in small amounts in human diets to enhance the normal physiological function of the human body. They are components of the body tissues and fluids that work in combination with enzymes, hormones, vitamins and transport substances. Some are cofactors for enzymes while others activate molecules in metabolic pathways. The mineral element nutrients participate in nerve transmission, muscle contraction, cell permeability, tissue rigidity and structure, blood formation, acid-base balance, fluid regulation and osmolarity, protein metabolism and energy production or in general the metabolism of foods eaten by man [3]. The mineral elements essential for human health are classified as the major elements (macronutrients) and trace elements (micronutrients). The major elements

(macronutrients) comprise mainly of sodium (Na), calcium (Ca), phosphorus (P), potassium (K), magnesium (Mg) and chloride (Cl) [3,4]. The essential trace elements (micronutrients) have a common property in which they normally occur and function in living tissues in low concentrations. These normal tissue concentrations vary greatly in magnitude and are characteristic for each element. The essential trace elements presently recognized to be important for human health include: iron (Fe), zinc (Zn), copper (Cu), manganese (Mn), chromium (Cr), molybdenum (Mo), cobalt (Co), selenium (Se), iodine (I) and fluoride (F). The roles of the essential major and trace elements in human health and disease have been documented in the literature [1-5].

The dietary lack or insufficiency of the mineral element nutrients due to poor nutrition on a long term creates specific deficiency symptoms in the human body that leads to ill health [1-5]. The deficiency of the essential mineral elements in humans occurs worldwide especially in the developing countries of the world that includes Nigeria. Therefore, mineral nutrient supplements formulated as single or multimineral supplements are now used worldwide as dietary supplements to increase the intake of the mineral nutrients from human diets due to poor nutrition so as to prevent the specific deficiency states of the essential mineral elements, to promote good health and prevent chronic diseases such as cancers, tumors and cardiovascular diseases. Consequently, due to the demand for these multimineral/mineral nutrient supplements in Nigeria, many brands and varieties of these commercially produced dietary supplements by various multinational pharmaceutical manufacturers are prevalent in the markets in Nigeria. Most commercially produced

multimineral supplements available in the markets in Nigeria also contain many vitamins and are called multivitamin minerals (MVMs). The vitamin supplements formulated as single vitamins, multivitamins or as multivitamin minerals (MVM) available in the markets in Nigeria are essential organic (carbon containing) substances that are also needed in small amounts to increase their intake from human diets derived from plant and animal foods and are important for the metabolic process in the human body to ensure the normal function, growth and maintenance of body tissues for the improvement of human health. The vitamins are classified as the fat soluble vitamins such as A, D, E and K and the water soluble vitamins such as vitamin B1, vitamin B2, vitamin B6, vitamin B12, niacin, pantothenic acid, folic acid and vitamin C^[3,4]. It should be noted that it is not only the mineral nutrient supplements and vitamins that are finding increasing use in Nigeria. There is also increasing prevalence and use of many other types of dietary supplements such as fish oil, herbal products such as garlic and Aloe vera as well as powdered amino acids and enzymes in the markets in Nigeria

To the knowledge of the author, there has been no reported studies or national survey report on the knowledge and use of the dietary supplements among Nigerians. The aim of this study was to make a survey of the knowledge and use of the dietary supplements in some population settlements in Zaria, Kaduna State, Nigeria. The purpose was to assess the awareness or knowledge and use of the dietary supplements for the improvement of human health and the prevention of some diseases such as anemia, osteoporosis, cancers, tumors, cardiovascular diseases and Type II non-insulin dependent diabetes mellitus (NIDDM) that are common in these communities.

2. Methods

An 11-question questionnaire was developed to assess the knowledge and use of the dietary supplements by the people in some population settlements of Zaria, Kaduna State, Nigeria. These population settlements were Samaru, Palladan, Sabon Gari, Jama'a, Hayi Shehu, Kwangila and Grace land. It was a self-administered survey questionnaire by the author. The survey questionnaires were distributed from November 2016 to February 2017. They were distributed at work establishments and institutions, family homes, business shops, pharmaceutical and drug stores in the market and outside the market. A brief information on the role of nutrition and the need for dietary supplements to improve human health as well as the scope and purpose of the survey was first given to participants before the questionnaires were given to them. The participants were then left to complete the questionnaires independently either on the spot or could take as much time as desired to complete the questionnaires. Additional clarification was provided if needed.

Basic demographic information such as gender, age and address of the participants were required in the survey questionnaires. The demographic variables such as citizenship, race/ethnicity, and religion, highest level of education, occupation and status of financial income were not considered in the survey questionnaires. There was no criteria for eligibility to complete the survey questionnaire. In the survey questionnaire, participants were asked to indicate if they had any prior knowledge about the dietary supplements for the improvement of human health. They were then asked if they

ever used the dietary supplements before and how long ago they used them. They were asked to indicate if they were interested in using the dietary supplements even if they did not have prior knowledge on the dietary supplements or did not use them before. Respondents who indicated they ever used the dietary supplements before were further asked to give the types of supplements and sources or where they purchased them. Respondents were asked to indicate if they noticed any effect of the dietary supplements they used on their health and if they were interested in using the supplements for the rest of their lifetimes. Finally, the respondents were asked to say anything they felt about the dietary supplements. Confidentiality was ensured throughout the period of the data collection and analysis.

3. Results

A total of 219 survey questionnaires were collected and analyzed. A breakdown of the demographics of the respondents is shown in Table 1. For the total number of respondents, the highest number were of ages in the range of 20-30 years. This was followed by respondents with ages within the range of 30-49 years. The lowest number of respondents were those in the range of over 70 years.

Table 1: Demographics of the Respondents

| Demographics | | Total number |
|------------------|---------|--------------|
| Number of people | | 219 |
| Gender | Male | 139 |
| | Female | 80 |
| Age (years): | 10-20 | 18 |
| | 20-30 | 70 |
| | 30-40 | 53 |
| | 40-50 | 37 |
| | 50-60 | 32 |
| | 60-70 | 6 |
| | Over 70 | 3 |

From the data collected from the respondents in the survey, about 165 respondents indicated that they had prior knowledge of the use of the dietary supplements while 54 respondents indicated that they did not have any prior knowledge of the use of dietary supplements for the improvement of human health. Out of the number of respondents who indicated that they had prior knowledge of the use of dietary supplements, about 109 of them indicated that they used the dietary supplements before. Out of the number of respondents who had prior knowledge of the use of the dietary supplements but never used them before, about 38 of them showed interest in using the dietary supplements while about 18 of them indicated that they were not interested at all in using the dietary supplements. Out of the 54 respondents who indicated that they had no prior knowledge of the dietary supplements before, about 36 of them showed interest in using the dietary supplements. The analysis of the completed questionnaires collected showed the periods of the use of the dietary supplements frequently reported by the respondents as less than one year, 1-2 years, 2-3 years, 4-10 years, greater than 10 years and greater than 15 years ago. A list of some of the dietary supplements reportedly used by some of the respondents in this survey is shown in Table 2. It should be noted that this list does not cover all the dietary supplements used by the respondents as many of the

respondents could not remember the types of dietary supplements they used before. In this survey, it was not feasible to estimate the number of respondents who used one particular type of dietary supplement because a large number of the respondents who used the dietary supplements before could not remember the actual types of dietary supplements they used.

For the impact the dietary supplements made on the health of the respondents, about 98 respondents who used the dietary supplements before agreed they noticed remarkable improvement in their health after using the dietary supplements. About 8 respondents who used the dietary supplements before reported they did not notice any improvement in their health after using the dietary supplements. Two respondents reported that they did not use the dietary supplements long enough to notice any impact on their health. One respondent reported a negative effect on health after using the calcium dietary supplement. This respondent then suspended the use of any dietary supplement and presently prefers the use of natural foods. On the worthiness of the dietary supplements to be used for a life time, about 96 respondents who used the dietary supplements before indicated that the dietary supplements can be used for a life time. About 48 respondents comprising of those who never

used the dietary supplements before and who used the dietary supplements before did not agree that dietary supplements can be used for a life time. Where the respondents were asked to say anything they felt on the dietary supplements, a large number of the respondents (98) who used the supplements before indicated that the dietary supplements are very beneficial for the improvement of human health. Many of these respondents who recognized the important role of the dietary supplements in human health reported that the dietary supplements are expensive for the reach of a large population of the poor people in Nigeria. They also suggested that more effort should be made to educate the people on the important role of the dietary supplements in nutrition for the improvement of human health. A few number of the respondents who used the dietary supplements before did not favour the use of dietary supplements and preferred diets from natural foods. Some of the reasons given by these few number of respondents included the possible long term adverse side effects of the dietary supplements on health. Most of the respondents who never had prior knowledge of the dietary supplements indicated they needed to be given more education on the important role of the dietary supplements in nutrition

Table 2: List of Some of the Dietary Supplements used by some of the Respondents

| Dietary supplements | Dietary supplements |
|--|---|
| Omega-3 (fish oil) | Calcium Herb Combo |
| Zinc | Calcimax |
| Chelated Zinc | Calcium pantothenate B.P. |
| Multivitamin minerals: Centrum tablets (Adults) | Calcium Herb Combo |
| | Calcimax |
| | Calcium pantothenate B.P. |
| Uppa 2000+ capsules | Xin-ke- ning |
| Updyn capsules | Kombacha(Japnes drink with natural yeast) |
| Daravite capsules | Shake Off |
| Wellwoman | A-Beta care |
| Supradyn capsules | Vitamin B complex |
| Omega-H3 | Multivitamin tablets |
| Selenium | Vitamin A |
| Iron | Vitamin C |
| Lecithin | Vitamin D |
| Natural Soy lecithin | Vitamin E |
| Calcium | Ginseng |
| Cal-Mag | Aminoglobin |
| Ginseng Cordyceps | Goko cleanser |
| Amino acid | |

4. Discussions

Surveys concerning the use of dietary supplements have been conducted in many other countries by several authors [6,7,8]. To the knowledge of the author, there has been no reported studies or national survey report concerning the knowledge and use of the dietary supplements among Nigerians. This survey was therefore important because it sought to understand the knowledge, attitude and use of dietary supplements to improve human health and prevent some of the chronic diseases.

In this survey, data was collected from 219 respondents and analysed. The results of the survey revealed that since more than 15 years ago, there has been increasing knowledge and use of some of the dietary supplements by some of the people in the population settlements surveyed. One of the significant

findings in this survey is that out of the 98 respondents who used the dietary supplements and experienced remarkable improvement in their personal health, there was one case in which a respondent with age in the range of 20-30 years experienced the suppression of a small hand tumor after using the multivitamin mineral supplements that contained the minerals Ca, K, Mn, Cu, Fe, Zn, I, Se, Cr and Mo about 2 years ago. Another significant finding was that a respondent with age in the range of 60-70 years experienced the alleviation of a suspected lung cancer at marginal level after using the multivitamin mineral supplement that contained the minerals Ca, K, Mn, Cu, Fe, Zn, I, Se, Cr more than 15 years ago. The author suggests that these cases of the suppression of the small hand tumor and alleviation of the suspected lung cancer experienced by these two respondents may be due

strongly to the action of selenium in the multivitamin mineral supplements. Selenium has antioxidant functions and has been recognized in nutrition as an essential trace element for the prevention of cancers, tumors, liver and muscle damages and cardiomyopathy [3]. The concern for the adverse side effects and safety use of dietary supplements is not only peculiar to the reports by some of the respondents in this survey. Like drugs, dietary supplements have potential risks and adverse side effects. Garrison and Somer [3] have discussed the possible adverse effects of some vitamins and mineral nutrients when consumed at excessive levels or for long periods of time. However, as revealed in this survey, if used properly, certain dietary supplements may help to improve health and reduce risk of some diseases. All dietary supplements sold in the Nigerian markets have to be registered with the National Agency for Food and Drug Administration and Control (NAFDAC) in Nigeria. Therefore, any adverse side effect experienced by any dietary supplement user should be reported to NAFDAC for appropriate action to be taken.

In this survey, respondents were not asked to indicate the sources of knowledge about the dietary supplements. It was completely not known by the author if respondents who indicated they used the dietary supplements before sought for adequate knowledge and professional guidance to ensure the appropriate and safety use of the dietary supplements. Dietary supplements are mostly self-prescribed and may be purchased and used without a prescription.

The results of this survey reveals that many respondents purchased the dietary supplements from a pharmaceutical or drug store, from existing network marketing or multilevel marketing (MLM) companies in Nigeria. Some even purchased them directly from manufacturers in other countries using the internet

Dietary supplements are regulated differently from drugs with regard to labeling and quality assurance of the products. The standardization of active ingredients is regulated by individual manufacturers and no regulatory process exists for these products comparable to prescription medications. Supplement manufacturers are not required to have or provide proof of the purity, potency, safety and efficacy of the dietary products. Furthermore, dietary supplement manufacturers may include information on labeling that may not be substantiated by evidence or include disease claims that the product may prevent, treat or cure diseases. Since dietary supplements are mostly self-prescribed, most people who use dietary supplements do not seek professional guidance prior to their purchase and use. It is therefore necessary for the National Agency for Food and Drug Administration and Control (NAFDAC) in Nigeria to ensure that the dietary supplements imported and sold in the Nigerian markets are of good quality so as to improve the safe use and potential risks of dietary supplements.

This survey had some limitations. First, the survey covered only a small number of people (219 respondents) in the population settlements of Samaru, Jama'a, Palladan, Kwangila, Sabon Gari and Grace land in Zaria, Kaduna State, Nigeria. Zaria is a major city in Kaduna state, Nigeria with an estimated population of 306,990 people according to the 2006 census. The results in this survey may therefore not necessarily reflect that of the general population. Another limitation of in this study is the self-administered nature of

the survey which might have not enabled the participation of a higher number of people in this survey. Many prospective respondents rejected to participate in this survey. Also many respondents that received the survey questionnaires did not return them. In this study, the results of the survey was based on previous use of dietary supplements. In the questionnaires, the respondents were not asked to indicate how frequently they used the dietary supplements, whether regularly, occasionally or seasonally, the duration of use and if they were currently using the dietary supplements. Therefore, the results of this survey may not reflect the present state of health of the respondents who indicated they used the dietary supplements before. Based on the results obtained in this survey, it is expected that future wider surveys on the knowledge and use of dietary supplements will be more successful if well planned.

5. Conclusions

A survey was made to assess the knowledge and use of the dietary supplements by some people in the population settlements of Samaru, Palladan, Jama'a, Hayi Shehu, Kwangila, Sabon Gari and Grace land in the town of Zaria, Kaduna State, Nigeria. About 219 respondents participated in this survey. The results in this survey revealed that since more than 15 years ago, there has been a growing awareness of the importance of and use of dietary supplements among the people in the locations where the survey was carried out. The results showed that about 165 (75.34%) respondents had prior knowledge of the dietary supplements before. About 98 respondents (90 %) out of the 109 respondents who had prior knowledge and used the dietary supplements before reported remarkable improvement in their health and agreed that the use of dietary supplements was beneficial and could be used for a life time. They however agreed that a large percentage of the population do not still have adequate knowledge of the use of dietary supplements in human health and are also not accessible to dietary supplements due to their high cost. The negative effect on health reported by one of the 11 respondents who did not find the use of the dietary supplements to be beneficial suggests that dietary supplement users experiencing adverse side effects from the use of dietary supplements should report such cases to the National Agency for Food and Drug Administration and Control (NAFDAC) so that the use and safety of the dietary supplements imported into Nigeria can be properly monitored.

There is a need for the continuing provision of education and professional guidance to the general public on the role of nutrition and dietary supplements in human health. The continuing provision of education and professional guidance on the use of dietary supplements is necessary to ensure the appropriate and safety use of dietary supplements and also to improve the awareness of the adverse effects of dietary supplements.

The widespread use of dietary supplements for the improvement of human health is feasible in Nigeria provided adequate education and professional guidance are made available to the general population on the appropriate and safety use of the dietary supplements to reduce the possible risk of adverse effects on health to potential users of dietary supplements.

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