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PERCEIVED ROLE OF DIETARY FACTORS IN CANCER CAUSATION AND PREVENTION AMONG UNVERSITY UNDERGRADUATES.

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ABSTRACT

The impact of cancer on patients, care givers and family could be extremely traumatic, yet predisposition to the disease could be curtailed. Excess fat and calories; inadequate intake of fruits, vegetables, fibre, calcium and other dietary imbalances as well as alcohol, smoking and chronic infections are essential cancer aetiological factors. The purpose of this study was therefore to determine the association between perceived role of dietary factors in cancer causation and prevention. The cross sectional study adopted an exploratory survey technique. It took place in the University of Ibadan, Ibadan, Nigeria. Using multi-stage sampling, 346 undergraduates whose ages ranged between 20 and 30 years participated. They responded to a 51-item questionnaire which tapped information on their demographic characteristics, knowledge of cancer, awareness about dietary factors in cancer causation and prevention, and perception of the role of dietary factors in cancer causation and prevention. Results showed that the respondents' level of awareness of cancer was generally high (91.9%) with few differences across demographic characteristics. However, the relative importance of the relationship between cancer and diet was underestimated (37.3%), and 12.1% of them completely missed the correct cancer risk factors. Similarly, 92 participants (16.6%) believed that cancer is a supernatural disease that cannot be prevented. One hypothesis was tested using chi square, it revealed that there is a significant association between awareness of cancer and knowledge of the role of dietary factors in cancer causation and prevention (X^2= 50.24, df = 2, p= 0.001). With the relatively high degree of awareness of cancer and acceptance of dietary factors as cancer risk determinants, campaigns which involve skill transfer and removal of barriers to change would enhance cancer preventive behaviour among university undergraduate. It is recommended that improvement in health education through inclusion of contents related to cancer causes, prevention and management, as well as social support programmes including subsidized cancer-limiting feeding of undergraduates would be necessary in cancer prevention.

Key words: *Perceived role, dietary factors, cancer causation, prevention, undergraduates.*

INTRODUCTION

Cancer is a major health challenge in all populations, hence the world Health Organization (WHO,1990) identified cancer as one of the four major health problems confronting mankind this century; and reported that over 50% of cancer victims live in the poorer nations, which have less than 10% of the resources for cancer care and control. Every year, 1.2 million people are diagnosed with cancer globally and more than 500,000 people die from the disease. According to the National Cancer Institute, over 30% of these deaths can be attributed to diet (National Cancer Institute, 1997). This means that the average person can greatly lower his risk of getting cancer simply by changing his diet (Iverson, 2003), and stopping smoking (Hogbin, Lyon, and Davis, (2003).

Despite widespread campaigns to decrease the incidence of cancer, three things have been obvious for many years; cancer is increasing in resource limited settings at a rate of more than one percent per year. First, cancer is a very serious and common disease and there is something in the environment that promotes it (Counselling Sheets, 2002, Valsecchi, Steliarova-Foucher, 2008). Second, literature provides clear evidence that action on smoking, diet and infections can prevent one third of cancers; and third, healthy lifestyles and public health action by governments and health practitioners could stem this trend, and prevent as many as one third of cancers worldwide (The World Cancer Report, 2008, Kritchevsky, 2003; Polednak, 2003; Yoo, Park et al.; 2001, Vainio and Bianchini, 2002, Mettlin, 1987).

With increasing wealth and industrialization, many countries undergo rapid lifestyle changes that greatly increase their future cancer disease burden (International Agency for Research on Cancer, IARC, 2008). The Registry report also calls for effective and carefully evaluated school education programmes for tobacco abstinence and healthy eating habits especially because very few countries currently have effective education programmes. There is therefore a strong justification for focusing cancer prevention activities particularly on two main cancer-causing factors; tobacco and diet. Because these factors were responsible for 43 percent of all cancer deaths in sub-Saharan Africa (IARC, 2008).

One third of Nigeria's population of 148 million (World Population Data Sheet, 2008), are youths between the ages of 15 and 24years. Further, by 2025, the number will exceed 57 million (National Population Bulletin, 2000). Undergraduates in tertiary educational institutions form a significant percentage of these youths and are fond of eating "junks" with excessive fat, fried foods and snacks just to mention a few due to lack of time to prepare healthy foods, and limited resources in procuring health-enhancing foods in form of raw fruits and vegetables (Paraskevi & Russell, 2008, Canadian Paediatric Society, (CPS), 2001, Maheux, Pinault, Lamberty, Beland,

and Berthiaume). Chances are therefore high that young people also have a few cancer cells lurking in their body. As a result of this, anticancer diet should be emphasized from childhood since cancer cells develop very slowly over decades and may not be detected until decades later.

Similarly, food fads are common among undergraduates and this leads to nutrient imbalance in their diet. There is evidence that patterns set in adolescence regarding food preferences; physical activity and even smoking continue into adult years (Texas Cancer Data Centre, 1999). Some dietary factors probably or possibly decrease or increase the risk of cancer incidence. Therefore, it is important to be sure that the populace including undergraduates, know the important role of dietary factors in cancer causation and prevention. Hence, there is a dire need to determine the perceived role of dietary factors in cancer causation and prevention among University of Ibadan undergraduates.

Statement of the Problem
Cancer accounts for 7.1 million deaths annually among the 20 million people suffering from it. This figure is projected to rise to 30 million within 20 years. Dietary factors such as fats (Allen, Key, Appleby, and Travis, 2008; Holmes and Willett, 2004) are known to account for about 30% of all cancers in western countries and approximately 20% in developing countries (WHO, 2003). For example, a variety of breast cancer risk factors pertain to a woman's adolescence and may be related to nutritional influences in form of westernization of food choices and consumption. But the pertinent question is, what is the perceived role of dietary factors in cancer causation and prevention among undergraduates?

Purpose
This study seeks to determine the perceived role of dietary factors in cancer causation and prevention among University of Ibadan undergraduates.

Research Questions
1. What is the level of awareness of study participants of the occurrence of cancer?
2. What are their sources of information?
3. What is the association between perception about the role of dietary factors in cancer causation and prevention?

Hypothesis
There will be a significant association between undergraduates' perceived role of dietary factors and cancer causation and prevention among university undergraduates.

Method

Design

This is a cross sectional study which adopted an exploratory survey technique to assess the perceived role of dietary factors in cancer causation and prevention.

Setting

The study was carried out at the University of Ibadan. The University campus is located in Ibadan, south-Western Nigeria. It is the premier tertiary institution in the country with focus on undergraduate and postgraduate education. It was established in 1948, with 13 faculties at date.

Participants and sampling

Undergraduate students in all the Faculties participated. Each of the 13 Faculties were clustered. From each of the clusters, 30 willing students were purposively selected, cutting across all the departments in each of the faculties. A total of 390 students therefore participated.

Of the 390 questionnaires distributed only 346 (88.7%) were correctly filled and fit for analysis. Their age ranged between 20 and 30 years with a mean age of 23years.

Instrument

A 51- item self report questionnaire consisting of close and open-ended questions following literature search and consultation of experts in the field was developed and validated using face and content validity. It comprised of 5 sections as follows:

Section A tapped information on demographic data. Section B which had 6 items was designed to obtain information on general knowledge about cancer. It had a split-half reliability of .78 for part 1, .82 for part 2 and a Cronbach alpha of .80. The mean score on knowledge was N346, X=36.42, SD=1.43. Section C contained 23 items which tapped information on knowledge about dietary factors in cancer causation and prevention. It yielded a split half reliability of .69 for part 1, .75 for part 2 and a Cronbach alpha of .71. The mean score was N346, X=23.37, and SD=.2.62. The 14-item Section D was used for gathering information on perception of the role of dietary factors in cancer causation and prevention. The subscale yielded a split half reliability of .56 for part 1, .63 for part 2 and a Cronbach alpha of .57. The mean score on the section was N346, X= 33.30, and SD=3.42.

Permission to conduct the study was granted by the Department of Nursing in the University. Participants were informed of the purpose of the study and its potential contribution to knowledge. Privacy and confidentiality of their responses and persons were assured in conducting the research. Anonymity was also assured. They were informed of their freedom to withdraw at any stage of the study without any negative consequence. The opening page of the questionnaire essentially also

contained informed consent issues, and signature to authenticate authority to be included in the study.

Data collection procedure

Each of the Faculties in the University was visited. In each Faculty, 30 questionnaires were personally distributed by the researcher accidentally across all departments after seeking and obtaining permission from potential participants. Completion of the questionnaire took an average of 30 minutes, and immediately retrieved. Returned questionnaires were coded and analyzed using the SPSS statistics software.

Data Analysis: Descriptive statistics involving frequencies, percentages, mean, and standard deviation were computed to obtain information about the socio-demographic data. Further, Chi-square analysis was computed to show the association between pertinent related variables. Calculations were done at 0.05% level of significance. These were presented in Tables and graphs as shown in the results section.

Results

Table 1. *Demographic Characteristics of Respondents*

		Frequency	Percentage (%)
1.	Age (Years)		
	≤=20	126	36.4
	21-25	167	48.3
	26-30	40	11.6
	Total	346	100
2.	Marital status		
	Single	329	95.1
	Married	17	4.9
	Total	346	100
3.	Tribe		
	Yoruba	245	70.2
	Ibo	73	21.7
	Hausa	1	0.3
	Others	27	7.8
	Total	346	100
4.	Sex		
	Males	202	58.4
	Females	144	41.6
	Total	346	100

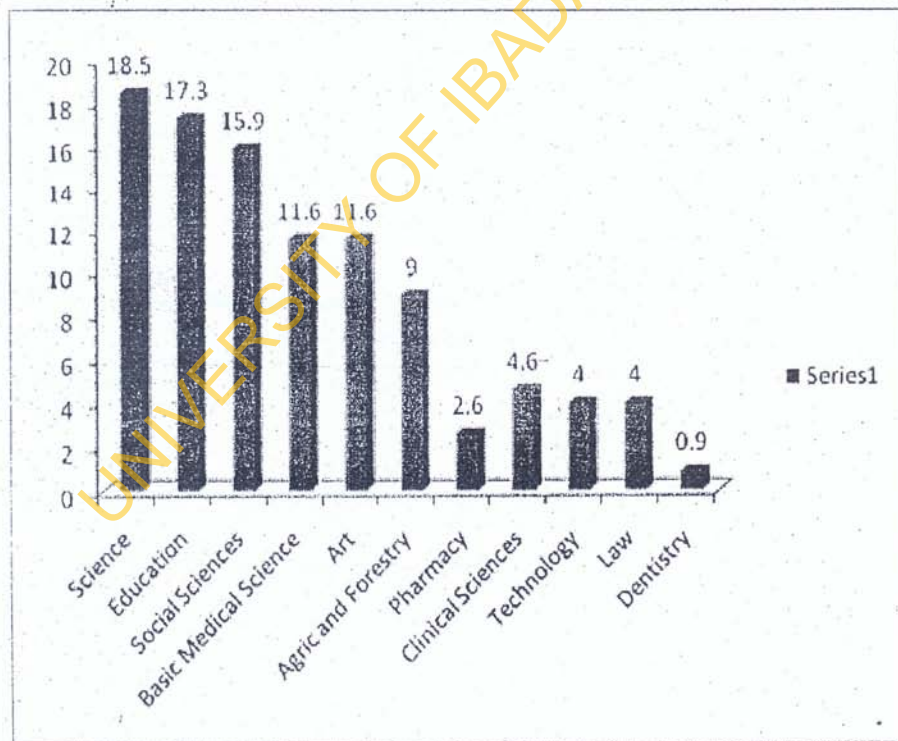| 5.	Religion		
	Christianity	307	88.7
	Islam	36	10.4
	Traditional	1	0.3
	Others	2	0.6
	Total	346	100
6.	Level of Study		
	100	134	38.7
	200	113	32.7
	300	59	17.1
	400	32	9.2
	500	8	2.3
	Total	346	100

Figure 2. *Distribution of respondents by Faculty*

Table 2. *Respondents' awareness about cancer, its causes, risk factors and relationship between diet and cancer.*

	Variable		Response	
	Yes	%	No	%
Have heard of cancer	318	91.9	28	8.1
Causes / risk factors	304	87.9	42	12.1
Parts of body affected	312	90.2	34	9.8
Relationship between cancer and diet exist	217	62.7	129	37.3
Average	288	83.2	58	16.8

Table 3. *Respondents' on sources of information about cancer*

Sources of information	Frequency	Percentage
Friends	102	29.5
Parents	25	7.2
Nurses	7	2.0
Doctors	33	9.5
Newspaper	62	17.9
Television	91	26.3
Posters/Handbills	4	1.3
Others	22	6.4
Total	**346**	**100**

Table 4. *Respondents knowledge of food, Nutrition, Method of Food Preservation and Preparation and Cancer*

Knowledge	Frequency	Percentage
Low	41	11.85
Average	114	32.95
High	191	55.20
Total	**346**	**100**

Table 5. *Perception of Respondents about Role of Dietary factors inCancer Causation and Prevention*

Items / Questions on variables	Right		Wrong	
	Frequency	%	Frequency	%
1. Diet has effect on cancer	197	56.9	149	43.1
Modifying diet is not a priority now	147	42.5	199	57.5
2. Wish to have more knowledge on dietthe relationship between diet and cancer	280	80.9	66	19.1
3. Believes that diet has a relationship with cancer	213	61.6	133	38.4
4. Diet only can prevent cancer	161	46.5	185	53.5
5. Cancer is a supernatural disease & cannot be prevented	254	73.4	92	26.6
6. Maintaining body weight reduce cancer risk	72	20.8	274	79.2
7. Fears that anything causes cancer	204	58.5	158	41.5
Wishes to make changes in diet to reduce cancer risk	188	54.4	158	45.6
8. Belief in no restriction in lifestyle habits including diet to reduce cancer risk	239	69.1	107	30.9
9. Believes cancer affects only old People	288	83.2	58	16.8
10. Believe cancer is a spiritual Phenomenon	276	79.8	70	20.2
11. Perceives nothing can be done at the present to prevent future occurrence of cancer	280	80.9	66	19.1
12. Perceives only affluent can have a cancer	283	81.8	63	18.2
13. Perception of effectiveprevention of cancer through combined therapy including diet	215	62.1	131	37.6

Table 6: *Chi-square analysis showing the association between awareness of breast cancer and knowledge of the importance of dietary factors in cancer causation and prevention.*

Awareness of cancer causation and prevention	Knowledge of the importance of dietary factors							
	Low		Average		High		Total	
	Freq.	%	Freq.	%	Freq.	%	Freq.	%
Low	24	6.94	13	3.37	4	1.16	41	11.85
Moderately aware	25	7.23	23	6.65	66	19.08	114	32.95
High level of Awareness	26	7.51	48	13.87	117	33.82	191	55.20
Total	75	21.68	94	24.28	187	54.06	346	100.0

Chi-square Test for Equal Proportions. N346, X^2 = 50.24, Df = 2, P = 0.001.

Table 6 above shows that 6.94% of respondents with low level of knowledge of the role of dietary factors in cancer had low level of awareness of cancer causation and prevention. 66, i.e. 19.08 % of those with high level of knowledge of the importance of dietary factors were moderately aware of cancer causation and prevention. Most of the respondents with high level of awareness of cancer (N117) also had a high level of knowledge of the role of dietary factors in cancer causation and prevention. The Chi-square Test for Equal Proportions shows N346, X^2 = 50.24, Df = 2, P = 0.001. This means that there is a significant association between awareness of breast cancer causation and prevention and knowledge of the importance of dietary factors. The hypothesis is therefore supported.

Discussion

This study sought to assess undergraduate students' level of awareness of cancer, determine their knowledge of the role of dietary factors in the causation and prevention of cancer, and find out their perception of the role of diet in cancer causation and prevention.

Most of the participants in this study are youths, showing the relevance of this study to them. Figure 2 revealed that Faculties of Science and Dentistry had the highest (18.5%) and least (0.9%) participants respectively. This could be as a result of the differentials in the enthusiasm shown by students in the Faculties during enrolment for participation in this study.

The high level of awareness of cancer shown by the respondents could be due to the peculiarity of the population of study. University undergraduates are expected to be exposed to knowledge in various fields. Also, a look at the participants' profile reveals that many of them are enrolled for health and clinical studies during which

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information about cancer would have been part of their course content. However, 37.3% of the respondents did not see any relationship between diet and cancer, contradicting the outcome of similar studies done earlier, where a relationship was observed between diet and cancer; and in some other cases, a relationship between high fat and other dietary intake and an increased risk of cancer (Valsecchi, Steliarova-Foucher, 2008, Allen, Key, Appleby, and Travis, 2008; Holmes and Willett, 2004). The fewer participants could also have failed to appropriately apply their knowledge about cancer to cancer causation and prevention.

Table 3 revealed that of the 8 possible sources of cancer information, awareness through friends was the mean by which most of the respondents (102, i.e. 29.5%) became aware of cancer. This shows the importance of peer education in children and teens as buttressed by a study in British Columbia's Children's Hospital, Vancouver, (Goodell, 1984). The next highest source of information to respondents was television (26.3%) revealing the importance of media in disseminating health information. This is further confirmed by the fact that 62 respondents (17.9%) got to know about cancer through Newspapers. However, doctors were a relatively irrelevant source of information (9.5%) to respondents and worst still, the nurses only contributed 2.0 percent to the source of information on cancer to the respondents. This is contrary to the expectation of the role of health professionals especially nurses as highly credible source of information; and in an advantageous position to disseminate health related information as posited by Maheux, Pinault, Lamberty, Beland, and Berthiaume, (1989) and Canadian Paediatric Society, CPS (2001).

On respondents' level of knowledge of the role of dietary factors in cancer causation and prevention. Table 4 revealed that undergraduates know the type of food, and method of food preservation and preparation that decrease or increase cancer risk. This shows the interest young people especially undergraduates, have in how diet affects their cancer risk. Increased knowledge predicts greater adherence to safe diets in adolescents as found in an earlier study among adolescents (Paraskevi, Janice and Russell, 2008).

In eliciting the perception of undergraduates about the role of dietary factors in cancer causation and prevention. It was revealed that health workers including nurses and physicians still have the responsibility of continuously enlightening the public including undergraduates about diet and cancer as revealed in the outcome of other related studies (Maheux, Pinault, Lamberty, Beland, and Berthiaume, 1989, and CPS, 2001).

Table 5 reveals that 56.9 percent of the respondents claim to know that diet has an effect on cancer but 42.5 percent indicate that they cannot regulate their diet now; until when they start working. This might be related to the perception in resource limited settings that eating diet composed of fresh vegetables and fruits is fairly

expensive and relatively unaffordable. A very large percentage (80.9%) of respondents desired higher level of knowledge about how cancer can affect their risk for cancer; which shows their interest and willingness to learn more about the concept. On the contrary, 61.6% of the respondents stated that they did not believe that cancer has a relationship with diet; in disagreement with the work of experts like Iverson (2003) and Mettlin et al. (1987). This presents the serious need for raising the awareness of undergraduates on this vital issue.

Table 5 also shows that 161 i.e. 46.5% of the respondents do not think that diet alone can cause cancer, which is true. However majority, 185 (53.5%) of them have the wrong perception that only cancer is exclusively caused by unhealthy dietary practices. Similarly, majority (73.4%) of the respondents according to item 6 in Table 5 believe that cancer cannot be prevented because it is supernatural. This could be a reflection of the myths and misconceptions about many terminal diseases held in many south western Nigerian communities. Surprisingly, the academic exposure of the participants has not influenced their attitude to myths and misconceptions. In the same vein, Item 7 of Table 5 shows that more than half (56.1%) of the respondents disagreed with watching their weight in order to reduce cancer risk which suggests an erroneous perception that overweight may not have a bearing on cancer risk. Contrary to the perception of the participants, several studies have shown that over the last two decades, the incidence of obesity and overweight has been steadily rising among adults, teenagers and children. Most of these studies have related lack of physical activity with obesity and risk of coronary heart disease, stroke, high blood pressure, and diabetes. Obesity also increases the risk of cancers of the breast (postmenopausal), endometrium (the lining of the uterus), colon, kidney, and esophagus (Vainio and Bianchini, 2002; Cui, Whiteman, and Flaws, 2002; Petrelli, Calle, Rodriguez and Thun 2002). Hence many related researches concluded that avoidance of weight gain can lower the risk of cancers of the breast (postmenopausal), endometrium, colon, kidney, and esophagus. As a result, regular physical activity have been recommended as it lowers the risk of colon and breast cancers (Friedenreich, 2001; Kritchevsky, 2003; Polednak, 2003; Yoo, Park et al.; 2001).

It is surprising to note in response to the self report questionnaire that (69.1%) of the respondents are not willing to make attempts to live a healthy lifestyle to prevent cancer as shown in item 10 of Table 5. Contrary to general misconception in the society, 73.2% of the respondents do not believe that cancer affects only old people, implying that they accept the fact that youths are also susceptible. This shows their perceived susceptibility.

Item 12 of Table 5 reveals that most of the respondents (80.9%) do not think they can do anything presently to reduce their probability of having cancer in the future. This contradicts the findings in a study which affirmed that the habits that will

affect health in the future are formed early in life (Texas Cancer Data Centre, 1999). The respondents' opinion that combined integrated therapy which include good nutrition and smoking cessation would be effective in preventing cancer suggests the possibility of perceiving an appropriate means of cancer prevention. This is true in the context of another United Sates based report (Hogbin, Lyon, and Davis, (2003).

One hypothesis was tested in line with the research questions. The hypothesis was to ascertain the significant relationship between the respondents' level of awareness of cancer and knowledge of the role of dietary factors in cancer causation and prevention. Table 6 shows that 6.94% of the respondents with low level of knowledge of the role of dietary factors had low level of awareness of cancer causation and prevention. Similarly, 19.08% of those with high level of knowledge were moderately aware of cancer causation and prevention, and 33.82% of those with high level of knowledge of the role of dietary factors had high level of awareness about cancer causation and prevention. The results imply that most of the respondents with high level of awareness of cancer also had a high level of knowledge of the role of dietary factors in cancer causation and prevention. This corroborates other findings as reported in literature (Paraskevi, Janice and Russell, 2008). From this, it is affirmed that there is an association between awareness of cancer and perception knowledge of the role of dietary factors in cancer causation and prevention. However, the small sample size for this study occasioned by a workers' industrial action during data collection limited its genalizability, hence the suggestion for a future study with larger sample size.

Conclusion

This study examined the knowledge and perception of the undergraduates in this study, towards the role of dietary factors in cancer causation and prevention. It reveals the interaction and social impacts of some factors such as: cancer awareness, eating habits, accessibility and affordability of safe and health promoting foods. The discussion of the findings highlighted that undergraduates have heard about cancer, have correct knowledge of the risk factors and causes of cancer but despite their level of knowledge, majority of them have a wrong perception of the role of dietary factors in cancer causation and prevention.

Adoption of healthy dietary habits such as eating fresh vegetables and fruits and avoiding fatty foods in order to reduce cancer risk among undergraduates can be reinforced through improved information related to health promoting feeding practices. Similarly, social support in form of food subsidies, and feeding allowance by responsible governments will not only reduce predisposition to cancer, but also the attendant bio-psycho social impacts of cancer. Without this, the current global drive for reducing the growing scourge of cancer will be a mere gimmick.

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