ORIGINAL ARTICLE

Nutrition knowledge of young, post-year one, non-biological science female students at a private university in Rivers State, Nigeria

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ABSTRACT

Background: Nutrition knowledge, highly associated with healthy eating is especially needed by women of child-bearing age. High knowledge is expected of female university students but, in non-biosciences this may not hold because of inadequate study of life sciences.

Objectives: To assess nutrition knowledge and effects of age, course of study and birth order of second to final year students of Madonna University Elele, in non-biological science disciplines.

Methodology: Data were collected from engineering and computer science students using semi-structured questionnaire. Analysis was by frequency, percentage and SPSS version 20 statistical soft-ware.

Results: Students generally had fair nutrition knowledge (59.7%). Further, 10.1% of engineering and 3.2% of computer science students had very good knowledge. Students who were their families' only daughters had the highest knowledge (9.1% had very good knowledge) followed by 1st daughters (7.1% had very good knowledge). Daughters who were the last offsprings had the least knowledge (1.6% had very good knowledge). Effect of age could not be determined due to low number between 25–29years age group.

Conclusions: Course of study impacted on nutrition knowledge. Careers in non-bioscience disciplines did not favour adequate nutrition knowledge. However, chemistry as an essential component of such courses could mitigate the knowledge deficiency. Birth order that exposed a child to household responsibilities favoured nutrition knowledge.

Keywords: *Birth order, child-bearing age, neuro-developmental process, peri-conception folic acid deficiency, women*

INTRODUCTION

Nutrition knowledge is indispensable for sustainable good nutrition practice.[1] Good nutrition is necessary for physical and neuro-developmental processes.[2,3] It is important for tissue repair, immunity and general resistance to diseases, tissue respiration, proper functioning of body parts, organs and tissues, as well as various metabolic processes.[4,5,6,7]

Female undergraduates are appropriately described as women of child-bearing age (WCBA) comprising females between 15 and 49years of age who generally have special nutrition requirements as potential mothers.[8] Menstrual blood loss that occurs regularly predisposes to anaemia.[5,9] During pregnancy, many of which can occur unexpectedly and

unplanned, adequate nutrients are essential for the health of the foetus and mother.[10,11] Peri-conception folic acid deficiency predisposes to foetal neural tube defect.[12] Maternal pre-pregnancy body weight deficit frequently rooted in nutrition ignorance is one of the characteristics associated with intra-uterine growth reduction (IUGR) with its future serious physical, neurological and metabolic adverse consequences on that offspring.[13] Basic nutrition knowledge enables women of childbearing age to realize the need for six months of exclusive breast feeding for the baby, essential nutrients for the older infants, toddlers and children to avoid their stunting, wasting and neurological deficits, for proper bone development and its maintenance in old age.

Besides, in many societies, young females are involved in family nurturing and domestic duties and are traditionally responsible for family food selection, handling and preparations in a typical African setting.[14] Nutrition knowledge has been significantly associated with healthy eating such that women with the highest level of nutrition knowledge are more likely to meet current international recommendations for consumption of fruits, vegetables, fats and other nutrients than those with the lowest knowledge.[15] On the other hand, nutrition ignorance could manifest as failure to eat nutritive rich food materials even when available, non-appreciation of disease causation, consequences, prevention and treatment even when accessible, among other problems. Thus, knowledge of basic nutrition is important for WCBA to be able to care nutritionally for themselves, their children and other family members.

The need to investigate the nutrition knowledge of the students generally is premised on observations of the students which are suggestive of nutrition ignorance. Among the observations is that the students purchase and consume non-essential, high energy-dense products from the campus' canteens and supermarkets neglecting fruits and vegetables.

In this study, the authors assessed the level of nutrition knowledge of young female undergraduates at Madonna University Elele, in non-bioscience disciplines who have finished in Year One, the highest classroom biology related course possible for their disciplines. The authors further strived to determine the effects of age, course of study and birth order on nutrition knowledge among the students.

RESEARCH QUESTIONS

The following research questions guided the study:

1. What is the level of nutrition knowledge among the young female students in non-bioscience related disciplines of Madonna University Elele Campus?
2. What is the influence of course of study on nutrition knowledge of the students?
3. What is level of nutrition knowledge among the female students post-Year One based on age?
4. What is the level of nutrition knowledge among female students based on birth order?

A study of this nature is a tool for estimating the impact of career choice and other factors on nutrition ignorance in young female students, so as to help in the articulation of measures, by curriculum planners and parents to ameliorate the situation and for the school authorities to provide facilities for adequate and quality nutrition education for students. Nutrition knowledge is especially important to female students because of the magnitude of the nutrition burdens facing them presently and in their future homes.

Literature reporting poor nutrition knowledge and related issues associated with WCBA abound. Ji-Yeon, Jeong-Soon and Kyung-Ja found poor dietary habits and unbalanced nutrition status among WCBA, students of a Korean University.[16] Poor knowledge about importance of iodine in relation of pregnancy was discovered in 2014 among 101 University WCBA students in Mexico.[17] Fayet-Moore, Petocz and Sammen (2014) found deficiency of iron, vitamin B12 and apparent excess of folate

among Australia WCBA university students.[18]

METHODOLOGY

This is a descriptive survey research design using a semi-structured questionnaire.

Study Area

Elele Campus is predominantly a healthcare premises of Madonna University, Nigeria. There are six faculties: Medicine, Basic Medical Sciences, Pharmacy, Natural Sciences and Engineering/Technology.

Of the seven non-bioscience courses, Computer Science is under the Faculty of Natural Sciences, whereas Civil Engineering, Mechanical Engineering, Petrochemical Engineering, Chemical Engineering and Computer Engineering are in the faculty of Engineering/Technology.

Population and Sample Size of the Study

All the qualified 305 female students were used for the study. Thus, there was no other sampling procedure employed.

Instruments for Data Collection

Semi-structured questionnaire was the instrument used. The items were formulated based on the validated "***Nutrition Knowledge Questionnaire for Adults***" designed by Permenter and Wardle. This was modified for local context using the adult section of Nigerian food-based Dietary Guidelines (2009).[19, 20]

Knowledge was sought in four clusters:

(a) Experts' dietary recommendations
(b) Food providing required nutrient
(c) Healthy food choices using the recommendations
(d) Relationship between diet and diseases

After assessment by nutrition experts, the final draft consisting of 19 both closed and open ended questions were distributed through the class representatives during 2013/14 academic session.

Of the copies filled and returned within 45 minutes, 290 were valid and subsequently, used for data analysis using frequency, percentages and the Statistical Package for Social Sciences (SPSS) Version 20.

RESULTS

Most of the students 173 (59.7%) had just a fair nutrition knowledge, whereas 14(4.8%) students had very good overall nutrition knowledge, 94(32.4%) had good knowledge, and 9(3.1%) had poor knowledge of nutrition. Thus, the level of overall nutrition knowledge among the students was rated as fair; *see Table 1*.

Table 1. Overall nutrition knowledge level among the entire students

Level of overall Nutrition Knowledge	**No. of Students**	**% of entire Students**
Very good	14	4.8%
Good	94	32.4%
Fair	173	59.7%
Poor	9	3.1%
Total	**290**	**100%**

Table 2 shows that 10.1% of engineering students and 3.2% of computer science students had very good knowledge, while 39.1% of engineering students and 30.3% of computer science students had good knowledge. Then, 62.9% of computer science students compared to 49.3% of engineering students had fair knowledge, while 3.6% of computer science students and 1.4% of engineering students had poor nutrition knowledge. Thus, engineering students generally had more overall nutrition knowledge than computer science students.

Table 2. Nutrition knowledge of students based on course of study (*n =290*)

Nutrition Knowledge Level	**Course**	
	Computer Science *(n=221)*	**Engineering *(n=69)***
Very good	7(3.2%)	7(10.1%)
Good	67(30.3%)	27(39.1%)
Fair	139(62.9%)	34(49.3%)
Poor	8(3.6%)	1(1.4%)
Total	**221(100%)**	**69(100%)**

Table 3 shows that for 15–19year age group 4.8% had very good nutrition knowledge, 35.2% had good, 59% had fair while 1% had poor knowledge of nutrition; and among the 20–24year group 5.1% had very good

knowledge of nutrition, 29.9% had good, 60.5% had fair while 4.5% had poor knowledge of nutrition.

Table 3. Nutrition knowledge of students according to age (*n =290*)

Nutrition Knowledge Level	Age 15-19 yrs *(n=105)*	20-24 yrs *(n=177)*	25-29yrs *(n=8)*
Very good	5(4.8%)	9(5.1%)	0(0%)
Good	37(35.2%)	53(29.9%)	4(50%)
Fair	62(59%)	107(60.5%)	4(50%)
Poor	1(1%)	8(4.5%)	0(0%)

For the 25–29year age group, 50% had good, while, the other 50% had fair nutrition knowledge. Thus, nutrition knowledge tended to increase with age but the very low number of students in the age bracket of 25-29 years prevented a statistically significant result. The effect of age on nutrition knowledge thus cannot be inferred from the data.

Table 4. Knowledge level of students based on birth order in family (*n =290*)

Nutritional Knowledge Level	Birth Order First Daughters (n=99)	Middle Birth Order (n=106)	Last Birth Order (n=63)	Only Daughters (n=22)
Very good	7(7.1%)	4(3.8%)	1(1.6%)	2(9.1%)
Good	42(42.4%)	28(26.4%)	19(30.2%)	5(22.7%)
Fair	49(49.5%)	72(67.9%)	39(61.9%)	13(59.1%)
Poor	1(1.0%)	2(1.9%)	4(6.3%)	2(9.1%)

Table 4 shows that for first daughters, 7.1% had very good nutrition knowledge, 42.4% had good, 49.5% had fair while 1% had poor nutrition knowledge. For students in middle birth order, 3.8% had very good knowledge, 26.4% had good, 67.9% had fair while 1.9% had poor nutrition knowledge. For students in last birth order, 1.6% had very good knowledge, 30.2% had good, 61.9% had fair while 6.3% had poor nutrition knowledge.

For lone daughters 9.1% had very good knowledge, 22.7% had good, 59.1% had fair while 9.1% had poor nutrition knowledge. The students who were the only daughters had the best nutrition knowledge followed by those in the first and middle order while those in the last birth order had the least nutrition knowledge.

DISCUSSION

The results from this study showed that the female students generally possessed only fair nutrition knowledge (59.7%). Being of high education standard as university students, these young women were expected to possess a higher nutrition knowledge.[21] However, like these students, inadequate nutrition knowledge was, also, discovered among female students of a Mexican University.[16] It should be noted that poor scores in nutrition knowledge assessment among the highly educated may not be comparable to such scores among the uneducated since a higher standard of test unwittingly must have been used for the educated. However, in this study, it is realistic to attribute the inadequate nutrition knowledge to career choice due to very limited biology education required for such careers.

In the choice of careers in the sciences, situations are rife where students who opt for mathematical courses comprise largely of those academically uncomfortable with the subject of biology, and vice versa. Based on the course of study, engineering students possessed higher nutrition knowledge than their computer science counterparts. This can be explained by the fact that nutrition is a subject concerned with constituents of foods which include nutrients, toxicants, antioxidants, etc; and their interactions as they participate or promote or inhibit various

metabolic processes characteristics of life and hence, highly biochemical. Some of the engineering disciplines that participated in the study have been exposed to high level chemistry which is an indispensable component of such engineering disciplines unlike computer science. This might explain the higher nutrition knowledge exhibited by engineering students.

With reference to the age of students, the positive relationship between age and nutrition knowledge was evident between the age brackets 15–19years and 20–24years. However, the determination of overall statistical significance of age on nutrition knowledge was marred by the very low number of students within the age bracket of 25–29years. Furthermore, findings on birth order showed that students who were the only daughters in the families had the best nutrition knowledge, followed by those who were first daughters and then, those in the middle birth order while, those in the last birth order possessed the least nutrition knowledge.

Since the society regards family catering service as female gender specific duty, an only daughter, from childhood, necessitated by the solo status, learns from the mother. The mother's catering duties are normally relieved as the first daughter gradually takes over. The first daughter, as opposed to the only daughter, may deploy sisters for some assistance but an only daughter may receive only little help from her male siblings. The last child, the perennial baby of the family, is generally doted on and protected from much responsibility and inconvenience. This explanation may be deemed valid for this finding on influence of birth order on nutrition knowledge.

CONCLUSION AND RECOMMENDATIONS

Young female students in non-bioscience disciplines who have finished Year One at Madonna University Elele had only fair nutrition knowledge, and their course of study affected nutrition knowledge. Thus, while courses outside biology related disciplines generally did not favour adequate nutrition knowledge, chemistry as an essential component of such courses tended to lessen the deficiency. Birth order that exposed a child to household responsibilities favoured acquisition of nutrition knowledge.

Since poor nutrition has been identified as the largest single contributor to disease occurrence, the researchers made the following recommendations to promote nutrition knowledge:

a. The recent policy scrapping Year One biology for non-bioscience students in Madonna University and perhaps, other Nigerian universities should be reversed.
b. Primary and secondary schools' curriculum planners should make food and nutrition education compulsory at certain stages of schooling.
c. Topics concerning nutrition should be emphasized in subjects like biology, chemistry, agricultural science and health science.
d. The general course of entrepreneur studies in Year Two at Madonna University should be broadened to encourage food and domestic science skills.
e. At family level, actions and attitudes like child favouritism that unintentionally inhibit impacting and acquisition of nutrition knowledge and skills should be discarded.

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