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Inside:

- Knowledge of Cervical Cancer, Screening and Willigness to Invest in Periodic Screening by Market Women in Enugu.
- Palliative Care for Cancer Patients
- Cancer and Nutrition
- Burden and Risk Factors for Hypertension among Secondary School Teachers in Enugu Metropolis.
- Psychosocial Effects of Overcrowding
- Maximizing Your Memory

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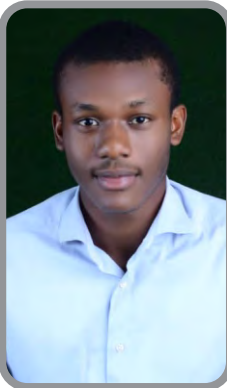
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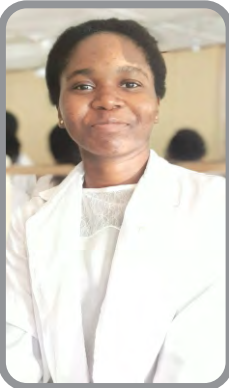**Favour Martins**
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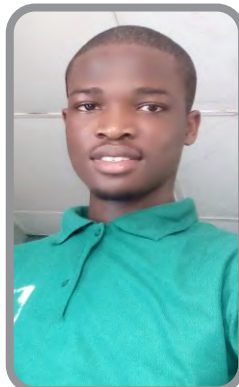Research Editor II

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MEDIKKA is a recognized, peer-reviewed annual international medical journal published in English language by the University of Nigeria Medical Students' Association (UNMSA) at the College of Medicine.

The following categories of manuscripts are accepted for publication:-
Research Articles: Original research concerning any aspect (e.g. aetiopathogenesis, epidemiology, diagnosis, management and prevention) of disease. Animal research contributions of relevance to human health are also welcome. Abstract required. (Maximum 4,000 words).

Review Articles including meta-analyses: Detailed systematic and critical evaluation of the literature on a specified clinical problem. Reviews should include information such as type of studies and the selection process. (Maximum 3,500 words).
Short Communications and Case Reports: These may be unique case reports, clinical experiences and short reports of original research. (Maximum 1,500).
All articles are subjected to peer-review by the MEDIKKA Board of Editorial Consultants and/or invited assessors.

MANUSCRIPT REQUIREMENTS: Manuscripts must be in accordance with the Uniform Requirements for Manuscripts submitted to Biomedical Journals published by the International Committee of Medical Journal Editors (ICMJE).www.icmje.com.
Papers should be type-written (original copy) with double spacing throughout, except for quotations. On a sheet separate from the text, the following should be typewritten:
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EDITOR'S NOTE

Learning is an unending activity. Kenneth Blanchard stated that, 'When you stop learning, you stop growing.' This statement holds true in all areas of life. One must intentionally take steps to learn so as to grow and not lose relevance. In keeping with this commitment to learn, to know and as a result to grow, MEDIKKA, the journal of the University of Nigeria Medical Students Association (UNMSA) was established in 1975. Previous journals have featured various mainstream issues as theme over the past years.

This year's edition is dedicated to the burden of cancer in Nigeria and emerging issues in management of cancer patients. It is also aimed at giving hope to cancer patients and oncology teams that manage such patients.A diagnosis of cancer is not to be seen as a death sentence which must end up as a sad story.Sadly, this is the case in most places especially in developing countries. Much effort is however being put in both locally and internationally to change the story. One may not be able to predict when the scourge of cancer will be fully contained but hope must be kept alive. Progress has indeed been made for example in early diagnosis and treatment of cervical cancer. Gradually more progress can and will still be made in other areas as long as unrelenting effort is put in.

I immensely appreciate the leadership of the University Of Nigeria Medical Students' Association (UNMSA) for giving me the opportunity to serve the association as the editor-in-chief. I appreciate Dr Young Ekene, the staff editorial adviser for the year 2019, for her time, counsel and commitment to the publication of this journal. I appreciate the University of Nigeria College of Medicine Alumni (UNCOMA), North America for the magnanimous financial support given to us.I am grateful to Prof Uche Nwagha, the provost, College of Medicine for the fatherly role he played. My heartfelt gratitude also goes toProf Bond Anyaehie, the deputy provost, College of Medicine, Dr Francis Chukwuani and Dr Kene Mezue.I acknowledge Prof S.O. Ekenze, our amiable dean. Many thanks to Prof and Prof (Mrs) H. U. Ezegwui.

I appreciate, on a special note, all the members of the editorial board for the effort put in towards the production of this year's journal. I appreciate every other individual and organisation that has contributed financially and otherwise towards the successful ofpublication of this journal. All thanks to God Almighty.

Anuli Ezegwui
Editor-in-Chief,
Medikka 2019 Edition.

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KNOWLEDGE OF CERVICAL CANCER, SCREENING AND WILLINGNESS TO INVEST IN PERIODIC SCREENING BY MARKET WOMEN IN ENUGU

Authors: Dr. Ibeleme Okezie; Dr Ezike Adanna; Dr Ezike Chinweizu;Dr Eze Chidiebere

ABSTRACT

Background: Carcinoma of the cervix is the commonest malignancy of the female genital tract in the developing countries and second-most common cancer in women worldwide after breast cancer. The aim of this study was to determine the knowledge of cervical cancer, screening, and willingness to invest in periodic screening by market women in Enugu State.

Methodology: Consecutive women who gave informed consent were recruited from Ogbete and Akwata markets in Enugu. An interviewer administered questionnaire was used to obtain relevant information including their knowledge and awareness of cervical cancer screening and risk factors for cervical cancer. Data was analysed using SPSS V 23 and a p value of <0.05 was considered significant.

Results: There were 382 women, who were mostly aged 21-25years. Only 118(30.9%) had heard about cervical cancer screening, while 11.3% were aware that they could be screened. Younger age and higher educational level was significantly associated with better knowledge and screening practices.

Conclusion: there was generally low awareness about cervucal cancer in the women.

INTRODUCTION
1.1 Background

Carcinoma of the cervix is the commonest malignancy of the female genital tract in the developing countries and second-most common cancer in women worldwide after breast cancer1,2. Women in developing countries suffer disproportionately from the burden of cervical cancer and account for over 80% of cases3.

It was reported in 2007 that 36.59 million women aged 15years in Nigeria are at risk of developing cervical cancer. There are 9922 cases diagnosed annually with 8030 deaths. The human papilloma virus prevalence is 24.8% while the incidence of cervical cancer in Nigeria is about 250/100,000 women5.

Cervical cancer is one of the leading causes of death among the female population6. In 1941, due to the location and relative ease of accessibility of the cervix, Papanicolaou and Traut introduced exfoliative cytology as a means of early screening of premalignant lesion which invariably prevent progression to carcinoma following treatment7.

Market women constitutes a crucial group and economic driving force in the country and therefore it is important to ascertain if the knowledge of cervical cancer, screening, and inability to invest in periodic screening by this group is associated with certain socio-

demographic and socioeconomic factors6. Cervical cancer is commoner in Northern part of Nigeria due to some sociocultural practices of early marriage and onset of sexual activities: and economic factors favour the disease12. The major setback to cervical cancer management in Nigeria is late presentation. This has led to high mortality rates. The risk of transmission is high among women of childbearing age, hence of public importance. It was reported to be the most common cancer among female population in Nigeria16,17. Studies have shown that the burden is almost 80% in developing countries like Nigeria3. Cancer is responsible for about 51 million deaths yearly out of which cervical cancer accounts for 8.5% of cases in developing countries18. In 2008, it was estimated that half a million new cases and 274,883 deaths occurred and about 86% of these cases occurred in developing countries19. Despite the prevalence and burden of cervical

cancer worldwide with almost 80% mortality in developing countries like Nigeria, only 52% of Nigerian women were aware of the disease20.

The morbidity and mortality are very high in late diagnosis which is the norm here in our country. It affects most of the women of childbearing age hence increasing the rate of early death among women. It has been reported that each year approximately 10,000 women develop cervical cancer and about 8,000 women die from the disease21. In African countries, for the mortality of cervical cancer by absolute numbers, Nigeria was the highest followed by Ethiopia22. It causes death in younger women when they are economically productive and very useful to their families23. It is a public health scourge that present a serious burden on the patient, family, occupation, community and therefore deserves more attention24.

The result of the research conducted by obstetrics and

gynaecology lecturers in Enugu showed that improved awareness of pap smear may not affect its use in Nigeria if other issues like availability is not addressed25.

1.3 Objective
To determine the knowledge of cervical cancer, screening, and willingness to invest in periodic screening by market women in Enugu State

METHODOLOGY
3.1 Study Area
The study was carried out among women in Ogbete and Akwata markets in Enugu. The religious practice of dominance is Christianity with a mixed population of Islamic worshippers in its Nsukka axis65. Akwata and Ogbete markets lie within walking distance to each other with a largely female population. These markets can be assessed through more than four routes lying within the heart of Enugu city and serves as its major commercial hub.

3.2 Ethical Clearance
Ethical clearance was obtained from the University of Nigeria Teaching Hospital ethical committee. Participants were made to understand

the nature and purpose of the study and reassured that their identities would be adequately protected. Verbal consent was then obtained before administration of the questionnaire.

Sampling
Consecutive recruitment of all consenting women in the market was done. An interviewer administered questionnaire was used to obtain relevant information about socio-demographic characteristics and their knowledge and attitude about cervical cancer.

RESULTS
A total of 382 women completed the study. Their age distribution and other socio-demographic characteristics is as shown in Table 1below.

Table 1: Sociodemographic Characteristics of Respondents

Age (years)	Frequency	Percentage
21-25	104	27.2
26-30	75	19.6
31-35	56	15.4
36-40	54	14.1
41-45	26	6.8
46-50	23	6.0
51-55	15	3.9
56-60	21	5.5
61-65	3	0.8
No response	1	0.3
Total	**382**	**100.0**

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Mean Age: 33.99 10.89yrs		
Marital Status		
Single	139	36.4
Married	227	59.4
Widowed	14	3.7
Divorced	0	0.0
Separated	0	0.0
No response	2	.5
Total	**382**	**100.0**
0	155	40.6
1	27	7.0
2	41	10.7
3	26	6.8
4	37	9.7
>4	85	22.3
No response	11	2.9
Total	**382**	**100.0**

No formal education	10	2.6
Primary	42	11.0
Secondary	206	53.9
Tertiary	121	31.7
No response	3	0.8
TOTAL	**382**	**100.0**
Ethnicity		
Igbo	377	98.7
Hausa	1	0.3
Yoruba	1	0.3
Others (TIV, Edo, Ibibio)	3	0.7
TOTAL	**383**	**100.0**
Religion		
Christianity	380	99.4
Muslim	1	.3
Traditional	1	.3
Total	**382**	**100.0**

The women were asked about their knowledge of cervical cancer and cervical cancer screening. Only 118(30.9%) had heard about cervical cancer, of which 30(25.2%) heard about it from a health facility (Table 2, Fig 1.). Their knowledge of the method of transmission was also ascertained and is outlined in Table 3 below.

Table 2: Awareness of cervical cancer and sources of awareness

Factors	Frequency	Percentages
Awareness Yes	118	30.9
No	263	68.8
No response	1	0.3
TOTAL	**382**	**100**
Source (n=119)		
Television	24	20.2
Radio	16	13.4
News	6	5.0
Health care facility	30	25.2
Enlightenment Programs	11	9.2
Friends	24	20.2
Others	5	4.2
No response	3	2.5
TOTAL	**119**	**100**

Awareness of cervical cancer

- Aware (30.9%)
- Not Aware (68.8)
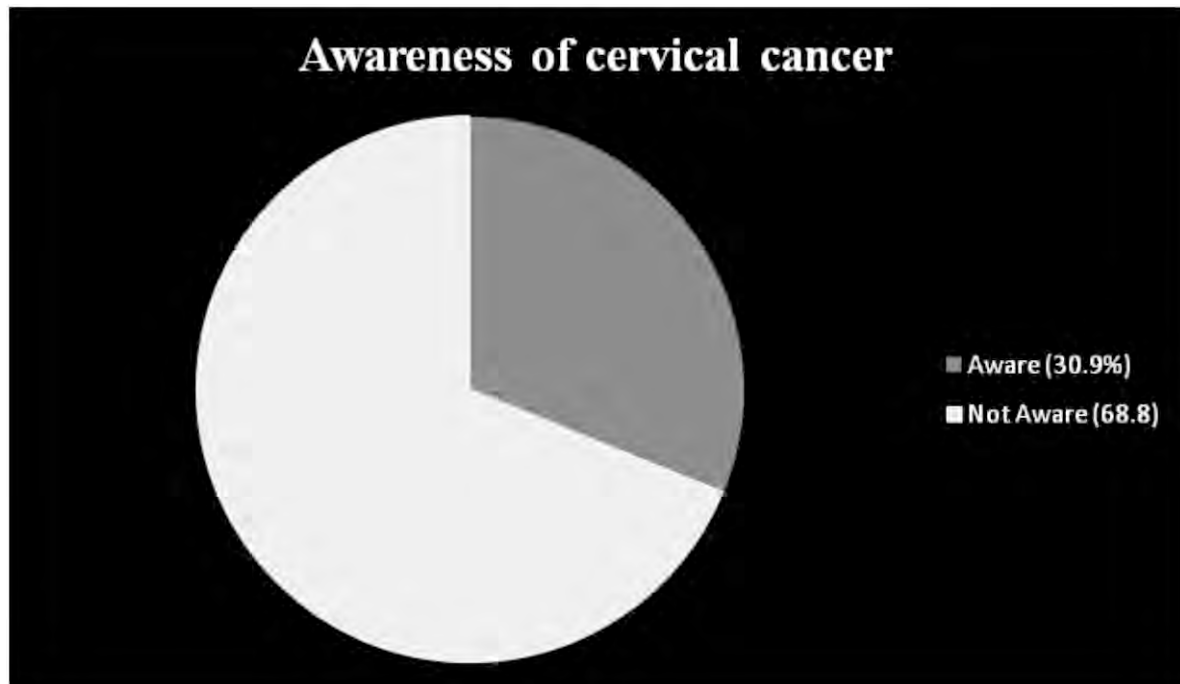
Figure 1: Piechart showing the respondents awareness of cervical cancer

Source of awareness n=119

frequency

Television (20.2%): 24
Radio (13.4%): 16
News (5.0%): 6
Health Care Facility (25.2%): 30
Enlightenment Programs (9.2%): 11
Friends (20.2%): 24
Others (4.2%): 5
No response(2.5%): 3
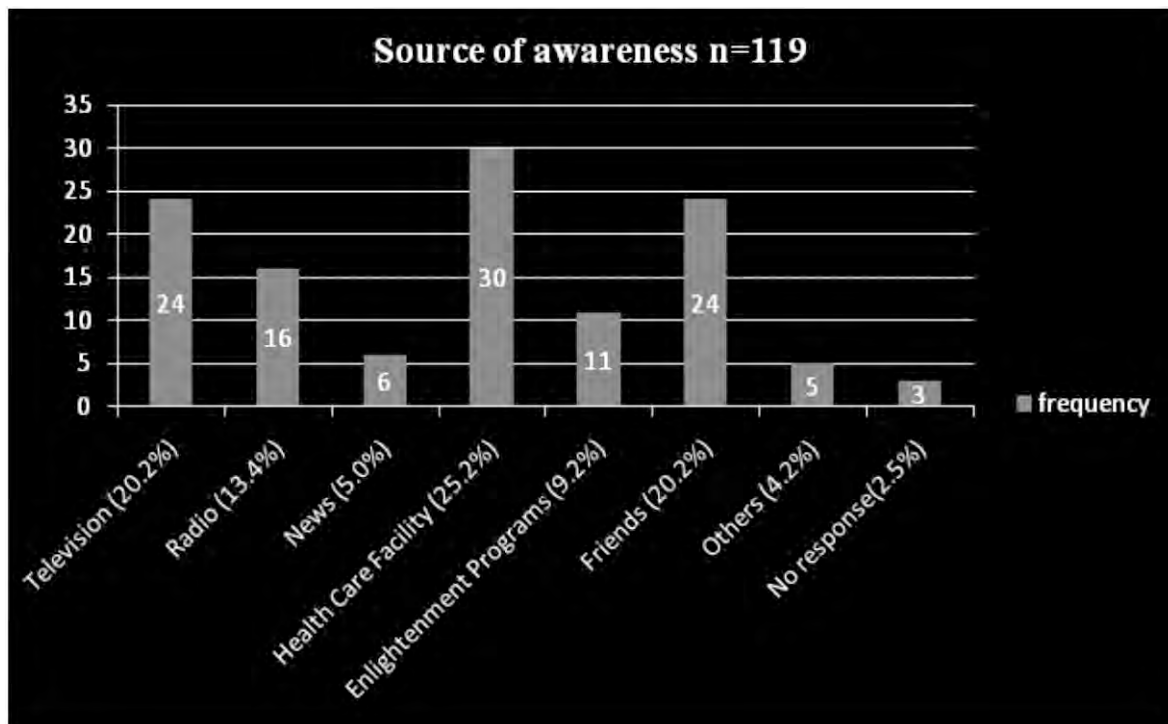
Figure 2: Showing respondents source of awareness on cervical cancer

Table 3: Knowledge of Method of Transmission

Factor		Frequency	Percentage
Sexually	Yes	29	7.6
	Don't know	353	92.4
TOTAL		**382**	**100**
Kissing	Yes	2	0.52
	Don't Know	380	99.47
TOTAL		**382**	**100**
Sharing sharps	Yes	1	0.03
	Don't Know	381	99.7
TOTAL		**382**	**100**
Airborne	Yes	2	0.05
	Don't Know	380	99.5
TOTAL		**382**	**100**

Out of the 44 women who responded to questions about signs of cervical cancer, 15(34.1%) identified vaginal bleeding as a symptom, while 14(31.8%) knew that foul smelling discharge was a possible symptom. This is shown in Table 4.

Table 4: Knowledge of symptoms of cervical cancer

Symptoms	Frequency	Percentage
Vaginal Bleeding	15	34.1%
Post coital bleeds	6	13.6%
Foul smelling vaginal discharge	14	31.8%
Weight loss	9	20.5%
TOTAL	44	100%

Out of all the women, 333(87.2%) did not know that there was available screening for cervical cancer (Fig 2), while only 11.3% were aware that they could be screened for cervical cancer. For the methods of screening, 19(5.0%) knew about the pap smear, while only 4(1.1%) had heard of other screening methods.
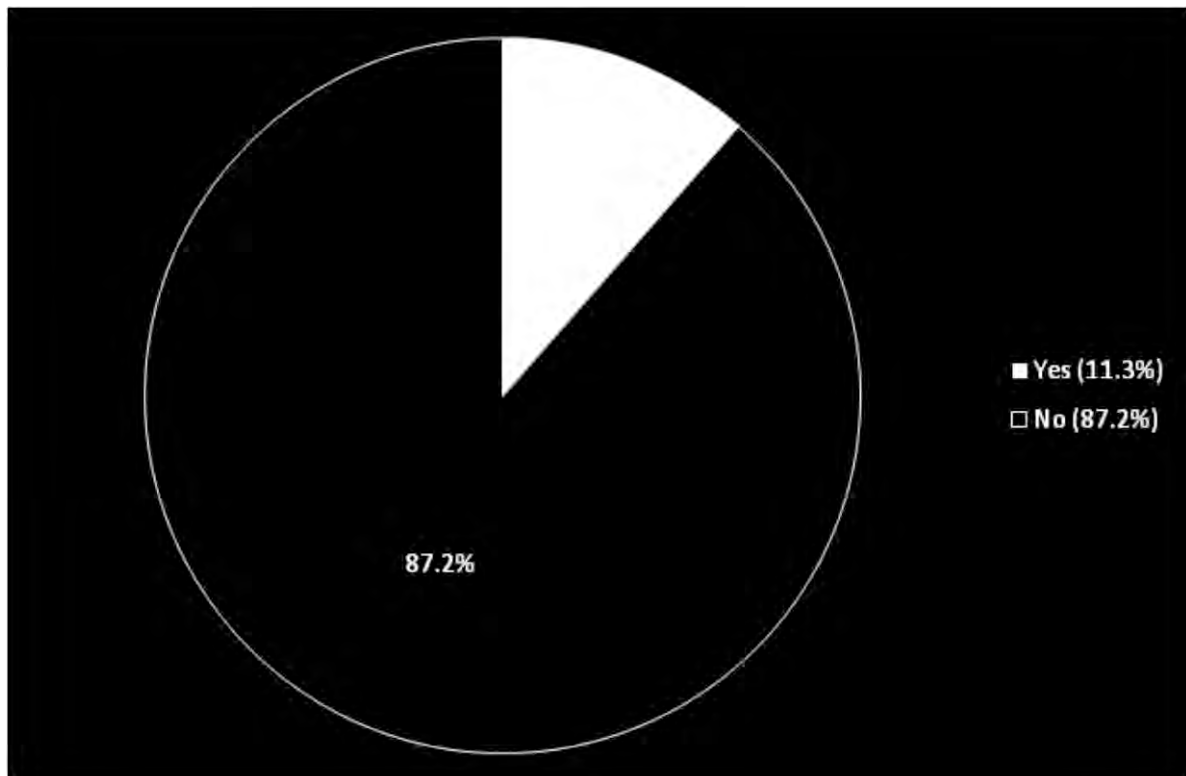
Fig 3: Pie chart showing respondents awareness on cervical cancer screening

The association between socio-demographic and socio-economic characteristics of the women and their knowledge of cervical cancer and screening was evaluated and are shown in Tables 5 and 6 respectively. Higher educational level was significantly associated with knowledge of cervical cancer and its symptoms (p<0.001).

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Table 5: Showing the association between sociodemographic factors and knowledge of cervical cancer

Factors	Knowledge of cervical cancer	Chi-square (p - value)
AGE		
21-25 years	36 (30.5%)	0.255
26-30 years	18 (15.3%)	
31-35 years	16 (13.6%)	
36-40 years	20 (16.9%)	
41-45years	12 (10.2%)	
46-50years	5 (4.2%)	
51-55years	6 (5.1%)	
56-60years	5 (4.2%)	
61-65years	0 (0%)	
>66years	0 (0%)	
No response	1 (0.8%)	
TOTAL	**119 (100%)**	
Marital Status		

Marital Status		
Single	49 (41.2%)	0.039
Married	70 (58.8%)	
Widowed	0 (0%)	
TOTAL	**119 (100%)**	
Educational Level		
No formal	2 (1.7%%)	<0.001
Primary	6 (5.0%)	
Secondary	51 (42.9%)	
Tertiary	59 (49.6%)	
No response	1 (0.8%)	
TOTAL	**119 (100%)**	

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Table 6: Comparing Sociodemographic and Socioeconomic Factors and Knowledge of Cervical Cancer Screening.

Factors	Knowledge of cervical Cancer Screening	(p-value)
Age		
21-25 years	13 (30.2%)	0.888
26-30 years	8 (18.6%)	
31-35 years	6 (14.0%)	
36-40 years	6 (14.0%)	
41-45years	5 (11.6%)	
46-50years	0 (0%)	
51-55years	3 (7.0%)	
56-60years	2 (4.7%)	
61-65years	0 (0%)	
>66years	0 (0%)	
TOTAL	**43 (100%)**	
Marital Status		
Single	28 (65.1%)	0.842
Married	15 (34.9%)	
Widowed	0 (0%)	
TOTAL	**43 (100%)**	

Educational Level		
No formal	2 (4.7%)	0.008
Primary	2 (4.7%)	
Secondary	15 (34.8%)	
Tertiary	24 (55.8%)	
TOTAL	**43 (100%)**	
Number of Children		
0	17 (39.5%)	0.591
1	2 (4.7%)	
2	4 (9.3%)	
3	4 (9.3%)	
4	7 (16.2%)	
>4	6 (14.0%)	
No response	3 (7.0%)	
TOTAL	**43 (100%)**	

Average Monthly Earnings		
5,000-10,000	11(25.6%)	<0.001
10,000-20,000	11 (25.6%)	
20,000-40,000	7 (16.3%)	
40,000-80,000	9 (20.9%)	
>80,000	4 (9.3%)	
No response	1 (2.3%)	
TOTAL	**43 (100%)**	
Do You Know of any one Diagnosed of Cervical Cancer		0<.001
YES	7 (16.3%)	
NO	36 (83.7%)	
TOTAL	**43 (100%)**	

Risk Factors of Cervical Cancer in respondents
The respondents' attitude to risk factors for cervical cancer was assessed and outlined in Table 5 below. A total of 14 women were smokers; 10 smoked 1-5 cigarettes daily, while 2 women smoked 11 -15 cigarettes daily (Table 7).

Table 7: Risk Factors for Cervical Cancer

Risk Factor	Present	Absent	No Response
Smoking	14(3.7)	363(95.0)	5(1.3)
Sexually active	279(73.0)	97(25.4)	6(1.6)
Condom Use	165(43.2)	159(41.6)	58(15.2)
No of sexual partners > 1	10(2.7)	264(69.1)	108(28.2)

252(66.0%) women said they were willing to enrol on a platform for regular reminder for cervical screening. However, as regards cost of screening, only 37.4% of the women were willing to pay 5,000 naira for screening. Those who were willing to undergo screening were significantly younger ($p<0.001$).

Table 8: Comparing Effect of Sociodemographic and Socioeconomic Factors on Practice of Cervical Cancer Screening

Factors	Practice of cervical cancer screening	Chi-square (p - value)
AGE		
21-25 years	1 (16.7%)	0.624
26-30 years	0 (0%)	
31-35 years	1 (16.7%)	
36-40 years	1 (16.7%)	
41-45years	2 (33.2%)	
46-50years	0 (0%)	

51-55years	0 (0%)	
56-60years	1 (16.7%)	
61-65years	0 (0%)	
>66years	0 (0%)	
TOTAL	**6 (100%)**	
Average monthly earnings		
N5000-N10,000	2 (33.2%)	0.387
N10,000-N20,000	1 (16.7%)	
N20,000-N40,000	1 (16.7%)	
N40,000-80,000	1 (16.7%)	
N>80,000	1 (16.7%)	
TOTAL	**6 (100%)**	
Educational Level		
No formal	0 (0.0%)	0.000
Primary	1 (16.7%)	
Secondary	2 (33.2%)	
+Tertiary	3 (50.0%)	
TOTAL	**6 (100%)**	

Table 9: Reasons for Non-Practice of Cervical Cancer Screening

	Frequency	Percentage
Ignorant of screening location	17	4.5%
Price	4	1.0%
Distance	7	1.8%
Husband's disapproval	1	0.3%
Fear of cancer detection	3	0.8%
Fear of pain during the process	3	0.8%
Ignorant of cervical screening	336	88%
Religious belief	11	2.8%
Sex of the attending physician	0	0%
TOTAL	**382**	**100%**

DISCUSSION

The total number of respondents from this research were 382 and mainly females aged between 21 and 30 totalling 179 and a combined percentage of 46.8%. This represents a largely youthful population of women. Of the number of respondents, 139(36.4%) were married and a staggering 279(73%) were sexually active. Of the 279 sexually active female respondents, 264(69.1%) had only one sexual partner and 10(2.7%) having two or more sexual partners. This represents a significant risk for the development of cervical cancer. Though not considered as a preventive method, the number of sexually active respondents that made use of condoms during sex were 165(43.2%). The recognized risk of the age at coitarche being significant for cervical cancer development was also shown in this research, as the mean age at coitarche was shown to be 23.25, highest at age 20(46%).

From our sample population, 377(98.7%) were of Igbo ethnicity and 380(99.4%) were Christians. The remaining respondents were from other ethnic groups 5(1.3%) and other religions 2(0.6%).

Comparing the findings from our work with a similar work done by Saad et al., we had in our study 118(30.9%) who were aware of cervical cancer and 263(68%) who were not aware of cervical

cancer. This is a sharp contrast from the 66.9% of persons who were aware from the study by Saad et al6. It was found also that only 43(36.1%) of those who were aware of cervical cancer were also aware of cervical cancer screening while 75(63.0%) were not aware of cervical cancer screening. Compared to a study done in Aba30 that had 16% of the total respondents who had knowledge of cervical cancer screening services, 11.3% of our total respondents where aware of cervical cancer screening representing a lower level of knowledge compared to that done in Aba.

It was also noted that only 10(2.6%) lacked formal education contrasting with the work by Saad et al 6 which had 21.2% of respondents lacking formal education. 53.9%(206) of our respondents had education up to the secondary level making up the bulk of respondents. An awareness of 30.9% found in this study is much higher than what is found in other parts of the country but less than that from similar studies from Ilorin57 69.89% and Ibadan58 70%. The poor level of awareness in this study is associated with differences in educational levels as compared to an awareness of 87% in Nnewi southeast Nigeria where a similar research was carried out by Udigwe et al31 among Nursing students. Among the respondents aware of cervical cancer, 36(30.5%) were between the ages of 21 and 25. This followed an age wise decline to the lowest being among respondents aged 56-60 which is 5(4.2%). From our sample population, 378(98.7%) were of Igbo ethnicity and 380(99.5%) were Christians. This reduced the rate of failure for cervical cancer screening uptake being attributed to religious belief, with only 11(2.9%) of women stating religion as the key barrier to screening uptake. This was slightly lower compared to the result from Ilorin57 which had 14.6% of respondents stating religious belief as key deterrent to cervical cancer screening. The majority of respondents stated lack of knowledge of cervical cancer screening 336(88.0%) as the main reason for not having done a cervical cancer screen. Fear of detection of cervical cancer as deterrent to screening was 3(0.8%) as against 19.2% from the work by Aboyeji et al57. Spousal disapproval as reason for failure to perform screening was abysmally low with only 1(0.3%) stating that as reason for failure to perform cervical cancer screening.

Multiparity as a recognized risk factor for cervical cancer29 was seen to be present in our sample group. The research showed a total of 189(49.5%) multiparous and grand multiparous women with only 21(16.21%) aware of cervical cancer screening. This being slightly higher than the result, 48% from a similar work in Zaria6.

The willingness to screen will either positively or negatively influence the outcome from mortality and morbidity associated with the performance of screening. Of the respondents seen, those between the ages of 21 and 25 expressed the highest willingness to invest in periodic screening for cervical cancer 35(24.5%). This willingness took an age wise decline being as low as 5.6% for women aged 41-45 years who are considered to be in the reproductive age group and at increased risk of cervical cancer.

CONCLUSION
Knowledge of cervical cancer was found in this study to have a direct relationship with education

just as collaborated by similar studies. There was also found a correlation with age of respondent, hence, having more of the younger respondents aware of cervical cancer. This finding might not be unrelated with availability of means of being constantly aware e.g. the internet and television.

On knowledge of screening for cervical cancer, a similar result existed. Marital status seemed to affect this positively and regardless of the relative knowledge of cervical cancer that existed, a proportionately lower number had heard of screening for cervical cancer before. This poor knowledge also negatively affected the number of respondents who had taken up cervical cancer screening.

The florid presence of risk factors like; early age at first sexual intercourse, multiparity, non-use of condom and multiple sexual partners and the disproportionately low levels of willingness to invest in periodic cervical cancer screening made the outlook poor. On the willingness, increased financial earnings did not seem to positively influence the number of persons willing to invest in periodic screening as those who earned higher monthly income where less willing to invest in periodic screening.

Generally, deterrents to screening were mainly those of knowledge and little of knowledge of screening locations and fear of detection of premalignant or malignant lesions. Religion played very little role as deterrent to screening as less persons stated it as the reason for not partaking in screening.

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PSYCHOSOCIAL EFFECTS OF OVERCROWDING:
A CASE STUDY OF STUDENTS LIVING IN THE HOSTEL OF UNIVERSITY OF NIGERIA ENUGU CAMPUS (UNEC)

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ABSTRACT
Background: The work assessed the psychosocial effects of overcrowding, a case study of students living in the hostel of University of Nigeria of Enugu Campus (UNEC). Different literatures reviewed showed that overcrowding was a major cause of psychosocial distress.

Methodology: Multistage sampling method was used to select the participants and structured closed ended questionnaires were self-administered.
Results: The result revealed that the UNEC hostels were heavily overcrowded as up to six or more students share a single room and more than 20 persons share a single toilet/bathroom. This gross overcrowding gave rise to many students having trouble with relaxation, sleeping and feeling depressed. Bad habits and social evils are also acquired in the overcrowded hostels as the study revealed.
Conclusion: It was then recommended that the school authority, the government and private corporations should join hands in building more hostels to ensure adequate conducive learning environment for the students.

INTRODUCTION
1.1 Background
The basic essentials of public health are proper housing, adequate nutrition and clean sufficient water supply. Because these factors are primary determinants of a population's health status, they have priority over all others.1 How these essential needs are enjoyed by inhabitants is dependent on the number of people sharing them together.More importantly is the need for good accommodation to ensure proper psychological and social development of man especially students who need conducive environment for better academic performance. This work therefore looks at psychosocial effects of overcrowding using UNEC students living in hostels as a case study.

According to the World Health Organization, overcrowding refers to the situation in which more people are living within a single dwelling than there is space for, so that movement is restricted, privacy secluded, hygiene impossible, rest and sleep difficult.

1.2 Statement of the problem
· The high number of people living within a single hostel puts a burden on the water resources and leads to insufficient water for consumption and hygiene which poses danger to the health.
· The toilet facilities are also burdened by the large number of people using them.
· Overcrowding inside the rooms has ripple effects on the inhabitantslike stress, inability to study, quarreling

and sometimes fighting.
· Even when a room is managed to be calm, the noise from nearby rooms still creates rowdy environment.
· At times older / stronger ones beat the younger / weaker ones as a way of venting out their general frustration.
· Within a room, there is lack of privacy. Students are exposed to and easily learn bad habits from other students like sexual perversions and drug abuse.
· Because of the large/excess population of students in the hostel, those that need special attention like the sick and the disabled are denied of that leading to their drop out in many cases.

1.3 Rationale for the study

From the literature, many researches have been done on overcrowding and its effects among people at home, refugee camps, prisons etc. but it was found out that not much study has been done on overcrowding in school hostels, particularly University of Nigeria, Enugu Campus.

More so, most of the studies done on the effects of overcrowding focused on physical and environmental effects of overcrowding. The study therefore becomes very necessary to x-ray the very important effects of overcrowding that many people do not perceive as major problem of overcrowding: the social and psychological effects.

1.4 Aim of the Study

To ascertain the psychosocial effects of overcrowding using students of University of Nigeria Enugu Campus living in hostels as a case study.

METHODOLOGY
3.1 Study Area

The study was carried out in Enugu, the capital of Enugu State of Nigeria with University of Nigeria Enugu Campus (UNEC) as the selected site.
The source of water in the hostels is from water vendors who sell in tanks and well water which dry up during dry season. The toilet facility is water closet.There is a medical centre containing about 8 beds and manned by three doctors and few nurses.

3.2 Instrument for Data Collection

The data collection was with self-administered questionnaires containing closed ended questions. These were given to the respondents after a detailed explanation of the study and confidentiality assured. The questionnaire was prepared based on some standard instruments for assessing psychosocial ailments which include:
Patient Health Questionnaire – 9 (PHQ-9), GAD-7, General Health Questionnaires (GHQ).

RESULTS

There were 375 respondents in total with their age and sex distribution outlined in Tables 1 and 2 below.

TABLE 1: Age Distribution of the Students

Age	Frequency	Percent
16-20	106	28.3
21-25	246	65.6
26-30	22	5.9
31 and above	1	0.3
Total	375	100.0

TABLE 2: Sex Distribution of the Students

	Frequency	Percent
Male	253	67.5
Female	122	32.5
Total	375	100.0

TABLE 3: Marital Status of the Students

Marital status	Frequency	Percent
Single	371	98.9
Married	3	0.8
Divorced	1	0.3
Separated	0	0
Total	375	100.0

Information on the year of study was obtained. There were 109(29.1%) in their first year of study. Others are as outlined in Table 4.

Table 4: Level of Study of the Students

Level of study	Frequency	Percentage
100	109	29.1
200	79	21.1
300	71	18.9
400	80	21.3
500	34	9.1
600	1	0.3
No response	1	0.3
Total	375	100.0

The number of persons living in a room was ascertained. The highest frequency of 40.5% was for more than 6 persons in a room. Further details are in Table 5.

TABLE 5: Number of Persons Living Per Room

	Frequency	Percent
Less than 3	31	8.3
3-6 persons	190	50.7
More than 6 persons	152	40.5
No response	2	0.5
Total	375	100.0

Various psychological factors on the effects of overcrowding were sought for. These included trouble relaxing which was reported in 212(56.5%) students, fear of something awful happening in 124(33.1%). Other responses are recorded in Table 6.

Table 6: Frequency and Percentage Distribution of the Effects of Psychological Factors on Students

Psychological Factors	No(%)		
	Negative Response*	Positive Response**	@NR
Trouble relaxing	161(43)	212(56.5)	2(0.5)
Feeling nervous or anxious	240(64)	135(36)	-
Worrying too much about different things	195(51.9)	176(47)	4(1.1)
Becoming easily annoyed or irritable	206(55)	167(44.5)	2(0.5)
Being so restless	230(61.4)	127(33.9)	18(4.8)
Not being able to stop or control worrying	253(67.5)	116(30.9)	6(1.6)
Feeling afraid as if something awful might happen	249(66.4)	124(33.1)	2(0.5)

Little interest in doing things	261(69.6)	111(29.6)	3(0.8)
Feeling down or depressed	244(65.1)	116(30.9)	15(4.0)
Trouble falling asleep or staying asleep	216(57.6)	156(41.6)	3(0.8)
Feeling tired or having little energy	214(57.1)	155(41.3)	6(1.6)
Poor appetite or overeating	233(62.1)	134(35.7)	8(2.2)
Feeling bad about yourself	254(67.7)	110(29.3)	11(3.0)
Trouble concentrating on things such as reading	170(45.3)	202(53.9)	3(0.8)
How often has this problems made it difficult for you to do your daily work	175(46.7)	197(52.5)	3(0.8)
Got any infection from room mate	316(84.3)	56(14.9)	3(0.8)

* Represents not at all and rarely
**several times and almost all the times
@NR means No Response

The social effects encountered by the students were also ascertained. It was found that 333(88.8%) admitted to fighting with their roommates, while 343(91.5%) said they had been offered cigarette or alcohol. Other responses are recorded in Table 7 below.

TABLE 7: Frequency and Percentage Distribution of The Effects Of Social Factors On Students

Social Factors	No(%)		
	Negative Response*	Positive Response**	@NR
Quarreling with roommate over space	340(64)	126(33.6)	9(2.4)
Fighting with roommate	333(88.8)	37(9.9)	5(1.3)
Someone asking you to smoke cigarette or drink alcohol	343(91.5)	24(6.4)	8(2.1)
Your item stolen	186(49.6)	181(48.3)	8(2.1)
Lack of privacy limiting your personal life	126(33.6)	241(64.3)	8(2.1)
Lied to your parents/sponsor so as to get much money as your room mate	339(90.4)	28(7.5)	8(2.1)
Witnessed people involved in sexual acts like homosexuality/lesbianism	351(93.6)	17(4.5)	7(1.9)
Attending lectures/ other programs late because of queue in the bathroom/toilets	129(34.4.)	236(62.9)	10(2.7)
Do you think that reducing number of persons sharing rooms and hostels will curb the above problems	16(4.3)	351(93.6)	8(2.1)
TOTAL	375(100)		

*Represents not at all and rarely
**means several times and almost all the time

TABLE 11: Percentage Distribution Of The Psychological Factors In Relation With The Number Of Years Lived In The Hostel

PSYCHOLOGICAL FACTORS	PERCENT							
	NEGATIVE RESPONSE*				POSITIVE RESPONSE**			
	<1yr	1yr	2yrs	>2yrs	<1yr	1yr	2yrs	>2yrs
Trouble relaxing	38.6	49.1	44.2	43.8	61.4	50.8	55.9	56.2
Feeling nervous or anxious	61.7	75.5	60.3	63.5	38.2	24.6	39.7	36.5
Worrying too much about different things	52.9	20.6	47.4	52.2	47.1	39.3	52.6	47.8
Becoming easily annoyed or irritable	52.9	58.9	59	53.7	47	41.1	41	46.3
Being so restless	65	61.1	65.3	65.3	35	38.9	34.7	34.6
Not being able to stop or control worrying	73	63.1	59.8	73.1	27	36.8	40.3	26.8
Feeling afraid as if something awful might happen	56.8	73.7	63.7	72.8	43.1	26.3	36.4	27.2
Little interest in doing things	64.7	67.3	75.7	72.7	35.3	32.7	24.3	27.2
Feeling down or depressed	65	65.5	65.8	72.4	35	34.5	34.2	27.4
Trouble falling asleep or staying asleep	65.7	55.3	50	58.5	34.3	44.7	50	41.5
Feeling tired or having little energy	58.4	60.7	53.3	59.6	41.6	39.3	46.7	40.4
Poor appetite or overeating	60.8	61.8	65	65.9	39.2	38.2	35.1	34.1
Feeling bad about yourself	71	69.6	68.9	70	29	30.3	31.2	30

*Represents not at all and rarely
**means several times and nearly all the times

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Table 12: Percent Distribution Of The Social Factors In Relation With The Number Of Years Lived In The Hostel

SOCIAL FACTORS	PERCENT							
	NEGATIVE RESPONSE				POSITIVE RESPONSE			
	<1yr	1yr	2yrs	>2yrs	<1yr	1yr	2yrs	>2yrs
Quarreling with roommate over space	60.4	67.9	73.7	64.4	39.6	32.2	26.3	36.8
Fighting with roommate	89.2	86	93.5	90.3	10.7	14	6.5	9.8
Someone asking you to smoke cigarette or drink alcohol	92	94.7	92.3	94.7	8	5.4	7.7	5.3
Your item stolen	45.1	59.6	44.7	55	54.9	40.3	55.2	18.4
Lack of privacy limiting your personal life	36.7	35.7	32.1	33.6	63.4	64.3	67.9	66.5
Lied to your parents/sponsor so as to get much money as your room mate	89	98.3	92.3	92.4	11	1.8	7.7	7.6
Witnessed people involved in sexual acts like homosexuality/lesbianism	92.1	96.5	96.1	96.9	8	3.5	3.9	3.1
Attending lectures/ other programs late because of queue in the bathroom/toilets	39	49.1	37.7	25.4	61	50.8	62.4	74.6

TABLE 13: Percent Distribution Of The Psychological Factors In Relation With The Sex

PSYCHOLOGICAL FACTORS	PERCENT			
	NEGATIVE RESPONSE		POSITIVE RESPONSE	
	MALE	FEMALE	MALE	FEMALE
Trouble relaxing	35.7	58.7	64.3	41.3
Feeling nervous or anxious	71.3	39.6	28.7	71.3
Worrying too much about different things	49.4	59	50.6	41
Becoming easily annoyed or irritable	55.6	54.6	44.5	45.5
Being so restless	61.5	70.4	38.5	29.6
Not being able to stop or control worrying	68.3	69.2	31.7	30.8
Feeling afraid as if something awful might happen	65.3	32.5	34.7	67.4

Little interest in doing things	69.2	72.3	30.8	27.7
Feeling down or depressed	65.5	72.7	58	27.4
Trouble falling asleep or staying asleep	53.8	66.9	46.2	33.1
Feeling tired or having little energy	57.4	59.3	42.6	40.7
Poor appetite or overeating	64.2	61.9	35.7	38.2
Feeling bad about yourself	69.5	70.4	30.5	29.7
Trouble concentrating on things such as reading	42.2	52.8	57.8	47.1
How often has this problems made it difficult for you to do your daily work	42.7	56.2	57.3	43.8
Got any infection from room mate	81.3	92.5	18.7	7.4

TABLE 14: Percent Distribution of The Social Factors In Relation With Sex

Social Factors	PERCENT			
	Negative Response		Positive Response	
	Male	Female	Male	Female
Quarreling with roommate over space	64.5	67.8	35.5	32.2
Fighting with roommate	90	89.9	10	10
Someone asking you to smoke cigarette or drink alcohol	92.7	94.9	7.2	5
Your item stolen	43.6	65.8	56.4	34.2
Lack of privacy limiting your personal life	31.2	41	68.8	58.9
Lied to your parents/sponsor so as to get much money as your room mate	92.4	92	7.6	7.7
Witnessed people involved in sexual acts like homosexuality/lesbianism	95.3	95.7	4.8	4.3
Attending lectures/ other programs late because of queue in the bathroom/toilets	29.5	47.9	70.5	52.2

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DISCUSSION

5.1 Socio-demographic data

The socio-demographic characteristics of the study group showed that majority of the respondents were within the age range of 21-25yrs (65.6%) while only 0.3% of the students were 31yrs and above. Out of the 375 students studied, 253 (67.5%) were male while 122 (32.5%) were female. This may be because the two male hostels studied are larger than those of the females in size and number of rooms. This may also be because number of boys per room is greater than number of girls per room.

5.2 Psychological Effects Of Overcrowding

Out of 375 students studied, 212 (56.5%) gave positive response to having trouble relaxing. As shown in table 13, percentage of male that responded positively was 64.3% while 41.3% of the females had positive response. This is not in consonant with the findings of Mona M. where women were more affected by overcrowding.[32] This large percentage (56.5%) having trouble relaxing shows quite significant psychological effects of overcrowding as having trouble relaxing is one of the major manifestations

of psychological distress. Only 36% gave positive response to feeling nervous or anxious while 64% responded negatively. Also 47% of the students responded positively to worrying too much about different things while 51.9% responded negatively and 1.1% had no response to the question. Almost half of the students (44.5%) responded to have been "easily annoyed or irritable". This is quite significant and in keeping with the work of Mona M[35], where he observed that overcrowded persons in refugee camp became hot tempered and scream at people when they ask for something.

Other parameters of depression, anxiety and stress, analysed include "feeling afraid as if something awful might happen" with a positive response of 124 (33.1%), "little interest in doing things" with positive response of 111 (29.6%), "feeling down or depressed" with positive response of 116 (30.9%). It was found out (table 13) that out of the females studied 72.7% had the problem of feeling down or depressed while 65.5% of the males had the same problem. This shows a larger percentage of females having the problem of depression. This is in

concordance with the findings of Mona M, that women and children are likely to suffer more of the psychological effects of overcrowding as they always remain in the confines of the house while men go out. This is true in UNEC because many at times the boys are seen at different relaxation centers outside the hostels like Jopal, P.G kitchen, student's center etc.

The study showed that 156 (41.6%) had problem falling or staying asleep several times and nearly all the times while 216 (57.8%) never had the problem or had it rarely. Inability to fall asleep depicts state of anxiety and psychological distress. Similarly, 155 (41.3%) had the problem of feeding tried or having little energy, 134 (35.8%) had the problem of poor appetite several times and nearly all the times (positive response) while 110 (29.3%) felt bad about themselves several times and nearly all the times. Equally the result showed that as much as 202 (53.9%) had trouble concentrating on things like reading. Majority of the people having problem with concentrating in reading were those newly staying in the hostel (stayed < 1yr). These parameters are essentially components of anxiety and depression; it therefore means that many of the respondents were psychologically perturbed due to the overcrowding. This agrees with the stress

hypothesis that bad housing conditions cause stress and other mental disorders.

5.3 Social Effects Of Overcrowding

From the result, a great number of students living in UNEC hostel complained of limitation of their social life because of too many people living together in the hostel. Except "telling lies to parents to get more money like one's roommate", other social parameters affected male more than female. Moreover, the effects were also more on those that have not lived more than one year in the hostel except lack of privacy which limits one's personal life and it has positive correlation with increase in number of years one lived in the hostel.

Out of 375 respondents, 126 (33.6%), had quarreled with their roommate over space. Also 27 (9.9%) respondents had fought over space. There are many things that can cause fighting in an overcrowded environment like using another person's property without permission. The study also showed that reasonable number of students (24%) were being lured into smoking and alcoholism. Overcrowding especially in a school environment usually fans social evils of different kinds.

Many of our respondents (48.3%) reported to have lost some of their items in the hostel. This is not surprising as up to 91.2% of the students are living with more than three persons in a room, chances of having a roommate with stealing tendency is very high. On the other hand, overcrowding is associated with lack of adequate secured space for one to keep his belongings, so the students usually keep some of their prosperities outside their rooms where another person can easily take them.

Lack of privacy was another important factor that affected greater percentage of the respondent (64%). Anybody that is up to 18years requires some degree of privacy. In a situation where many people share one room, such privacy becomes unachievable. .

It was also observed that 62.9% of the students have attended their lectures late several times because of queue in the bathroom & toilet. The prevalence was more in male hostels (70.5%) compare to female hostel (52.2%). As much as 93.6% of the students believed strongly that reducing overcrowding in the hostels will curb all these problems.

Conclusion

Conducive living condition remains one of the most important needs of man. Overcrowding greatly affects what people enjoy in their environment and their psychosocial stability. From the study, it was gathered that UNEC hostels were largely overcrowded which predisposed the inhabitants to diverse psychosocial effects. Many of the students had problem with relaxation, sleeping, being restless, feeding depressed etc. All these are parameters of psychological status. It therefore means that they had some degree of depression, anxiety and mental distress. The distress also led to decreased productivity in their academic work.

More importantly, some of the social evils and bad habits acquired by students from fellow roommates like smoking, alcoholism and sexual pervasions will have long term effects on the individuals and the society at large. The students believed that reducing number of students sharing a room, toilet or bathroom will go a long way in reducing the psychosocial distress.

The problem of overcrowding is not exclusive to UNEC hostels, many other schools, refugee camps and prisons also suffer from overcrowding. It is therefore very important that urgent measures are taken to reduce the psychosocial and other health implications of overcrowding.

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BURDEN AND RISK FACTORS FOR HYPERTENSION AMONG SECONDARY SCHOOL TEACHERS IN ENUGU METROPOLIS

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INTRODUCTION
1.1   Background of the study

Hypertension, a non-communicable disease, is the most common cardiovascular disease in black Africans and has been a cause of great morbidity and mortality in recent times. This is due to epidemiologic transition, which is a shift of the world disease burden from communicable diseases to non-communicable diseases (NCDs).

Hypertension is a long term medical condition in which the blood pressure in the arteries is persistently elevated1. Usually hypertension is defined as blood pressure equal to or above 130/80mmHg2. A distinction between high blood pressure and hypertension should be made, hypertension being a sustained high blood pressure. Hypertension normally has no symptoms and if left untreated over time can be a major risk factor for conditions like coronary artery disease, stroke, heart failure, peripheral vascular disease and chronic kidney disease.

- For the purpose of clarity

and diagnosis, different categories of raised blood pressures have been recently published by the American Heart Association:

-
- Normal blood pressure is said to be systolic of <120mmHg and diastolic of <80mmHg.

-
- Elevated blood pressure is said to be systolic of 120-129mmHg and diastolic of <80mmHg.

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Hypertension:
- Stage 1 is said to be systolic blood pressure of 130-139mmHg and diastolic of 80-89mmHg.

- Stage 2 is said to be systolic blood pressure of ≥140mmHg and diastolic of ≥90mmHg6.

Hypertension is broadly classified into primary (essential) and secondary. About 90-95% of cases are primary, defined as high blood pressure due to genetic factors and non-specific lifestyle3. Lifestyle factors that increase the risk include excessive salt intake, excess body weight, smoking and alcohol5.The remaining 5-10% cases are categorized as secondary hypertension, defined as

high blood pressure due to identifiable causes like renal disease (e.g. glomerulonephritis, renal vascular disease), endocrine disorders (e.g. phaechromocytoma, Cushing's syndrome, thyrotoxicosis), cardiovascular disease (e.g. coarctation of aorta,polyarteritisnodosa), preeclampsia, alcohol, obesity, drugs (e.g. oral contraceptives, Non-SteroidalAnti-Inflammatory Drugs NSAIDs). The world prevalence of hypertension was put at 26.4% in a 2005 study4. The reported prevalence of hypertension varies widely in various parts of the world being as low as 3.4% in rural Indian men and as high as 72.5% in Polish women5 while in Canada the prevalence is 27.42%6.In South Africa, national survey reported a prevalence of 21%7. A cross sectional survey of workers in Kinshasa, Congo revealed a prevalence of 21.3%8 while that found in Uganda was 30.4%9. In Ghana, a study in semi urban and rural area of Ashanti region gave an overall prevalence rate of 28.7%, being higher in semi-urban (32.9%) compared to the rural (24.1%) area and overall awareness level of 22%10. Currently, the population specific prevalence of hypertension in Nigeria is not

known with certainty. A previous national survey on non-communicablediseases gave an overall circle prevalence of 11.2% (using blood pressure threshold of > 160/95mmHg) and awareness level of 33.8%11. More recently, various studies have tried to give a picture of hypertension prevalence amongst different population groups and regions in the country. With these alarming prevalence got from other studies, this study therefore sought to ascertain the burden and risk factors of hypertension amongst secondary school teachers in Enugu metropolis and curb its attendant complications.

1.2 General and specific objectives
1.2.1 Aim (General Objectives)
To ascertain the burden and risk factors for hypertension among secondary school teachers in Enugu Metropolis.
1.2.2 Specific Objectives
1. To verify the prevalence of hypertension among secondary school teachers in Enugu Metropolis.
2. To determine the level of awareness of hypertension among this population.
3. To ascertain the knowledge of risk factors and consequences of living with undiagnosed hypertension among secondary school teachers in Enugu Metropolis.
4. To determine the

burden financial cost and morbidity of diagnosed hypertension among secondary school teachers in Enugu Metropolis.

LITERATURE REVIEW
Hypertension is defined as sustained elevation in the blood pressure of an individual above level considered normal for individual's age, sex, race, body size etc. this definition implies that there has to be a reference value for an individual which is not arbitrarily based on the above mentioned biosocial indices, in other words there are various classification for the diagnosis of hypertension which actually erupted as a result of different studies by various research groups and which became adopted by the World Health Organization(WHO)12.

Prevalence of Hypertension
The prevalence of hypertension is becoming increasingly alarming in developing countries as epidemiologic transition is encroaching in these countries. Epidemiological transition is the shift from communicable disease which ravaged developing countries some years ago to non-communicable diseases (NCDs).Prevalence of hypertension varies across different regions of the world.
Though the proportion of the world's population with high blood pressure or uncontrolled hypertension

fell modestly between 1980 and 2008 because of population growth and ageing, the number of people with uncontrolled hypertension rose from 600 million in 1980 to nearly 1 billion in 200813. In sub-Sahara Africa, with a steaming population of 650 million and over, longevity and westernization, hypertension has now changed from a relative rarity to a major problem14. Systemic hypertension was said to be rare in Africans in the first half of the twentieth century, but current evidences have shown it affects between 30% and 60% of black Africans15.

In Bauchi State Nigeria, of the total 3108 admissions at AbubakarTafawaBalewa Teaching Hospital 735 (23.7%) were due to hypertension-related complications, with mean age of years. And when cholera cases which ravaged Bauchi at the time of this study is excluded about (1225 admissions), hypertension-related cases accounted for 38.9%16. While in Edo State, a high prevalence of hypertension (37.8%) was got in a study1. In a study done at University of Nigeria Teaching Hospital (UNTH) Enugu, the total number of patients on medical admissions were studied (6162) and a prevalence rate of 20.46% for cardiovascular disease (CVD) was got17.

With this high prevalence of hypertension got from previous studies, this study aims to ascertain the current prevalence among school teachers in Enugu metropolis as most of them may be

suffering from the ailment without being aware of it.

Awareness of Hypertension

Awareness of hypertension refers to having been informed of one's hypertensive state by a health professional12.The World Hypertension League, an umbrella organization of 85 national hypertension societies and league, recognized that more than 50% of the hypertensive populations worldwide are unaware of their condition18.

It is also shown that there is a strong relationship between factors that portray the socioeconomic status of an individual or population and their level of awareness of health and health related practices19. Socioeconomic disadvantaged populations are more likely to be unaware and strongly affected by health problems 20.

In Nigeria, the overall poor level of education may partially explain the low level of awareness in the population. In a study conducted among health workers in Ogbomosho, the awareness rate 64.7%21while in Ibadan Nigeria, 40% males and 68% females were aware of their hypertensive status22.Among patients attending Federal Medical Center Owerri, South East Nigeria 37.5% of the respondents were aware of their hypertensive status4.In a study among a market population in Enugu,

the awareness level was 29.4%23. Therefore, there is need to increase the level of awareness.

Effects of hypertension on the economy of the nation

Hypertension inflicts a considerable economic burden upon individuals, households, societies and globally in the sense that it brings about absence from work, decreased productivity, high cost of treatment, morbidity and mortality, etc. The economic burden varies globally.

In the United State, the total economic burden of hypertension was estimated at $73.4billion in 2009 resulting from stroke, heart failure, myocardial infarction and other serious cardiovascular and renal diseases etc of which hypertension is their major risk factor24.

In Nigeria, most of the drugs used for treatment are manufactured outside Nigeria and the cost of importation is exorbitant, even the cost of the few ones that are manufactured here is still relatively high. Another problem faced by Nigerian patients is that they have to pay from their pockets. In the past, if you have to take a drug daily for about 30 days, N10,000 would have been sufficient for you but with the recent economic challenges, the cost has escalated. The cost is now up to N30,000 or N40,000 per month. These and other factors joined together could be the

reason for the increase in the prevalence of hypertension and consequences of hypertension25.

The number of people coming down with kidney disease is increasing likewise the number of people coming down with stroke. If the situation is not addressed, the implication is that the life span of Nigerians will keep reducing as well as the working population because the majority of people with hypertension belong to the workforce of the population. 25

Risk Factors of Hypertension

A couple of risk factors can predispose one to hypertension and other CVDs. Risk factors mean anything that can predispose one to developing a disease. The risk factors, are categorized as non-modifiable which includes increasing age, family history/ heredity, race and gender while the modifiable risks include sedentary lifestyle, cigarette smoking, stress, tobacco use, lack of exercise, unhealthy dietary habits, high salt intake, low potassium diet, alcohol use, contraceptive use, obesity / overweight, raised blood pressure, culture, diabetes etc12,26.

In this study, we aim to identify those with some of these risk factors and seek ways to address them. The location of our study already makes race a risk factor as it is stipulated that the Black population (Africans and African Americans) stand the chance of developing hypertension at an earlier age than their counterparts from other races27. Lifestyle factors if addressed can cut across the clinical risk factors as well as reduce risk for those with non-

modifiable risks.

METHODOLOGY
3.1 Study Area
The study was carried out in Enugu. Enugu is a state in South Eastern Nigeria created in 1991 from the old Anambra State. It shares borders with Abia State and Imo State to the South, Ebonyi State to the East, Benue State to the North East, Kogi State to the North West and Anambra State to the West.

The average temperature is mild (600F) in its cooler months and gets hot (800F) in its warmer months. The mean temperature in Enugu State in the hottest month of February is about 87.160f (30.640C) while the lowest temperature occurs in the month of November 60.540F (15.860C). The lowest rainfall occurs in February of about 0.16 cubic centimeters, while the highest occurs in July of about 35.7 cubic centimeters. Enugu has a total land area of 7,161km2 and population of 3,267,837 (2006 census) giving a density of 460/km2 58 .

3.2 Study Design
This study was a descriptive cross sectional study of the Burden and risk factors of hypertension among Secondary School Teachers in Enugu Metropolis.

3.3 Study Population
The population we used in this study was secondary school teachers within Enugu Metropolis. All teachers aged 18years and above that gave consent to participate in our study were studied. All teachers aged 18 years and above who were absent on the day of data collection and those who refused consent to be part of the study.

3.4 Sample Size Determination
A minimum sample size was determined as follows using the formula:

$$N = \frac{Z^2 (Pq)\, 59}{d^2}$$

Where:
N = Minimum sample size
Z = Confidence interval at 95% level of significance given as 1.96
P = Referenced prevalence 20.46% (0.2046)34
q = I – P
d = Maximum Sampling error allowed = 0.05

$$N = \frac{(1.96)2 \times (0.2046 \times (1 - 0.2046))}{(0.05)2}$$

$$N = \frac{3.8416 \times 0.16273884}{(0.05)2}$$

N ≈ 250.1
N = 250

The calculated sample size will be 250.
However, our population size is less than 10,000 and as such the formula

$$nf = \frac{n\,60}{1 + (n/N)}$$

Where:
nf = desired Sample Size when population is less than 10,000
n = desired sample size, when the study population is greater than 10,000
N = estimate of the population size

$$nf = \frac{250}{1+(250/400)} = \frac{250}{1+0.625} = 153.8$$

For 10% anticipated attrition rate, 15 persons were added. Hence, 169 persons were recruited for this study.

3.5 Sampling Techniques
Multi-stage probability sampling was used in the study. The secondary schools in Enugu Metropolis were grouped using the Post Primary School Management Board (PPSMB) zoning system and zones Enugu East and Enugu North were selected (stage 1). Using simple random sampling, two schools each were selected from Enugu East and Enugu North zones (stage 2).

In each school, about 7 teachers were randomly selected from all classes and studied, giving a total of 42 test subjects (stage 3). When these schools were visited, the teachers who were available and those who gave consent were used for the studied.

3.7 Data Collection Methods
A self-administered questionnaire that combined both structured and unstructured questions was used to ascertain the burden, awareness, risk factors and complications of hypertension in our study population. The questionnaire was modified from another source4. The sections include: demographic data; awareness of hypertension; health behaviour;

financial burden of diagnosed hypertension; diet. The questionnaire was validated by the Community Medicine Department, College of Medicine, Enugu State University of Science and Technology, Parklane before its administration. The sphygmomanometer cuff was tied on the arm to cover 2/3rd of the arm and then inflated. The radial pulse was felt until its disappearance; this gave the upper limit of the blood pressure (palpation method). Afterwards, the cuff was deflated and inflated again to exceed the limit got during palpation. The stethoscope was then placed on the medial aspect of the cubital fossa and 1st Korotkoff and 5th Korotkoff sounds were used as the systolic and diastolic blood pressures respectively. The body mass index (BMI) of Quetlet was calculated from the weights in kilogramme got from the weighing balance and heights in meters from the stadiometer that is kg/m2.

3.8   Data Management
The variables that were measured are height in meters and weight in kilogramme for determination of body mass index of Quetelet which are continuous variables. In the questionnaire dichotomous variables were scored 1 for the positive answer in respect to the question asked and 0 for negative answer. The data collected were sorted, coded and inputted in Statistical Package for Social Sciences (IBM SPSS Version 23) for analysis.

3.9   Ethical Considerations
Ethical clearance was obtained from the Head of Community Medicine Department, Enugu State University of Science and Technology, College of Medicine. Informed consent was obtained from the Principals of the secondary schools studied as well as from the teachers.The questionnaire used was anonymous so as to protect privacy of our study population.

RESULTS
This study which sought to evaluate the burden and risk factors of hypertension among secondary school teachers in Enugu metropolis assessed a total of 173 teachers. The predominant age group was 50 – 54 years, 46 (26.6%). Majority of the respondents were females 163 (94.6%) and 152 (87.9%) were married. Most teachers had tertiary level of education 168 (97.1%).Majority of the teachers (34.6%) earned between N20,000 – 40,000.A total of 87 teachers were detected to be hypertensive with 49 (28.4%) being previously diagnosed and 36 (73.5%) of them were already taking medications. The predominant age group detected to be hypertensive was 50 – 54 years, 29 (16.8%).

There was no statistically significant difference between hypertension in the males and females.

Most teachers 145 (83.8%) were aware that heart attack was a complication of hypertension. At least 90 teachers (52%) were aware of one or more of these complications of hypertension; Diabetes mellitus, kidney disease, eye problems, stroke, heart failure and heart attack. The Predominant grade of hypertension was stage 1 (diastolic BP (80 – 89 mmHg) using American Heart Association Classification (2017) with a frequency of 70 (40.5%).The age group with the most severe hypertension (stage 2) is 45 – 49 years with a frequency of 18.

Lack of physical activities and alcohol consumption ranked highest as the important risk factors. Diabetes mellitus was ranked as the least risk factor among the respondents. There was no statistically significant association between being hypertensive and diabetic patients.

The mothers of most respondents were hypertensive. About 36 (20.8%) of the 60 (34.7%) respondents also have hypertension.There was no statistical significant association between being hypertension and obesity. Out of the 110 (63.6%) teachers who consume alcohol, 93 (53.8%) have consumed alcohol within the last 30 days and 51 (29.5%) of them have hypertension.

There was no statistical significant association between being hypertension and lack of

financial burden of diagnosed hypertension; diet. The questionnaire was validated by the Community Medicine Department, College of Medicine, Enugu State University of Science and Technology, Parklane before its administration. The sphygmomanometer cuff was tied on the arm to cover 2/3rd of the arm and then inflated. The radial pulse was felt until its disappearance; this gave the upper limit of the blood pressure (palpation method). Afterwards, the cuff was deflated and inflated again to exceed the limit got during palpation. The stethoscope was then placed on the medial aspect of the cubital fossa and 1st Korotkoff and 5th Korotkoff sounds were used as the systolic and diastolic blood pressures respectively. The body mass index (BMI) of Quetlet was calculated from the weights in kilogramme got from the weighing balance and heights in meters from the stadiometer that is kg/m2.

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There was no statistical significant association between being hypertension and lack of

exercise.

The number of respondents that take medication for hypertension was 32 (18.5%), and 19 (11%) of total population) of them spend less N5,000 monthly on treatment of hypertension. Majority 10 (%) earn between N 80,000 – 100,000 monthly.

DISCUSSION

From this study, it was observed that hypertension was commoner in females than in males although this is attributed to the fact that the population was made up of more women than men. This is however in line with studies conducted in rural India and Poland which gave a prevalence of 3.4% in men and 6.8% in women and 68.9% in men and 72.5% in women)5 respectively and contradicted by studies in Owerri that gave a higher prevalence rate of 59.4% in males. The prevalence of hypertension was also notably high in the married population than in any other and this is attributed to the fact that they were more married respondents than in any other groups, in addition it is believed that married people have more responsibilities than others and they tend to pay inadequate attention to their health. The 50-54 age group had the highest number of people with hypertension followed by 45-49 age group this is in line with beliefs that hypertension affects mostly the middle aged and the elderly.

In this study, the level of awareness is moderate, with 52.8% of the hypertensive population being aware of their hypertensive status but only 41.3% of this population were on treatment. This is suspected to be as a result of the educational status of our study population where most reached the tertiary level of education and are definitely more enlightened than the semi-literates or illiterates. It was noted that 83.8% of the study population were aware that hypertension could lead to cardiac complications. However 47.4% were unaware of the fact that hypertension could cause diabetes mellitus.

In our study, it was noticed that the most prevalent grade of hypertension was stage 2 and more of the people had diastolic hypertension. This is attributed to poor control of hypertension especially in the unaware population and congruent with studies in Owerri28.
In this study, the risk of hypertension is more likely to be higher because their work was a sedentary kind and majority of the correspondents do not exercise and those that even exercised weren't exercising adequately. We also discovered that majority of our correspondents were either obese or overweight, obese person are 1.8times more likely to have hypertension than in non obese1 this is a major risk factor for hypertension which is modifiable. Hypertension is known to increase with age and a major percentage of our hypertensive population(60%) were in the 45-55 age group, which is in line with the fact that hypertension is the disease of the elderly. Alcoholism is also implicated, 63.6% of the teachers were alcoholics with and 46.3% of these had hypertension. Dietary habits also plays a role in development of hypertension, most of our correspondents are not aware of the importance of balanced diets, and deleterious effects of increased salt intake. All these can culminate to the development of hypertension.

Hypertension is a cause of considerable economic burden upon individuals, and for effective management, combination therapies are required. From our study, a larger fraction(96%) who were on treatment spent within N10000 monthly, this compared to their earnings could put a large strain in their pockets. This is congruent with studies in Africa which have proposed that hypertension remains the prime cause of significant financial burden29. This financial burden is taken to be the reason why majority of our study population have uncontrolled hypertension. We, however, believe that amount of money spent on treatment of uncomplicated hypertension is far lower than what would be spent in

cases of complications also, spending this low amount is also better compared to the life threatening and debilitating complications of hypertension.

Conclusion

This research shows that the rate of awareness of hypertension and its complications in the study population is still low. Those who are aware of their hypertension status are not strictly adherent to their medications. The risk factors which were implicated in this study include: age, sedentary lifestyles, obesity, dietary factors, family history, alcohol intake, diabetes mellitus and cigarette smoking. Hypertension is a disease that has a significant impact on the economy of the nation.

Schools should be provided with routine health education that would instruct the staff on risk factors complication and importance of treating hypertension. In addition, they should be advised on the importance of owning sphygmomanometers and knowing how to use it.We also recommend that schools should be equipped with stations where they can get their blood pressures measured from time to time.Ministries of health in various states should find a way to subsidize cost of treatment of hypertension, in addition, we recommend that they organize intermittent health awareness programmes that will educate the population on how to live and eat healthy.These would go a long way in reducing the prevalence of uncontrolled hypertension.

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ONCOLOGY EDITION

DEGREE OF AWARENESS OF OBESITY AS A RISK FACTOR FOR CANCER IN ENUGU STATE: A CROSS SECTIONAL SURVEY OF STUDENTS IN UNIVERSITY OF NIGERIA, ENUGU CAMPUS

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Iheonunekwu Henry Chinaemerem 200 level Medicine and Surgery

Introduction

Today, Nigeria is listed by WHO as one of the countries where obesity is epidemic [1]. Obesity is a public health concern considering the various morbidities and mortalities associated with it. Aside the much known diseases like cardiovascular disease, studies have shown that obese patients are at risk of developing certain cancers [2], of which there has been an increase in its incidence in countries like the US where Obesity prevalence is high [3]. Healthy lifestyle and nutrition will go a long way reducing cancer risk. There is need for enlightenment on the health risks associated with Obesity of which cancers is among.

Obesity is a worldwide epidemic, and has been listed as a major preventable cause of death in the United States [4]. Once thought to be restricted to developed countries, the obesity scourge has today not left out developing countries and this with its adverse effects[5]. In this article, we define obesity and overweight and its screening based on WHO recommendations. We discuss the pathogenesis of obesity particularly as it relates to cancer based on available evidence. We discuss the degree of awareness of Obesity as a risk factor for cancer based on a survey. Finally we recommend ways to improve lifestyle to decrease the prevalence of obesity.

Obesity, Overweight: Measurement and classification

Obesity refers to accumulation of excess body fat stores in a way that it can impair health. Weight can be used as an anthropometric index of excess body fat, but a problem arises because simple weight measurement does not distinguish between lean body mass which is due to muscle, bone and extracellular water and adipose tissue which brings about ambiguity. Therefore measurement of weight adjusted for height provides a better approximation of the total amount of adipose tissue in the body than weight alone. The most popular weight for height index for assessment of obesity is the body mass index(BMI), an equation which was devised originally byAdolpheQuateletwhich is defined as the weight in kg divided by height in metres squared, usually expressed in Kg/m2. Though a crude method, despite disputes BMI remains the overall best assessment for obesity[6], due to the fact that it is inexpensive and a better predictor for the morbidities associated with obesity. Based on this according to WHO, an adult with a BMI greater than or equal to 25 is said to be overweight and with a BMI greater than or equal to 30 is said to be Obese[7]. Other **classification for obesity exists as shown in table 1.**

BMI	Classification
< 18.5	underweight
18.5–24.9	normal weight
25.0–29.9	overweight
30.0–34.9	class I obesity
35.0–39.9	class II obesity
≥ 40.0	class III obesity

Table 1: Classification of Obesity based on BMI [8]

Other tools that can be used in assessment of obesity include waist-to-height ratio, fat free mass, percent body fat, Skinfold thickness, Bioelectric impedance, Underwater weighing(Densitometry), Air-displacement plethysmography, Dilution method, Dual Energy Xray absorptiometry, computerized tomography and magnetic resonance imaging and the waist circumference[8]. Each of these methods has its strengths and weaknesses, waist circumferenceis a better assessment for truncal adiposity [9]. Some of these tools like magnetic resonance imaging can be used to measure visceral fat only, which bears more risk than subcutaneous fat.

Pathogenesis of Obesity

Obesity is basically an Energy balance dysfunction, this occurs when energy input greatly exceeds output. The lipostat theory proposed by Gordon Kennedy in 1953 proposes a way the body strives to keep its fat stores nearly constant [10],this theory basically says that fat cells release a hormone,proved to be leptin in proportion to their mass which go on to signal the hypothalamus to know the body's energy requirements.Two groups of neurons in the hypothalamus are involved in energy balance, the orexigenic and anorexigenic neurons[11-13].The anorexigenic neurons suppress appetite while the orexigenic neurons stimulates appetite.Leptin secreted by adipose tissue stimulates the anorexigenic neurons and inhibits the orexigenic neurons in the hypothalamus.Another hormone Ghrelin secreted by the stomach stimulates orexigenic neurons and inhibits anorexigenic neurons[14-16, 13].The body can deal with excess calories in three ways, converting the excess fuel to fat and storing it in adipose tissue, burning the excess fuel by extra exercise and wasting 'fuel'by diverting it to heat production[17].From this we see that there is a set point for fat storage, that is the fat stores are kept almost constant in adipose tissue which the hypothalamus regulates by receiving signals from the adipose tissue, the hypothalamus through the anorexigenic center activates the sympathetic nervous system,levels of circulating cytosol and thyroxine all in a bid to expend the excess calories consumed,the opposite occurs when

leptin levels fall, the orexigenic neurons are activated which stimulates appetite. Leptin also increases energy expenditure by stimulating the sympathetic nervous system and the release of cortisol which breaks down fat stores and thyroxine[56]. Ghrelin opposes leptin so a decrease or dysfunction of leptin produces energy balance dysfunction by leaving ghrelin activity unopposed by increasing appetite and decreasing energy expenditure. The parts of the hypothalamus involved in regulating energy expenditure, satiety and food intake are
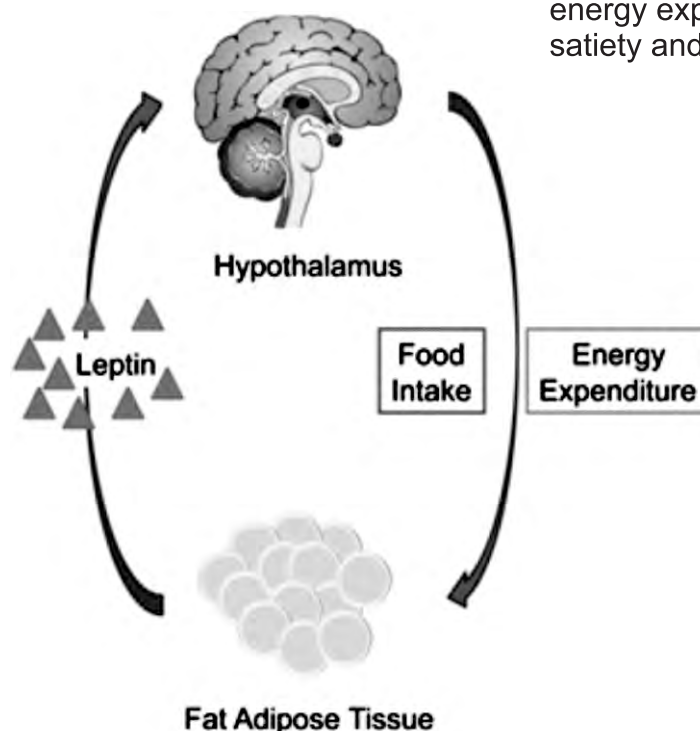
Figure 1: Leptin and regulation of body weight[18].

From the foregoing we see that obesity could be caused by any factors that affect this circuit, like decreased levels of leptin or problems with leptin receptors in the hypothalamus or a lesion in the hypothalamus. Although there is not enough evidence to prove that leptin dysfunction can result in obesity, high leptin levels have been found in obese individuals, suggesting resistance to leptin as a cause of obesity[19].

Other known established factors that can cause obesity are chronic consumption of excess carbohydrates and a sedentary lifestyle. The hormone insulin is particularly important in the pathogensis of obesity as it is the only hormone that increases fat synthesis and inhibits fat breakdown from storage sites, this implies that hyperinsulinemia will increase fat storage in adipose tissue and inhibit their breakdown. An important association exists between type II diabetes mellitus and obesity, excessive weight gain leads to down regulation of insulin receptors which causes hyperinsulinemia which in turn increases fat stores [20]. Genetics also play a role in placing individuals at risk of developing obesity but this is greatly modified by environmental factors[21]. Studies have proven that weight loss will go a long way curtailing the harmful effects of

obesity [22].

Genetic Component of Obesity

Irrespective of the environmental and bad feeding habits that brings about variations in the body size of individuals, part of the variations that account for obesity are genetic.Isn't it funny or rather strange how two persons can consume the same quantity of food daily, but still one gains so much weight while the other person looks almost the same. This also points, to the fact that obesity would have some genetic elements. Effective familial studies show that BMI is highly correlated with parental obesity. Children in whom both parents are obese are at higher risk of being obese when compared to persons whose parents are non- obese. Mutations to genes such as leptin receptor, melanocortin 4 receptor, pro- opiomelanocortin genes have been found to be the major contribution genetic factors to obesity.

Obesity and cancer

Weight gain and obesity account for approximately 20% of all cancer cases [23]. Epidemiological data has proven shown that obesity is strongly associated with some cancer types[24]. According to the center

for disease control and prevention (CDC),several cancers are associated with obesity [18]. These include endometrial cancer, oesophageal adenocarcinoma, liver cancer, kidney cancer, pancreatic cancer and many more.

Globally there has also been an increase in incidence of these cancers[3, 25], which correlates with the increase in prevalence of obesity. Several possible mechanisms have been suggested to explain how obesity might increase the risks of some cancers.Increased adipose tissue leadsto increase in the enzyme aromatase which increasescirculating estrogen, this places postmenopausal Obese women at risk of endometrial and breast cancers[26].The increased associated hyperinsulinemia andincrease in insulin like growth factors seen in obesity have also been hypothesized as mechanisms of obesity associated cancers [27].Obese patients have chronic low levelinflammation example gallstones, which can lead to DNA damages, predisposing them to cancer [28]. The aim of this study was to

determine the degree of awareness of the link between obesity and cancer in Enugu State.

METHODS

A total of 111participants completed an online survey in September 2019, the mean age of the respondents was 21, we used a university community as our sample as this would give the highest index of knowledge about health risks associated with obesity since it is a learning community.

Survey Development

An online tool was used to develop the survey.We developed the survey questions with the aim of getting the level of awareness among respondents on health risks associated with obesity.
The survey collected information on demographic information i.e. sex and age of respondents
The respondents were asked to select their BMI ranges, with "I forgot" and "I have never checked" options.

Knowledge of health conditions linked to obesity

Participants were asked to select from a list of options, health conditions that could result from obesity, two options

included (Type I diabetes mellitus and depression) do not have any known associations with obesity.

Results

The average age of the respondents was 21years. There were 58(52%) males and 53(48%) females. Public awareness of the link between obesity and cancer was low (26%).

Higher levelsof awareness existed forother morbidities associated with obesity. Most respondents had never checked their BMI nor attempted losing weight.

Table 2 Demographic characteristics

	N(%)
Gender	
Male	58(52%)
Female	53(48%)
Age	
15-19	39(35%)
20-25	54(49%)
25-30	16(14%)
30-35	2(2%)

Knowledge of the link between obesity and cancer

On a multiselect option, most respondents were quite aware of other health risks associated with obesity such as Coronary artery disease, Type II DM (72% and 60% respectively) but only 26% selected cancer (Figure 2).

Two health conditions not related to obesity (Type I DM and Depression) were also chosen by some respondents.
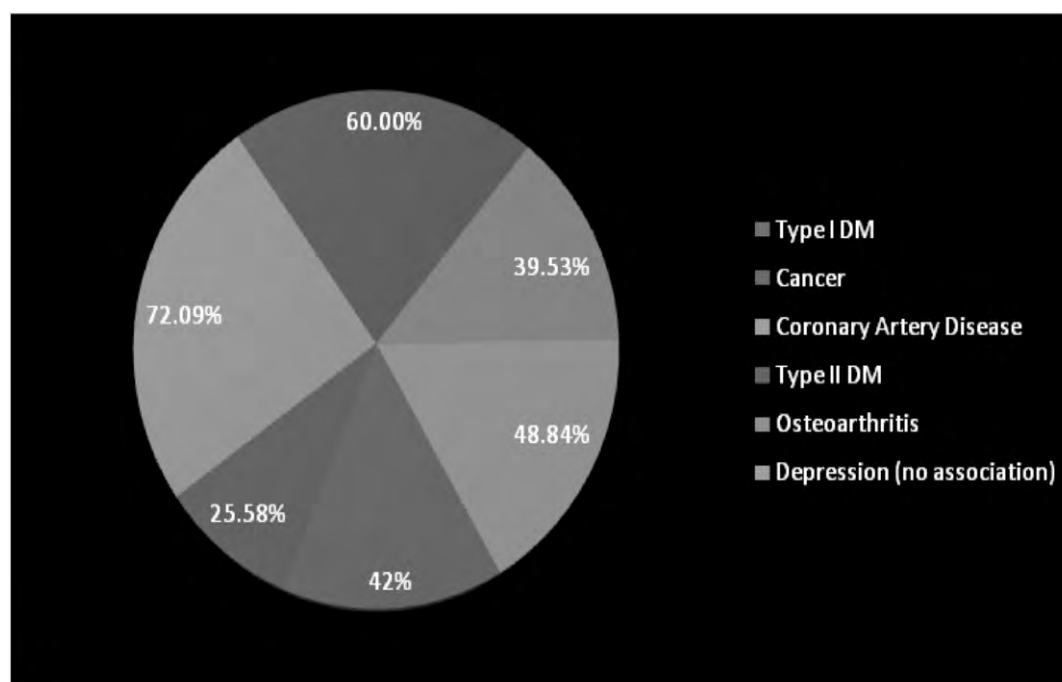

Figure 2 Health risks associated with obesity based on response

Discussion

Most respondents were unaware that obesity is a risk for cancer, but most were aware of other health risks associated with obesity. We therefore reiterate that the degree of awareness of obesity as a carcinogen is quite low among the populace, and this may also be true of other modifiable risk factors for cancer.

Strength and limitations of study

The survey questions were quite eyeopening from feedback we received from peers; it alerted people that there is indeed serious life threatening health risks with getting obese. Our sample didn't represent the whole population well as most respondents were medical students in the university community. Additionally, some of the survey questions did not give participants opportunity to give reasons for their choices.

We believe health policy makers and health practitioners have a lot to do to inform the public on the link between Obesity and cancer, much work still need to be done to create this awareness.

Conclusion and Recommendations

The obesity epidemic is here with us, and we cannot sit back and allow it encroach on us the more. Obesity can cause cancer, it is carcinogenic; there is great need to educate the public on this, as it will make people take the right actions regarding their diet and modify their lifestyle. Preventing cancer also invariably involves preventing weight gain.

Healthy nutrition is the bestway to prevent weightgain. All food are calories but not all calories should serve as food.It is true that 'Overeating doesn't make us fat, the process of becoming fat makes us overeat'[29]. Insulin the orphan hormone which instructs our fat cells to take or release calories, our fat cellscan be forced into a calorie-storage overdrive, here the adipose tissue store more than they should, where one is overweight yet always hungry, the highly processed carbohydrates do this, by increasing insulin levels dramatically after ingestion. There are other factors like stress and not having enough sleep that can reprogram our fat cells. Having trained the fat cells the wrong way, they have to be retrained; this is the case for some obese individuals [29]. Trying to physically burn calories, medications and surgery are indicated in the management of obesity, but lifestyle changes especially in area of type of calorie intake is a proven cheap way to lose and maintain weight 29].Behavioral changes other than feeding habits can help remedy the wide spread of obesity. Through this treatment, one can learn how to change their eating and exercise habits. This helps you lose weight. Behavioral changes target poor habits that lead to obesity. These may include unhealthy eating and not exercising. The treatment uses interventions to fix these poor habits. It'll require a lot of self-discipline. Specifically, one may learn how to: track their eating, change their environment to avoid

overeating, increase activity level, create an exercise plan, set realistic goals. By making these changes, one may be able to lose a lot of weight and also likely to keep the pounds off. Weight loss is possible by a change to healthy lifestyle, if we seek a healthier population, policies should be made for nutrition education among the populace.

There is still much to be known on the pathogenesis of obesity, the role of genetics and how it links to cancer, and by this we mean research, which requires funds and interest in the fields of nutrition and cancer.

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SKIN CANCERS

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Introduction/Definition

Skin cancers are cancers that arise from the skin. They are due to development of abnormal cells that have the ability to invade or spread to other parts of the body. They are usually locally destructive. How common is skin cancer?
The incidence of skin cancers has been increasing over the past decades. It is highest among outdoor workers, sportsmen, and sunbathers and is inversely related to the amount of melanin skin pigmentation; fair-skinned people are most susceptible. Skin cancers may also develop years after therapeutic x-rays or exposure to carcinogens (eg, arsenic ingestion). Over 5.4 million new cases of skin cancer are diagnosed in over 3.3 million people in the United States yearly.
Currently, between 2 and 3 million non-melanoma ask in cancers and 132,000 melanoma ask in cancers occur globally each year. One in every three cancers diagnosed is ask in cancer and, according to Skin Cancer Foundation Statistics, one in every five Americans will develop skin cancer in their lifetime.
Skin cancer are less common in Nigeria than in some other parts of the world but are still a very important cause of morbidity and, to a lesser extent, mortality especially among albinos here. It is estimated that there are 65,258 new cases of skin cancer in Nigeria annually giving a projected annual incidence of 52 in 100,000.

Anatomy

The skin is the largest organ in the body. It has 2 main layers which are the epidermis and the dermis. They epidermis which is the outermost layer contains 3 main types of cells:
Squamous cells: These are flat cells in the upper (outer) part of the epidermis, which are constantly shed as new ones form. Basal cells: These cells are in the lower part of the epidermis, called the basal celllayer. These cells constantly divide to form new cells to replace the squamous cells that wear off the skin's surface. As these cells move up in the epidermis, they get flatter, eventually becoming squamous cells.
Melanocytes: These cells make the brown pigment called melanin, which gives the skin its tan or brown color. Melanin acts as the body's natural sunscreen, protecting the deeper layers of the skin from some of the harmful effects of the sun.
The epidermis is separated from the deeper layers of skin by the basement membrane.

Types

There are two main types of skin cancer:
The Non-melanomas and The melanomas.

The non-melanomas:

these are skin cancers developing from cells in the skin that are not the melanocytes. This type tends not to metastasize but may become locally invasive if left untreated, can grow into nearby area and invade the bone or other tissues beneath the skin. The usually occur as a result of DNA mutation secondary to UV rays. They occur in parts of the body exposed to sunlight and rarely appears on the mucosa. They show a very low degree of malignancy, despite of the capability of local invasion, tissue destruction, recurrence, and a limited potential for metastasis.
The two main types:
Basal cell carcinoma (BCC) is most common type of skin cancer. These cancers start in the basal cell layer and are often mistaken for sores that don't heal. They tend to grow slowly and are the least deadly form. They are believed to arise from basal keratinocyte cells of

the epidermis and adnexal structures. The course of BCC is unpredictable. BCC can also occur at sites of previous trauma (scars), thermal burns, and injury. One study speculated that the risk for a new neoplasm largely depends on the number of prior skin tumors. UV radiation plays the most important role in BCC. It is associated with exposure to both UVA and UVB of an intense amount over a short period of time. Genetic diseases like Gorlin–Goltz syndrome and Fitzpatrick skin types I and II are also risk factor for developing this cancer.

Clinical features include
. pearly translucent flesh-colored papules or nodules with superficial telangiectasias (broken blood vessels).
. More active lesions may have rolled edges or ulcerated centers.
. Crusting and bleeding in the center of the tumor frequently develops
. a flat, flesh-colored or brown scar like lesion
. bleeding or scabbing sore that heals and returns

Squamous cell carcinoma (SCC) is the second most common type of skin cancer.These cancers start in the squamous cells of the epidermis. These grow slowly but there are more deadly than the BCC. SCCs develop from epidermal squamous cells (keratinocytes). They are more likely than basal cell cancers to invade into

deeper layers of skin, bone and other tissues beneath the skin and metastasize to other parts of the body. They can also develop in scars or chronic skin sores elsewhere.
Immunosuppression is also risk factor for developing this type cancer, although they sometimes start in actinic Keratosis (described below). They are most attributable to with exposure to UVB over a long period of time. The spectrum of severity ranges from low-grade intraepidermal carcinoma (Bowen disease) to invasive SCC with the potential to metastasize.
Clinical features include
- Red scalling thickened patch on skin
- Some are thick and hard, dome shaped like keratoacanthomas
- Crusted papules and plaques that may become indurated, nodular, or ulcerated.
- It may arise in chronic wounds, scars, and leg ulcers.

Actinic keratosis
Actinic keratosis (AK), also known as solar keratosis, is a pre-cancerous skin condition caused by too much exposure to the sun. AKs are usually small (less than 1/4 inch across), rough or scaly spots that may be pink-red or flesh-colored. They occur on sun-exposed areas. People who have them usually develop more than one. AKs tend to grow slowly and usually do not cause any symptoms (although some might be

itchy or sore). They sometimes go away on their own, but they may come back. A small percentage (about 10%) of AKs may turn into squamous cell skin cancers.

Melanomas
Melanomas originate from melanocytes. They can occur in any part of the body. They are the least common but most dangerous type. They easily invade and metastasize. It is the most serious of all cutaneous malignancies. Roughly about 10% of all melanoma cases are strictly hereditary. UV exposure appears to be the greatest inducer of melanoma through many mechanisms, including suppression of the immune system of the skin, induction of melanocyte cell division, free radical production, and damage of melanocyte DNA. Disease like dysplastic nevus syndrome is a risk factor.
There are 4 main types of melanomas
Superficial spreading melanoma: this is the common and it often appears on the trunks or limbs. The cells tend to grow slowly at first before spreading to acrss the surface of the skin
Nodular melanoma: this is the second most common type. It tends to grow more quickly than others turning red rather than black as it grows
Lentigomaligna melanoma: this is less common and tends to affect the elderly. It starts as Hutchinson's frecle

or lentigomaligna which looks like a stain on the skin. It grows less slowly and is less dangerous than the other types. Acrallentiginous melanoma: this is the rarest kind of melanoma. It usually appears on the palm of the hands, soles of the foot or under the nails. It may appear as a dark spot that may not go away . It occurs more in dark skinned people and does not appear to be linked to sun exposure.
The ABCD rule outlines the clinical presentation and warning signals of the most common type of melanoma. "A" is for asymmetry (one-half of the mole does not match the other half); "B" is for border irregularity (the edges are ragged, notched, or blurred); "C" is for color (the pigmentation is not uniform, with variable degrees of tan, brown, or black); "D" is for diameter greater than 6 mm (about the size of a pencil eraser). Some clinicians now include "E" regarding evolution, elevation, or enlargement of a lesion.e a change in the moles appearance over a period of time.

Risk factors
- The main risk factor for skin cancer are the ultraviolent rays (UVrays) from the sun. The UV radiation in sunlight induces all major forms of skin neoplasm. UV radiation is composed of 2 main types of rays: UVA (UV radiation with a wavelength of 315 nm to 400 nm), UVB (280 nm to 315 nm).UVA rays

pass deeper into the skin and UVB rays are more likely to cause sunburn. UVB is associated with direct damage to DNA, whereas UVA is associated with indirect damage mediated by free radical formation and damage to cellular membranes.
- Individuals who are light skinned have a greater risk of acquiring the disease. This is because the melanin in the skin serves as a both a coloring pigment and as a protective mechanism against the UV rays of the sun
- Exposure to ionizing radiation or chemicals are known to predispose to the cancer. Absorption of ionizing radiations leads to a direct breaking of chemical bonds or to the production of radicals that produce massive damage in cellular molecules, including lipids and nucleic acids and these breaks leads to mutation which can transform to cancer
- Certain rare inherited skin conditions such as Xerodermapigmentosum, basal cell nevus syndrome

- Age, Race , climatic conditions

Diagnosis
The diagnosis of this disease is usually made by the dermatologist. Along with a standard physical exam, many dermatologists use a technique called dermoscopy (also known as dermatoscopy, epiluminescence microscopy [ELM], or

surface microscopy) to see spots on the skin more clearly. The standard for diagnosis is a biopsy by shave, punch, or excision. Biopsy is indicated in all skin lesions that are suspected of being neoplasms. Treatment is contingent upon histopathology. The process used to determine if the cancer has spread within the skin or to other parts of the body is called staging. For non melanoma skin cancers in Stage 0, the abnormal cells are confined to the epidermis, and it is said to be in situ. A carcinoma measuring less than 2 cm or greater than 2 cm depending on the region of the body involved is considered Stages I and II, respectively. In Stage III, it involves the structures below the skin such as muscle, bone, or cartilage or nearby lymph nodes and in Stage IV has metastasized. Both the Clark and Breslow systems are commonly used in the staging of MM. The Clark stage, ranging from I to IV, is based on the tissue level of invasion to IV. The absolute depth may differ, depending on the region of the body involved.14. Imaging tests such as MRI and CT scan can be used in cases where the cancer has metasized.

Prevention
Identifying abnormal moles and having them removed. Certain types of moles have an increased risk of developing into a melanoma

and can be done by self examination or by routine check by the doctors. A normal mole is usually an evenly colored brown, tan, or black spot on the skin. It can be either flat or raised,round or oval. Moles are generally less than 6 millimeters (about ¼ inch) across. They can appear at birth or during childhood or young adulthood. New moles that appear later in life should be checked by a doctor. Once a mole has developed, it will usually stay the same size, shape, and color for many years. Some may eventually fade away. most all moles are harmless, but it's important to recognize changes in a mole – such as in its size, shape, color, or texture – that can suggest a melanoma may be developing. Routine removal of many moles is not generally recommended as a way to prevent melanoma.

Treatment
Current local treatments such as surgery and radiation therapy work well for most skin cancers. Immunotherapy and newer forms of non-surgical treatment1 such as drugs, photodynamic therapy, and laser surgery may help reduce scarring and other possible side effects of treatment.

Conclusion
Exposure to sun causes most of the wrinkles and age spots on our faces, and it can lead to much more serious consequences as the skin cancer. Fortunately, when detected and treated early, skin cancer usually can be cured. The best treatment for these are early detected by self examination of irregular patches or moles in the body. Melanomas are usually life threatening and are better treated early.

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CANCER AND NUTRITION

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INTRODUCTION

Cancer cells result from multiple genetic defects caused by exposure to environmental, dietary and infectious agents. Nutritional factors have been found to account for about 30% of cancers in western countries. The contribution of diet to cancer risk in developing countries has been considered to be lower, around 20%, making diet second only to tobacco as a preventable cause of cancer. Tobacco use is directly related to at least 30% of cancers, when poor diet is included the incidences is much higher. Unravelling the effects of diet on cancer risk is, therefore, of great public health importance. Epidemiological studies have consistently shown that a high dietary intake of fruits and vegetable as well as whole grain is strongly associated with reduced risk of developing chronic diseases, such as cancer and cardiovascular disease.

It has been estimated by American Institute of Cancer Research (AICR) and World Cancer Research Fund (WCRF) that 30-40% cancers can be prevented by appropriate diets, physical activities, and maintenance of appropriate body weight (WCRF/AICR, 1997). It can be higher for some individual cancers. In last three decades, research on carcinogenesis has yielded sound knowledge. Nutrients can help in reducing cancer by antioxidant activity, reduction in free radicals, regulation of gene expression, stimulation of the immune system etc. The field of investigation of the role of nutrition in the cancer process is very broad, and it is becoming clear as research continues that nutrition plays a major role in cancer. Some diets are the major risk factor for colon cancer. Mutations are likely to occur in the cell lining of the colon and rectum because stool usually stays in the large intestine or colon for 24 to 36 hours, allowing the carcinogen to make their effects. The link between diet, nutrition and cancer is now fully appreciated and a new paradigm for diet, nutrition and cancer prevention can be developed as we have good epidemiological evidences that some foods can prevent or cause cancer.

FACTS

Cancer can be caused by a variety of identified and unidentified factors. The most important established cause of cancer is tobacco smoking. Other important determinants of cancer risk include diet, alcohol and physical activity, infections, hormonal factorsand radiation. The incidence of cancers of the lung, colon and rectum, breast and prostate generally increases in parallel with economic development, while the incidence of stomach cancer usually declines with development (WHO, 2003 and ACS, 2007). Cancer is now a major cause of mortality throughout the world and, in the developed world, is generally exceeded only by cardiovascular diseases. As developing countries become urbanized, patterns of cancer, including those most strongly associated with diet, tend to

shift towards those of economically developed countries. Between 2000 and 2020, the total number of cases of cancer in the developing world is predicted to have increased by 73% and, in the developed world, by 29% (Parkin, 2001).

DIETARY FACTORS WHICH INCREASES CANCER RISK

1.   Over Consumption of Energy giving foods (Obesity):Overweight/obesity, a reflection of excessive energy intake, can result from both over consumption of energy from food or low expenditure of energy as physical activity; the relative importance of these two factors can vary between individual and populations. It is estimated in a recent study, from a prospective cancer prevention cohort, that overweight and obesity accounted for 14% of all cancer deaths in men and 20% of those in women. Significant positive association is found between obesity and higher deaths rates for the following cancers: oesophagus, colon and rectum, liver, gallbladder, pancreas, kidney, stomach, prostate, breast, uterus, cervix and ovary. Although these figures/ percentages can be lower in some developing countries where virally-related cancers(eg.

Cervical cancer) are more important, the rapid increase in overweight/obesity in developing countries means that cancers due to it will become increasingly important. The large increase in endogenous estrogen levels caused by excess body fat among postmenopausal women probably explains the higher risk of postmenopausal breast and endometrial cancer. For other cancers, pathogenesis is less clear, but it has been suggested that hyperinsulinemia may increase the risk of colon cancer. The glycemic index is an indication of the blood sugar response of the body to a standardized amount of carbohydrate in food/diet. The glycemic load takes into account the amount of food eaten. Case-control studies and prospective population studies have tested the hypothesis that there is an association between a diet with a high glycemic load and cancer. The case-control studies have found consistent increased risk of a high glycemic load with gastric, upper digestive tract, endometrial, ovarian, colon or colorectal cancers. The prospective studies results have been

mixed. Some studies showed increased risk of cancer in the whole cohort with high glycemic load. Some studies found only increased risk among subgroups such as sedentary, overweightsubjects; other studies concluded that there was no increased risk, but there is still strong link between diabetes and cancer.

2. Preserved meat and Red meat: The diet of human contains mutagenic material from numerous sources. The most prevalent source is fried or broiled protein rich food such as meat and fish. Amino acids and hexoses react to form hetero-aromatic moieties and then condense with creatinine to form the imidazo- moieties of heterocyclic amines. Role of intestinal bacteria in mutagenic activation was demonstrated by Overvik et al., (1990), who found that the mutagenic content of urine and faeces were significantly higher in conventional rats than in germ free rats on fried meat diet. Red meat has been implicated in colon and rectal cancer as reported by Slattery et al. (1998). A recent meta-analysis also found red meat, and processed meat, to be significantly associated with colorectal cancer (Norat et al. 2002). Sesink et al., (1999) demonstrated that dietary heme induced

faecal cytotoxicity and hyper proliferation of colonic mucosa in rats. Consumption of red meat but not of white meat is associated with a high risk of colon cancer because the heme content of red meat is ten-fold higher than that of white meat. Meat, and the heterocyclic amines formed in cooking, has been correlated to breast cancer also. Chao et al., 2005 reported that consumption of red and processed meat had been associated with colorectal cancer in many but not all epidemiological studies; few studies had examined risk in relation to long-term meat intake or the association of meat with colon and rectal cancer. Long-term consumption of poultry and fish was inversely associated with risk of both proximal and distal colon cancer.

3. **Fat:** As with meat, international correlation studies show a strong association between per capita consumption of fat and colorectal cancer mortality (Armstrong and Doll, 1975). The hypothesis postulated that a high fat diet enhanced the formation and degradation of bile acids and neutral sterols exerting promoting effects in colon carcinogenesis. It had been found that dietary fats increased the fecal concentration of bile acids. Secondary bile

acids, deoxycholic acid and lithocholic acid, can act as tumor promoters in animal experimentation, which are ideally performed in rodents, using azoxymethane as carcinogen (Nagangast et al., 1988). Bile acids might have a direct stimulatory effect on subclasses of these enzymes (Craven et al., 1987).

4. Diet and Cancer grain intake plant food intake and rectal cancer, while refined grains were associated with increased risk of rectal cancer. A threshold of about 5 daily servings of vegetables was needed to reduce cancer risk and the effect was stronger among older subjects. Many other nutrients are co-variants with fiber, including folic acid.

5. Ratio of Omega 3:6 Fatty Acids: Omega 3 fatty acids (alpha-linolenic acid, EPA, DHA) have been shown in animal studies to protect from cancer, while omega 6 fatty acids (linoleic acid, arachidonic acid) have been found to be cancer promoting (Michael, et al. 2004). Studies found an association between a higher ratio of N-3 to N-6 fats and reduced risk of breast cancer

(London et al. 1993). Long chain N-3 and N-6 fats have a different effect on the breast tumour suppressor genes BRCA1 and BRCA2 (Bernard et al. 2002). Treatment of breast cell cultures with N-3 fats (EPA or DHA) results in increased expression of these genes while arachadonic acid had no effect (Bernard et al. 2002).

6. Alcoholic Beverages: Another aspect of diet clearly related to cancer incidence is consumption of alcoholic beverages, which convincingly increases the risk of cancers of the oral cavity, pharynx, larynx, oesophagus, liver, breast and colorectum. (IARC, 1988). The increase in risk appears to be primarily due to alcohol per se rather than specific alcoholic beverages. Whereas most of the excess risks occur with high alcohol consumption, a small (about 7%) increase in risk of breast cancer has been observed with approximately one drink per day. Recent studies suggest that the excess risk of breast and colon cancer associated with alcohol consumption may be concentrated in persons with low folate intake (Timothy, et al. 2004). Liver cancer is also very prominent with alcohol consumption.

7. Aflatoxin: Food contaminated with aflatoxin

convincingly increases the risk of liver cancer. Yeh, et al. (1989) evaluated the roles of HBV (hepatitis B virus) and AFB1 (aflatoxin B1) in the development of liver cancer. Aflatoxins, especially aflatoxin B1, are potent carcinogens in some animals; there is interest in the effects of long-term exposure to low levels of these important mycotoxins on humans. In 1988, the IARC placed aflatoxin B1 on the list of human carcinogens. This is supported by a number of epidemiological studies that have demonstrated a positive association between dietary aflatoxins and Liver Cell Cancer (LCC). However, this contamination occurs mainly in areas where hepatitis viruses are a major cause of liver cancer, and the importance of aflatoxin in the absence of hepatitis virus infections (for example, after immunisation) is not clear (Timothy, et al. 2004).

 8. **Salt preserved foods and Salt:** High intakes of salt-preserved foods and of salt probably increase the risk of stomach cancer. Many, but not all, the results of case control studies have shown a positive association between gastric cancer and the intake of high salt foods such as salted fish, cured meat, and salted vegetables, or the use of table salt (Kono and Hirohata, 1996). Salt is not carcinogenic by itself, but in experimental animals, hypertonic sodium chloride solutions which produce increased DNA synthesis, (Furihata, et al. 1984) i.e. more cellular growth in the gastric mucosa, resulting ultimately in atrophic gastritis (Kodama, et al. 1984), become co-carcinogenic when given with nitrosamides, and promoting when administered after the carcinogen (Takahashi and Hasegawa, 1986). A high intragastric salt concentration destroys the mucosal barrier, and leads to inflammation and damage such as diffuse erosion and degeneration. The induced proliferous change might enhance the effect of food-derived carcinogens (Tsugane, 2005).

 9. Very hot drinks and foods Consumption of very hot drinks and foods typically consumed in some cultures probably increases risk of cancers of the oral cavity, pharynx and oesophagus. There is a possibility that drinking very hot drinks such as tea, coffee or soup (Ji et al., 1998) may increase risk. Studies have reported up to 3 times the risk in people who regularly drink hot drinks when they are burning hot, rather than warm. Hot drinks may damage the lining of the esophagus; even thermal irritation may have a role in gastric carcinogenesis (Vecchia, et al., 1990). The most important factors involved in esophageal cancer are the habit by which tea and foods are consumed. In most studies, the rapid ingestion of hot food and tea has been shown to be risk factor (Cook-Mozaffari et al., 1979). Drinking hot coffee or other types of hot drinks is associated with esophagitis, which is probably a pre-neoplastic condition.

DIETARY FACTORS WHICH PROBABLY REDUCE RISK
 1. Fruits and Vegetables: Most important idea of modern nutrition research is that a diet rich in fruits and vegetables protects against cancer. The same diet also protects against almost all other diseases, including cardiovascular disease and diabetes. For most cancers, people (1/ th of the population) who ate the least amount of fruits and vegetables had about twice the risk of cancer compared to those who ate the most fruits and vegetables. Even in lung cancer, after accounting for smoking, increasing fruits and vegetables reduces

lung cancer; an additional 20 to 33 percent reduction in lung cancers is estimated (WCRF/AICR, 1997). Steinmetz and Potter (1996) reviewed the relationship between fruits, vegetables, and cancer in human epidemiologic and animal studies and found "the evidence for a protective effect of greater vegetable and fruit consumption is consistent for cancers of the stomach, esophagus, lung, oral cavity, pharynx, endometrium, pancreas, and colon". Vegetables, particularly raw vegetables, were found to be protective; 85 percent of the studies that queried raw vegetable consumption found a protective effect. There are many substances that are protective in fruits and vegetables, so that the entire effect is not very likely to be due to any single nutrient or phytochemical. A joint report by the World Cancer Research Fund and the American Institute for Cancer Research found convincing evidence that a high fruit and vegetable diet would reduce cancers of the mouth, pharynx, esophagus, lung, stomach, colon and rectum; evidence of probable risk reduction was found for cancers of the larynx, pancreas, breast, and bladder. Some recent prospective studies have

not supported important protective effects for cancers of the lung and breast, and have suggested that the reduction in risk for colorectal cancer may be modest. These conflicting results, which add to concerns about the potential for bias in case-control studies, also suggest the need for some caution regarding diet, nutrition and cancer conclusions about intake of fruits and vegetables and the risks of oral, esophageal and stomach cancers, which have not been adequately examined in large prospective studies. Also, fruits and vegetables are extremely heterogeneous, and it is possible that only specific foods are related to risk for specific cancers.

2. Phytochemicals:
Evidence suggests that dietary phytochemicals/antioxidants can reduce cancer risk. Consumption of quercetin in onions and apples was found to be inversely associated with lung cancer risk (Le, et al. 2000). The effect of onions was particularly strong against squamous cell carcinoma. Boyle, et al. (2000) showed that increased plasma levels of quercetin following a

meal of onions were accompanied by increased resistance to strand breakage by lymphocyte DNA and decreased levels of some oxidative metabolites in the urine. Surh et al. (1998) reviewed evidence from animal studies to support the anti-carcinogenic and anti-mutagenic effects of capsaicin, the pungent ingredient present in red pepper and ginger. As evaluated by several biomarkers in tumor tissue, soy products decreased angiogenesis, increased apoptosis and slightly decreased proliferation of MB49 bladder carcinoma cells injected into mice (Kubena, and McMurray, 1996; and Zhou, et al. 1998). Genistein (5, 7, 4'-trihydroxyisofavone) is one of the major isofavonoids in soy. In human breast cancer cells in culture, genistein has anti-proliferative effects on mitogen-stimulated growth. Soy isofavonoid conjugates have chemopreventiveactivity in carcinogen induced rat models of breast cancer (Barnes, 1997). In rats, the mechanism of the preventive action is in part dependent on its estrogenic activity, which causes rapid differentiation of cells of the mammary gland. The potentially cancer-inducing oxidative damage might be prevented or limited by dietary phytochemicals found in fruit and

vegetables.

3. Probiotics: The Bogdanovet et al., (1962) reported that Lactobacillus bulgaricus produced substances which were active against tumor development.

Intake of fermented or culture containing dairy foods have been reported to reduce the risk of colon cancer (Miller et al., 2000). Although these findings are not entirely consistent and may depend in part on such factors as the strain of bacteria used in dairy foods. It was reported that consuming yogurt as infrequently as one to three times a month was associated with protection against colon cancer (Peters et al., 1992). Consumption of products containing viable lactic acid bacteria may lower risk of colon cancer by reducing pro carcinogenic substances or by reducing the level of enzymes (β-glucuronidase, β-glucosidase, azoreductase and nitroreductase) that convert pro carcinogen into carcinogens in the intestine. It appeared that this Lactobacillus species interfere with the initiation of early promotional stages of chemically induced carcinogenesis.

Bifidobacterium are the predominant bacteria in human gut micro flora and have been considered to exert a beneficial effect on human health by maintaining the equilibrium of the colonic microflora (Ueda, 1986). B. longum also reduced carcinogen induced cell proliferation, the activity of colonic mucosal and tumor ornithine decarboxylase, and the expression of Ras- p21 oncoprotein in rats (Singh et al., 1997). Increased activity of ornithine decarboxylase, a rate limiting enzyme in the metabolism of polyamines, had been observed in colon adenomas and carcinomas, reflecting colonic mucosa hyper proliferation. In general species of Bifidobacterium and Lactobacillus, have low activities of enzymes involved in carcinogen formation and metabolism in comparison to other major anaerobes in the gut such as bacteroids, eubacteria and clostridia (Saito et al., 1992).

5. Vitamin C, most common supplement taken, has been studied in relation to health. Low blood levels of ascorbic acid are detrimental to health (Fletcher et al. 2003) and vitamin C is correlated with overall good health and cancer prevention (Lee, et al. 2003). At high concentrations ascorbate is preferentially toxic to cancer cells.

6. Vitamin B12 has not been proven to be an anti-cancer agent, but there is some evidence indicating that it could be beneficial. Some experimental cancer studies have been carried out with various forms of vitamin B12. Methylcobalamin inhibited tumor growth in mice (Nishizawa, et al. 1997), and caused mouse mammary tumor cells to undergo apoptosis, even when stimulated to grow by the presence of growth-inducing androgen. Methylcobalamin, but not cyanocobalamin, increased the survival time of mice bearing implanted leukemia tumor cells (Tsao, and Myashita, 1993). 5'-deoxyadenosylcobalamin and methylcobalamin, but not cyanocobalamin, were shown to be effective cytotoxic agents. Methylcobalamin also was able to increase survival time and reduce tumor growth in laboratory mice. Laboratory mechanistic evidence for the effects of vitamin B12 was seen in a laboratory study with vitamin B12 deficient rats. This evidence indicating that vitamin B12 is an important nutrient for genetic stability, DNA repair, carcinogenesis, and cancer therapy (Choi, et al. 2004). The form of administered vitamin B12 may be important.

Folic acid has an integral role in DNA methylation and DNA synthesis. It works in conjunction with vitamin B6 and vitamin B12 in the single carbon methyl cycle. If insufficient folic acid is not available uracil is substituted for thymidine in DNA, which leads to DNA strand breakage. Many studies have found a significant reduction in colon, rectal, and breast cancer with higher intakes of folic acid and their related nutrients (vitamin B6 and B12) (Freudenheim, et al. 1991, Giovannucci, et al. 1995 and Slattery, et al. 1997). Alcohol is an antagonist of folate, so that drinking alcoholic beverages greatly magnifies the cancer risk of a low-folate diet. Genetic polymorphisms in the methylene tetra-hydrofolate reductase and the methionine synthase genes which increase the relative amount of folate available for DNA synthesis and repair also reduces the risk of colon cancer (Ma, et al. 1997 and Le, et al. 2002). Most of the breast cancer studies only found a protective effect of folate among women who consumed alcohol (Zhang, et al. 2003 and Sellers, et al. 2004). Studies showed that the risk of cancer due to

family history can be modified by high folate intake, so a prudent anti-cancer diet would be high in dark green leafy vegetables.

8. **Vitamin D** Active hormonal form of vitamin D has the potent anticancer properties (Michael, 2004). It has been discovered that various types of normal and cancerous tissues, including prostate cells (Schwartz, et al. 1998), colon tissue (Tangpricha, et al. 2001), breast, ovarian and cervical tissue (Friedrich, et al. 2003), pancreatic tissue and a lung cancer cell line (Mawer, et al. 1994) all have the ability to convert the major circulating form of vitamin D, 25(OH) D, into the active hormonal form, 1, 25 (OH) 2D. So, there is a local mechanism in many tissues of the body for converting the form of vitamin D in the body into a hormone that has anticancer activity.

9. **Carotene α- and β-carotene and other carotenoids** have been studied to see if these compounds can decrease cancer risk. Generally accepted that β-carotene is a cancer-protective agent (Michael, 2004). Beta-carotene may be a marker for intake of fruits

and vegetables, but it does not have a powerful protective effect in isolated diet.. α -carotene has been found to be a stronger protective agent (Michaud, et al. 2000 and Knekt, et al. 1999) than its well-known isomer β-carotene. Studies tend to agree that overall intake of carotenoids is more protective than a high intake of a single carotenoid (Stefani, et al. 1999). So, a variety of fruits and vegetables is still a better anti-cancer strategy than just using a single vegetable high in a specific carotenoid.

10. Selenium and Calcium: Selenium is a mineral with anti-cancer properties. Many studies in the last several years have shown that selenium is a potent protective nutrient for some forms of cancer (Duffield, et al. 2002 and Clark, et al. 1996). The selenium supplement was most effective in ex-smokers and for those who began the study with the lowest levels of serum selenium (Van, et al. 2003). Several prospective studies have also examined the role of selenium in cancer prevention, particularly for prostate cancer (Li, et al. 2004). If a person has low selenium levels and other antioxidant defences are also low the cancer risk is increased even further.

High intakes of calcium may reduce the risk for colorectal

cancer, perhaps by forming complexes with secondary bile acids in the intestinal lumen (WCRF, 1997) or by inhibiting the hyperproliferative effects of dietary haem (Sesink, et al. 2001).

11. **Conjugated Linolic Acid(CLA)** has shown to have positive effects on immune function and body composition. CLA in unusual among anticancer compounds because it reduces the incidences of cancer and also suppresses the growth of existing cancers. It has been suggested that CLA may act by antioxidant mechanisms, pro-oxidant cytotoxicity and reduction in cell proliferation activity. CLA has shown to inhibit the development of mouse epidermal tumors, mouse fore stomach cancer and rat mammary cancer. Feeding mice (Ha, et al. 1990) and rats (Ip, et al. 1991) a mixture of CLA isomers resulted in the preferential incorporation of the 9-cis, 11-trans isomer into membrane phospholipids, suggesting that the 9-cis, 11-trans CLA is the biologically active isomer. The fact that CLA is protective in the methylnitrosourea model suggests that it may have a direct modulating effect on susceptibility of the target organ to neoplastic transformation.

CONCLUSION

Our current acquaintance points to the idea that diet contains multiple biologically active compounds and nutrients and non-nutritive compounds that can affect gene expression and have different bioavailability profiles and can be converted into isomers and metabolites of different potency, which lead to complex beneficial interactions including cancer prevention. The knowledge we have gained of the carcinogenesis process and the role of dietary constituents on the effects of tumorigenesis processes, it is now a widely accepted concept that cancer is mostly a preventable disease. A new concept for diet and cancer prevention, research and strategy must be developed to include the nutrition modulation of the carcinogenesis pathway by nutrients, micronutrients and phytochemicals. This pathway includes nutrition modulation of DNA damage and repair mechanisms; DNA methylation pathways influencing gene expression and cellular phenotypes; antioxidant rearranging and oxidative stress modulation; target receptors and signaling pathways; cell cycle controls and check points; and antiangiogenic properties. With new DNA chip technology and functional proteomics, complex nutrient-gene interactions can now be investigated.

Cancer Research on nutrient-gene interactions not only provides pathophysiologic mechanisms of cancer causation and prevention, but also improves the ability to conduct the cancer surveillance that is crucial in identifying at-risk populations. By combining chemoprevention approaches using single nutrients with multiple dietary constituents and functional foods, the scope of the future cancer prevention strategies will be broadened. Research on eating behaviour and changing dietary patterns as well as psychobiological approaches must be included in any cancer prevention strategy. New frameworks are to be developed logically, using multidisciplinary approaches that include lifestyle and environmental changes, dietary modifications and physical activity to reduce the burden of cancer for the general population as well as high risk individuals (Vay, et al. 2001, Michael, 2004 and Thorogood, et al. 2007).

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PATIENT-CENTERED CARE

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William Osler once said, "A good physician treats the disease, the great physician treats the patient who has the disease". Irrespective of the fact that all health care is targeted at the patient, the care provider needs to understand that the care provided is for the patient and not only for the pathology. There is need to emphasize patient-centered care different from other models of care practiced in clinical settings. Patient-centered care is defined as healthcare that establishes a PARTNERSHIP among practitioners, patients and their families (when appropriate) to ensure that decisions respect patient's wants, needs and preferences; and that patients receive the education and support they need to make decisions and participate in their own care. In simpler terms, it is a pattern of care which engages the patient as a partner in his/her care.

But why is this important? The goal of patient-centered care according to Reynolds April is to empower the patient to become active participants in their own care. Patient-centered care enhances patient satisfaction, improves patient outcomes, greatly improves health care utilization costs, is associated with fewer medical malpractice claims and positive benefits for health professionals such as greater job satisfaction. Ideally, patient-centered care adopts a change in philosophy by the physicians and indeed all healthcare providers. Thus a patient becomes a client and a consultation becomes a partnership. In view of this, the patient becomes in part responsible and participant in his/her own care and enabling a more efficient collaboration with the physician in the process of health care delivery.

The distinguishing features of the patient-centered care model will be considered in the following components:
- **Exploring the illness and disease experience**

At any clinical partnership, the primary concern is that for the patient. Hence, physicians must consider the patient's illness experience i.e. the patient's feelings/fears, ideas, expectations and disabilities arising from the illness. By so doing, a good physician can acquaint him or herself with the desires of the client in the clinical encounter. Then, the physician employs clinically-derived disease experience involving the history taking, physical examination, investigations and management to ascertain what a patient needs different or similar to what the patient desires. By so doing, the physician is able to tell in certain terms a client's health concerns and what can be done to improve the client's health.

During such a partnership, the doctor invites the client to the conversation using

open-ended questions while listening avidly with minimal interruption, eventually verifying details at the end and summarizing to ascertain accuracy.

- **Understanding the whole person**

According to Harvey Cushion, a physician is obligated to consider more than the diseased organ, more even than the whole man – he must view the man in his world. Hence, there is the need for the physician to explore all the systems at play in the client's life and how the impact the illness experience and expected outcomes. Factors such as client's interaction with his/her family, friends, occupation, religion, culture, economy as well as state of mind and the entirety of his/her health must not be relegated at any time during the partnership. Not only does this greatly assist the physician in his management options, but also gives the client the impression that he or she is being offered holistic care and not treated as a disease entity.

- **Finding a common ground**

To effectively communicate, a physician must attempt to find a common and favorable ground upon which to lay the foundations of clinical partnership. Client's desires and expectations, priorities of management and; religious and cultural bias must be considered in laying the foundation for a sustainable and functional partnership.

A worthy physician must find an efficient means of connecting a client's desires as expressed in the illness experience to the health needs of the client and even more importantly, communicating this to the client successfully to achieve a united front in proposing and planning the client's management.

- **Incorporating disease prevention and health promotion**

The aim of any exemplary clinical partnership is not only to address the presenting pathology but also to offer comprehensive health care. Hence, disease prevention and health promotion must be engrained in client's management to improve and maintain health.

Thus, it is no longer sufficient to address only the client's immediate health needs. A physician must go the extra mile to know the requirements for healthy living and intentionally attempt to improve and promote the health and general wellbeing of the client.

- **Enhancing doctor-patient relationship**

Jerry Mc Geenery M.D. said, "The problem is not so much that patients are unengaged… but rather than that, providers are not very engaging". Physicians must attempt to adequately engage the patient while employing qualities such as empathy, trust, care, and honesty to foster a better doctor-client partnership while maintaining the ethical codes of conduct.

Every fruitful partnership is marked by understanding and it is no different for a clinical partnership. In establishing and fostering such a partnership, there must first be a common goal which is the client's

health. Both parties would then have to come up with a collaborative plan of action, in this case, the client's management plan. However, all these efforts would fail if such a partnership is not furnished with trust and honesty. A good physician must also be empathetic and show genuine care for the client to enhance such a relationship.

• **Being realistic**
Very importantly, physicians must be realistic with management goals and prognosis bearing in mind each client's unique preferences, socio-cultural and religious biases; and resources available to the patient in the forms of money, materials, manpower and time. However, the physician must bear in mind that the management layout irrespective of these must be multi-optional (when available) and non-directive.
A client must be made abreast of possible management modalities and options. Management goals proposed by the physician must also be feasible medically,

financially and otherwise. In giving disease prognostication, a physician must be careful to not dish out false hopes and at the same time, not exaggerate the client's condition. Where the physician has to break bad news, he or she must do so appropriately while allowing the client the liberty to express their feelings. Patient-centered care has been largely associated with increased job satisfaction on the part of the physician and increased client satisfaction about health services sought. Setbacks to practicing patient-centered care include the poor pay per patient encounter, fractionated/specialized care and the inadequacy of motivation, wisdom and time.

Patient-centered care is currently the advocated clinical model for consultation. It represents the subset of the art of medicine and its importance cannot be over-emphasized. Every medical practitioner, every health care provider and indeed every service provider must realize the need to

engage and partner with their clients for better and more acceptable outcomes.

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ONCOLOGY EDITION

PALLIATIVE CARE FOR CANCER PATIENTS

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INTRODUCTION

The Word Health Organization (WHO) defines palliative care as "an approach that improves the quality of life of patients and their families facing the problem associated with life-threatening illness, through the prevention and relief of suffering by means of early identification and impeccable assessment and treatment of pain and other problems, physical, psychosocial and spiritual."

Cancer patients develop severe physical and psychological symptoms as a result of their disease and treatment. Their families commonly suffer great emotional distress as a result of caregiving. Palliative care access can improve symptom control and quality of life and reduce the cost of care.Early palliative care access can also extend survival.

Unfortunately, only a minority of cancer centers around the worldhaveoutpatient palliative care centers and/or inpatientpalliative care units. In this article, we use a case presentation to discuss the impact of early palliative care access.

MODELS OF PALLIATIVE CARE DELIVERY

Palliative care is provided by a team of health care professionals that includes a primary oncologist, palliative care specialist, registered nurse trained in palliative care, chaplain, social worker, pharmacist, counsellor, occupational therapistand physiotherapist.The role of the palliative care team is to assess and manage patients' and families' care needs in the physical, psychological,social, spiritual, and information domains. It also includes the pharmacological management of symptoms.

The role of the oncologist includes making a diagnosis of the cancer and determination of its stage, development of a complex treatment plan in coordination with other team members and management of cancer treatment complications. These are time-consuming tasks that make it increasingly difficult for a busy oncologist to address multiple palliative care needs in the same visit. The lack of time is becoming an even larger concern as the body of knowledge and available interventions become more complex in oncology and palliative care.

In the Solo Practice Model (Fig. 1A), the oncologist takes care of all the disease assessments, management as well as all palliative care needs. This model is commonly required in community practices where palliative care consultants are unavailable. The key advantage is that the patient receives all aspects of care from the same oncologist. The
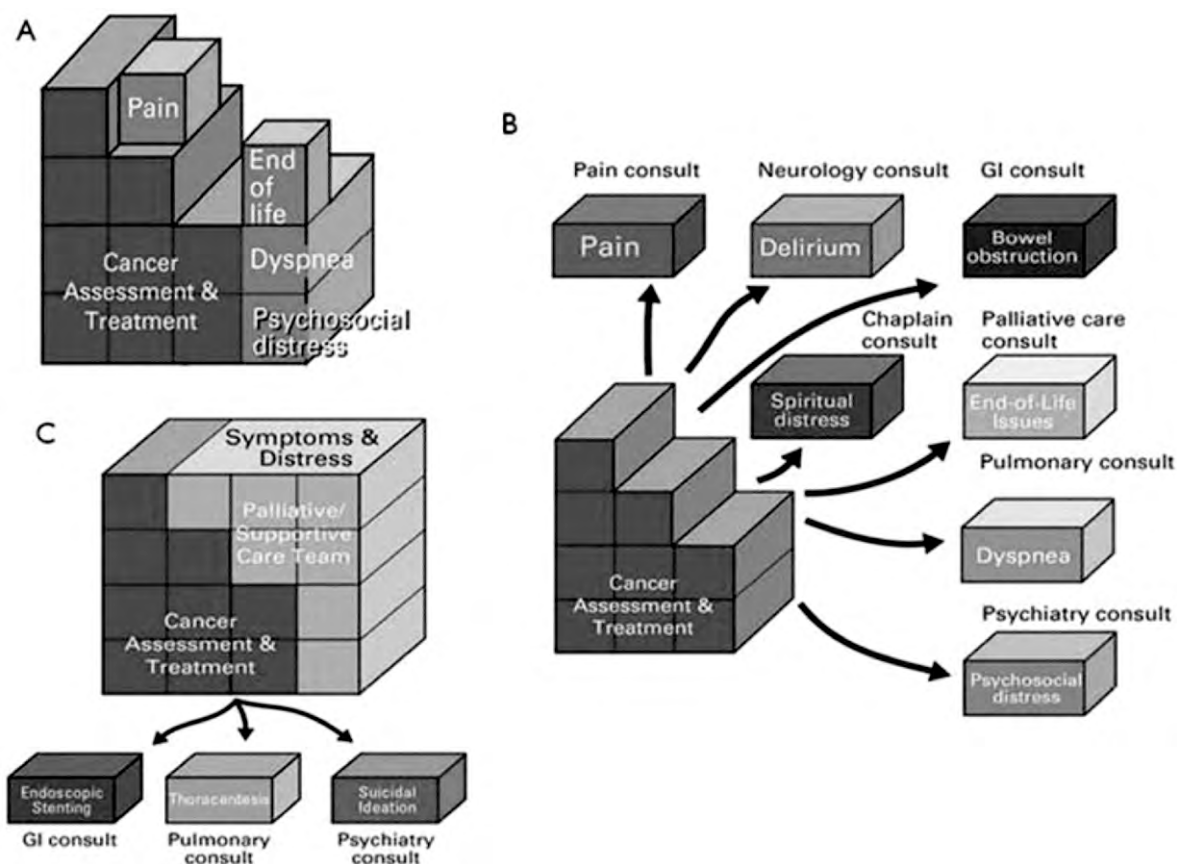
Figure 1 illustrates three models for the integration of oncology and palliative/supportive care.

disadvantage includes time constraints, limited palliative training and a risk of burnout of the oncologist as a result of the need to assume all aspects of care. To deliver high-quality palliative care under this model, the solo practitioner needs to receive extensive training.

In the Congress Approach Model (Fig. 1B), the oncologist refers patients to multiple consultants, such as a pain specialist for pain and a psychiatrist for emotional distress. The congress model has

limitations, which include fragmented communication among the health care providers themselves and betweenphysicians and patients and their families; this model can be time-consuming and exhausting for patients and expensive for patients and the health care system. The main risks of the congress model include potential polypharmacy, and in some instances, conflicting care plans, especially when there is poor communication among consulting specialists.
The Integrated Care

Model (Fig. 1C) allows the oncologist to focus on all aspects of cancer management while the palliative care team addresses physical symptoms and psychosocial concerns. This model includes consultation of other specialists for specific reasons, such aspulmonologists for interventional bronchoscopy aimed at relieving bronchial obstruction. However, because most problems can be managed by the palliative care team, there are fewer visits and lower costs. Taking advantage of these

established teams allows the oncologist to focus on the complex issues associated with the management of cancer.

BENEFITS OF PALLIATIVE CARE

The World Health Organization states that palliative care:

· Provides relief from pain and other distressing symptoms

· Affirms life and regards dying as a normal process

· Intends neither to hasten or postpone death

· Integrates the psychological and spiritual aspects of patient care

· Offers a support system to help patients live as actively as possible until death

· Offers a support system to help the family cope during the patients illness and in their own bereavement

· Uses a team approach to address the needs of patients and their families, including bereavement counselling, if indicated

· Will enhance quality of life, and may also positively influence the course of illness

· Is applicable early in the course of illness, in conjunction with other therapies that are intended to prolong life, such as chemotherapy or radiation therapy, and includes those investigations needed to better understand and manage distressing clinical complications.

Some benefits of palliative care include:
Symptom Control: Studies have shown improved symptom control in patients with advanced cancer as a result of a palliative care consultation. Studies by Follwell et al. and Rabow et al. also showed significant improvements in the symptoms of patients receiving palliative care inthe outpatient setting. Similar improvements in physical andpsychological symptoms and other patient-related qualityofcare outcomes were found when palliative care was deliveredby inpatient palliative care units, mobile team consultations, and intensive care unit palliative care consultations. In a recent study by Casarett et al., patientsadmitted to palliative care units achieved better symptom control than patients seen by palliative care teams at regular sitesof care (i.e., medical/surgical wards, intensive care units, andnursing homes). These results are very impressive because patients admitted to palliative care units have more severe symptom distress than patients in other inpatient settings.

There are numerous reasons why palliative care is more capable of improving symptoms than standard oncology care.Palliative care teams conduct systematic symptom evaluations, using standard tools such as the Edmonton Symptom Assessment System and document symptom distress ona regular basis. In addition, palliative care teams provide patients with regular assessments of emotional distress, screenings for delirium, and screenings for risk factors for the misuseof opioids using tools such as The Cut Down, Annoyed, Guilty, and Eye Opener (CAGE) questionnaire. Palliative care inpatients and outpatients have access to an interdisciplinaryteam capable of rapidly managing physical, emotional, functional, social/family, and spiritual problems.

Lower Cost:

A disproportionate amount of resources is spent at the end of life. 30% of Medicare expenditures are attributable to the 5% of beneficiaries who die each year and about one-third of the expenditures in the last year of life are spent in the last month of life. Several studies have found out that patients with advanced disease who received palliative care consultations had lower medical costs at their end of life. These investigators also found that higher costs were associated with a worse end-of-life experience. A study by Morrison et al. found that palliative care consultation teams can lower hospital costs for Medicaid patients with advanced illnesses. Based on data from four diverse urban New York hospitals, the authors concluded that the state of New York could save an estimated $84 –$252 million annually if every hospital with 150 beds had a fully operational palliative care consultation team. There are a number of possible reasons why a palliative care consultation is capable of reducing the cost of care. Among the most important of these are that palliative care might reduce intensive care unit deaths, reduce the number of days patients spend in acute inpatient care, and help avoid the use of unnecessary and excessive procedures. The simultaneous discussion of potential end-of life care and cancer treatment is likely to allow patients and their families to better adjust to events such as progressive disease and the need to discontinue therapy.

Survival:
Studies by Temel et al. and Bakitas et al. showed preliminary evidence for a survival benefit in patients who received palliative care. This benefit may be a result of multiple factors. Firstly, better symptom control and physical and psychosocial function could lead to a better ability to adhere to cancer treatment regimens. Secondly, physical (i.e., pain, dyspnea, fatigue) and emotional (i.e., anxiety, depression) distress have been linked to greater mortality related to cancer. Bakitas et al. and, Temel et al. found that palliative care access resulted in less depression and anxiety. Finally, effective transition to end-of-life care might prevent patients from receiving potentially harmful interventions.

OVERVIEW OF PALLIATIVE CARE IN NIGERIA

This is a new and evolving practice, which, for several years prior to 2003, was powered solely by non-governmental organisations (NGOs) and missionary institutions like the Centre for Palliative Care, Nigeria (CPCN) and Hospice Nigeria, Lagos respectively. Presently, these NGOs continue to encourage government involvement in palliative care development through capacity building, advocacy, training and community development. Current palliative care services are mainly hospital-based, offering adult and paediatric inpatient and outpatient consultations, pain management, home visits and bereavement support. The major palliative care units are found in six tertiary health institutions in the country. In January 2007, the Hospice and Palliative Care Association of Nigeria (HPCAN) was formed to promote the

practice of palliative care and ensure the provision of affordable and accessible palliative care to all Nigerians. Presently, HPCAN has commenced the inauguration of local chapters of the association in all the tertiary health institutions in the country to facilitate the dissemination of palliative care services in the nation. Atpresent, there are no national policies or programmes oncancer pain relief and palliativecare. Every year, a lowallocation of the national budget is made to healthcare, inwhich there is nospecific consideration for palliative care. There is no system in place to monitor constant opioid availability and accessibility to patients. Strict regulation on the importation of opioids exists with the National Agency for Food and Drug Administration (NAFDAC) and the Federal Ministry of Health (FMOH) being responsible for such regulation. ChallengesThe trend of 'death denial' exists and in many tribes it is considered a taboo to speak of impending death (Onyeka2011). In south-west Nigeria, there exist some beliefs and attitudes that encourage secrecy when illness occurs in a family (Otegbayo et al. 2010). Many see the origin of illness as being 'spiritual', hence they seek help with spiritualists and churches before getting proper medical care, giving rise to late presentation (Ezeome&Anarado 2007).

Widespread use of traditional remedies and herbs amongcancer patients in Eastern Nigeria has been established (Ezeome&Anarado 2007) and contributes to late presentation.

Expression of pain varies within Nigeria. For example, parturients from the east and south of Nigeria have emotional and public display of pain during labour as opposed to the stoic northern parturient. Also, the segregation of sexes in northern Nigeria owing to religious inclinations, demands female patients to be seen by female doctors and this practice may pose a limitation to care of the female cancer patient in an environment without a female palliative care physician or health worker.

National medical or nursing academic curriculum for palliative care at both undergraduate and postgraduate levels is lacking and palliative care research is nascent. Significant lack of awareness of palliative care, cancer pain relief and opiophobia among health workers, policy makers and public exists (T.C. Onyeka, H.A. Ezike and E.C. Onuorah, 2013, unpublished studies).

Problems of opioid unavailability, infrastructure lack and ill-equipped healthcare facilities also militate against palliative care growth. Oncology services are few and poorly developed, with only 10 hospitals as designated cancer centres. Seven radiotherapy centres and one brachytherapy unit, at various operational levels, serve this large population. Radiotherapy remains a costly venture for cancer patients, amidst high rates of unemployment and

poverty.

Many essential anti-cancer drugs, modern chemotherapy treatments and consumables continue to be either unaffordable or unavailable.

RECOMMENDATIONS

The World Health Organization's "little cost, big effect" measures which include education, increased drug availability, and changes in government policy should be adopted.

Advocacy and public education are essential to creating awareness, breaking the fallacy of cure versus palliation in our communities, and raising the profile of palliative care.

Research in palliative care should be encouraged as this would help in the identification of palliative care needs in the country and subsequently improve standards of practice of the profession as well as care of the terminally ill. Policymakers in the government should ensure that palliative care is integrated into the nation's health system, with some budget allocated for that purpose.

Medical practitioners should be encouraged to incorporate this field of medicine into their routine practice, following the Uganda example where palliative care for patients with AIDS and cancer has been made a priority in its national health plan.[3]

Finally, palliative care medications such as opioids should be included in the essential drug list.

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THE ROLE OF INTERVENTIONAL RADIOLOGY IN CANCER MANAGEMENT

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Introduction:

Interventional Radiology (IR) offers minimally invasive diagnostic and therapeutic procedures for cancer and cancer-related processes. Surgery, chemotherapy and radiation therapy remain the mainstays of cancer treatment but interventional radiology continues to grow in importance as an alternative mode of therapy or an altogether new form of treatment for patients with cancer.

Interventional Radiology is occupying an increasingly prominent role in the care of patients with cancer, with involvement from initial diagnosis, right through to minimally invasive treatment of the malignancy and its complications. Adequate diagnostic samples can be obtained under image guidance by percutaneous biopsy and needle aspiration in an accurate and minimally invasive manner. IR techniques may be used to place central venous access devices with well-established safety and efficacy. Therapeutic applications of IR in the oncology patient include tumor treatments such as trans-arterial chemoembolization and radiofrequency ablation, as well as management of complications of malignancy such as pain, organ obstruction and venous thrombosis.

Many IR procedures can be performed on an outpatient basis or during a short hospital stay. Consequently, these procedures tend to be less expensive than other forms of therapy and frequently are associated with less morbidity.
The primary goals of the procedures performed in the IR suite can be categorized based on the purpose of each procedure. These goals include the diagnosis of cancer or cancer-related diseases, the treatment of cancer and the treatment of complications arising from cancer.

Diagnosis of cancer or cancer-related diseases:
Appropriate treatment of malignancy is dependent on a timely definite diagnosis and on accurate staging of disease. While non-invasive imaging techniques have improved assessment and staging of cancer, histological confirmation remains the gold standard for definitive diagnosis of many tumors. Biopsies to establish histological diagnosis are increasingly performed using minimally invasive techniques by interventional radiologists. These minimally invasive techniques are applicable to a wide range of biopsy sites and, in most organ systems, have been demonstrated to be highly accurate with a low complication rate.

In biopsy planning,

modern cross-sectional imaging techniques help define lesion location, accessibility and suitability for biopsy and aid in ensuring the correct lesion is sampled in the context of multiple lesions. In selected cases where lesions are present in more than one organ, percutaneous biopsy may be used to concurrently confirm histological diagnosis and establish oncological staging by sampling the lesion suspicious for metastasis. With improving histological and cytological techniques, particularly in immunohistochemical analysis, histological and possibly molecular examination may determine with more certainty the probable underlying tumour site and can predict sensitivity to chemotherapeutic drugs in some cases. In cases where surgical biopsy remains the preferred diagnostic approach, preoperative tumor localization can be performed with image guidance in many situations; an example of this is wire-localisation prior to excisional breast biopsy and in the chest to guide video-assisted thorascopic surgery (VATS) for removal of lung nodules that would otherwise require open thoracotomy.

Choice of imaging modality is multifactorial and there are many available options. Ultrasound offers the benefit of real-time imaging allowing accurate monitoring of the needle trajectory through tissues en route to the target lesion, with the dual advantage of avoiding patient and staff exposure to ionizing radiation during biopsy. When lesions are visible by ultrasound, with suitable equipment and appropriate operator experience, this modality can provide equivalent or superior guidance to Computed Tomography (CT) at time of biopsy. CT guidance offers enhanced anatomical detailing and delineation with more precise needle localization when compared to ultrasound. Complications, if any, are easily recognized on CT scan. It finds particular utility in thoracic, pelvic and retroperitoneal biopsies which are frequently difficult to perform under ultrasound guidance. The main disadvantage is exposure to ionizing radiation; both patient and, to a lesser extent, staff are exposed to this at time of biopsy, and the extent of such radiation exposure is related to the total scan time, scan parameters such as peak tube kilovoltage(kVp) and milliamperage(mA), the body part imaged and the size of the patient. CT fluoroscopy is an additional tool which allows near real-time imaging of needle trajectory, which when appropriately used will shorten procedure duration.

Interventional Radiology in the treatment of cancer:
- **Central venous access:** an integral part of care of the cancer patient is

intermediate and longer-term vascular access as a means of medication, chemotherapy or parenteral nutrition administration as well as allowing repeated blood sampling without need for venipuncture. On an annual basis in UK, over 200,000 central access devices are inserted, many in oncology patients and while previously inserted by anesthetists and surgeons, IR techniques are now commonly employed to site these devices. Image-guided percutaneous central venous access involves placement of a catheter with its tip at the cavoatrial region or right atrium with assistance of real time imaging, usually fluoroscopy or ultrasonography.

Intraprocedural complications of central access catheter insertion are typically related to injury to surrounding structures or catheter malposition, and thus occur less frequently when performed under image guidance than with blind technique guided by external landmarks. The right internal jugular vein is the most commonly used central access route, but image guidance is particularly used to map alternative access routes in difficult cases. The longer-term complications of central access devices include thrombosis and infection and rates of these are unaffected by insertion technique. Patients with cancer have a 4- to 6- fold increased risk of thrombosis compared to the general population, a risk which is further increased by placement of a central venous catheter.

• **Arterial embolization techniques:** minimally invasive image-guided catheter treatments as an adjunct or alternative to surgery are increasingly being used in the management of malignancy. Delineation of the arterial supply of a solid tumour by contrast enhanced CT or MRI facilitates devascularisation of neoplastic tissues by transcatheter embolization. Bland mechanical occlusion can be achieved by gelfoam, polyvinyl alcohol, blood clots, coils and embopheres introduced into the tumour bed and lodged in the feeding vessel following fluoroscopic guided selective arterial catheterization by IR. This technique can be used alone as the primary modality of treatment where interruption of the afferent blood supplies to thetumour induces hypoxia and inhibits tumour growth, or in conjunction with ablative treatment or conventional surgery. Arterial embolization also has a role prior to surgical resection of hypervasculartumours

in an effort to reduce operative blood losses. In a palliative setting, embolization may be used to reduce tumour burden and aid symptomatic relief. In acute haemorrhagic complications of malignancy, such as massive haemoptysis, haematemesis or pleural or peritoneal haemorrhage, IR embolization of the bleeding vessel has therapeutic applications also.

Transarterial chemoembolization (TACE) is a modification of the above technique which is usually applied to hepatic tumours. Following selective hepatic artery catheterization, a single or combination chemotherapy therapy combined with a delivery agent, usually ethiodized oil is directly infused along with an embolic agent that occludes the flow through the catheterized artery. Radioembolisation, a novel form of liver-directed brachytherapy is another modality with potential for focused treatment of hepatic malignant lesions. Selective catheter placement allows introduction of beta-radiation emitting radioisotopes directly into the tumour mass by means of microspheres (glass, albumen, or resin). Depending on the nature of the tumour, various radionuclides are used, including yttrium 90, rhenium and holmium. Beta radiation has a very low penetration (approx. 2.5mm in human tissues), thus its necrotizing effects are localized. The concurrent emission of a small amount gamma radiation, which is capable of penetrating the body tissues, allows detection of the radiolabelled particles by a gamma camera and appropriate localization of isotope can be confirmed. Radioembolisation has been reported to produce a meaningful response and disease stabilization in patients with advanced unresectable liver metastasis, and may be potentially very useful in patients with chemorefractory metastatic colorectal cancer. Technically, radioembolisation is more difficult than chemoembolization with potential for inadvertent non-target embolization of other organs, particularly the stomach, small bowel and gall bladder causing slow-healing gastrointestinal ulcers or cholecystitis respectively.

• **Gene therapy:** advances in molecular oncology and tumour immunology have facilitated the development of gene therapy in the treatment of malignancy. Strategies employed include stimulation of the immune response to the tumour, reduction of oncogenic expression, restoration of tumour suppression gene function, alteration of susceptibility of proliferating tumour cells to chemotherapeutics and modulation of angiogenesis. In an IR technique similar to that used in chemoembolization,

genetic agents may be administered directly into the tumour mass by selective arterial injection, after which the vessel is embolised thus limiting adverse effects and prolonging agent dwell time which is believed to improve genetic transfer rate.

- **Ablative techniques:** local tumour ablation is an alternative method of achieving tumour control in those patients with early stage malignant disease, particularly in the liver, who are not candidates for resection. IR mediated tumour ablation induces tumour necrosis by the application of energy and modalities employed include radiofrequency, laser, microwave, ultrasound and cryotherapy.

Interventional Radiology in the management of complications of cancer Malignancy can induce dysfunction of many organs and bodily systems. Though debilitating, a significant proportion of these complications are reversible, many by minimally invasive IR methods. Such treatments can relieve symptoms, alleviate pain and improve operability of patients, thus having a significant positive impact on quality of life.

Interventional Radiology plays an essential role in the management of complications arising from biliary obstruction, renal obstruction, upper gastrointestinal obstruction, malignant pleural collections, venous thromboembolic disease and pain due to malignancies thus enabling the reduction of disabilities associated with metastatic cancerous conditions.

Conclusion
With the expanding application of minimally invasive techniques to the investigation and management of malignancies, the radiologist, who has traditionally been relegated to the role of diagnosis in cancer patients, is assuming a more prominent role in the multidisciplinary team that cares for the patient with cancer in the field of interventional radiology.

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MAKE IT STICK:
MAXIMIZING YOUR MEMORY

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Before one can set out to understand ways of maximizing one's memory, there is need to understand what memory is and how it is formed. Memory involves the structures and processes involved in taking in information (encoding), storing it and being able to recall it when needed (retreival). Hence every memory involves the process of encoding, storing and retrieval. Any error or inadequacies in any of these processes of memory formation in the cause of learning will invariably result in "poor memory." Hence, the first step to effectively maximize our memory is to understand ways we can effectively and efficiently take in information into our brain (encoding), how to ensure the information encoded is effectively stored and consolidated in the brain and how to make the stored information easily retrievable when required.

Another fact about memory is that it can broadly be divided into short-term memories and long-term memories. Memories that contain information you are currently learning or thinking about constitutes your short-term memory. When a student is reading a material for the first time, that information is stored in his short-term memory. If he pauses while

reading to think on what he just read, the information will be recalled from the short-term memory.

One good thing about the short-term memory which has worked against many students is the ease with which one call recall information from short-term memory at the moment he is acquiring that information. Why did I say this has worked against many students? Being able to recall an information immediately you learn it makes you to develop the illusion of knowledge and mastery and hence, you will not feel the need to do anything further to strengthen that memory, until the day you would be tested on that information. That is when you would realise to your frustration that, what appeared easy for you to remember and retrieve the day you studied the material, could no longer be recalled on the day of the exam. Short-term memory holds information only for a short time and the memory pathway will start fading unless deliberate efforts through the process of rehearsal and other consolidation techniques, are employed to transfer the memory from short-term memory to long term-memory. Attaining long-term memory of anything one is learning is often the goal of every student. In the course of our learning, we all have come to know that when we keep reading a material or doing something over and over, we will come to a point when that information or skill will become a part of us and recalling it anytime becomes an automatic action, or more like an acquired reflex. But, If the strategy to mastery, long term retention and maximizing one's memories in general is just constant repetition and rereading which almost all of us have known before now, what then is the essence of this article? What many of us do not know, which I intend to explain further, is that frequent repetition in the form of rereading, is not the only way to enhance transference of information from short term memory to long-term memory. In short, among all the methods that enhance memory transference from short-term to longterm memory, frequent repetition by constant rereading is one of the most ineffective for students. This is partly because of the time that is required to keep rereading a material, to the point of long term retention, which is not often at the disposal of the student.

In this article, we will be discussing more efficient ways of encoding information and techniques that will lead to better memory consolidations as ways of maximizing memory, to ensure that one is able to recall at required time, information that is learnt.

MULTIPLE ENCONDING IS THE ENCODING TECHNIQUE FOR MAXIMIZING ONE'S MEMORY

If you have a story that you want to save in your computer storage,

what is the first thing you will do? I believe the first thing will be to convert the story in a format that can be stored in the computer and this can be done through different means. You can decide to type the story and save it using Microsoft word or to create a voice record of the story and store it as an audio file or you can even sketch the scenes in the story and store it in a pictorial format. All these processes of converting an information into formats that can be stored by the computer is called encoding and the same is true concerning learning. From the illustration above, one thing is clear: there are different ways and formats we can use to store the same information in our brain. These methods of encoding include:

· Learning by attending class lectures
· Learning through online lectures in the form of videos and audios
· Learning by reading texts
· Learning by observation and demonstration

In order to maximize your memory on anything you are learning, study the same thing using multiple encoding techniques; watch a video on the subject, attend a live lecture, study from your textbook, learn from discussions on the subject, this concept is known as multiple encoding.

Why do students who use multiple methods of learning the same information appear to be better than others in long term retention and retrieval of the knowledge when required? The reason is that they have multiple alternative routes of getting to the same information. If for any reason one memory trace to the information fades away or is "blocked," the brain can always find an alternative way to access the information needed.

HOW CAN MEMORIES STORED IN THE BRAIN BE EFFECTIVELY CONSOLIDATED TO ENHANCE EASY RETRIEVAL WHEN NEEDED?It is possible that someone can be exposed to information, yet the brain will not store that information. You cannot hope to remember at a later time, such information that was not stored in the first place. When information is not properly stored during the process of storage, it makes retrieval (remembrance) very difficult or almost impossible.

All processes and techniques that can be employed by the learner to aid the transference of memory from short-term to long-term retention, that strengthens memory storage, and increases the retrieval of the information after a long time is referred to as memory consolidation. We only store short-term memories for only a very short time, so if we are ever going to remember anything, all that information have to be moved into long-term memory. [1] I believe developing long term memories of

what we study is one of the ultimate goals of every student. But, it does not come just by wishful thinking, but by employing some deliberate techniques and strategies we shall learn shortly.

Many students have this idea that memory works like a tape or video recorder, so if we read and reread or take verbatim notes, the information will eventually write itself on our memories. Nothing, however, could be far from the way we actually learn than that assumption. Neuro-scientists and learning psychologists have devoted a great deal of timestudying how memories are stored and they have written volumes of books to that effect, some of which are so big and the language so technical that it would almost seem as if you are learning a new language to someone who is not in the field of medicine. That is why I have decided to use simple terms and analogies to explain to us the basics of how memories are formed. In order to understand how memory storage and consolidation works, it is helpful to understand how synapses (the gap between two neurons in our brain) work in the brain. Think of it as an electrical wire conducting a current (in our case, the current is information we want to store): the synapses pass the signal from neuron to neuron, with the help of chemicals in brain called neurotransmitters. The more frequently signals are passed through the neurons, the stronger the synapses, memory storage and the easier it would be to retrieve the information. What are some of these effective techniques that enhances memory storage and consolidation?

1. SELF QUIZZING AS A METHOD OF MEMORY CONSOLIDATION

Self-quizzing, as the name implies, involves attempts to answer questions on a topic or material you just finished studying. These questions can be selfgenerated questions during the course of the study, multiple choice questions seen in standard review textbooks, past questions of your school, questions available on online websites, or exercises at the end of each topic in your textbook. The idea here is this, after reading a topic for the first time, do not spend so much time rereading the material again but rather spend most of your time subsequently, to test yourself on that topic using questions.

2. TEACHING AS A METHOD OF MEMORY CONSOLIDATION

Explaining a concept you are learning to yourself or to someone else using your own language, is a type of retrieval practice. It is very effective not just in memory consolidation, but also helps us detect gaps in our knowledge. The same is true about self-quizzing as a form of retrieval practice. I will illustrate this technique with practical examples in the chapters ahead. Whenever you are trying to teach

someone or attempting to explain a concept to someone else, always remember the words of Mortimer Adler,The person who says he knows what he thinks, but cannot express it, usually does not know what he thinks."

3. ELABORATION AS A TECHNIQUE OF MEMORY CONSOLIDATION

The term, elaboration, can be used to mean a lot of things. I am going to focus on elaboration as a learning strategy that strengthens a student's understanding and retention of any information that they are trying to learn. Scientists describe elaboration as a technique that involves making connections among ideas you are trying to learn and connecting the material to your own experiences, memories, and day-to-day life. [2] It involves making connections with old knowledge as you study, asking yourself questions about how and why things work, and then producing the answers to these questions.

Asking yourself a number of why and how questions (elaborative interrogation) will encourage you to produce explanations for the ideas you are learning, and to integrate the new material you are learning with the things you already know or have experienced. Elaborative interrogation will encourage you to think about relationships between different ideas, and understand how two ideas are both similar and different to one another. This will invariably improve your mastery of the concept you are learning. Imagine you are learning how blood circulates in the human body. While you are reading the material or watching an online lecture, pause at intervals and ask yourself the following questions: What are the structures involved in the circulation of blood in the human body? How are these structures related to each other anatomically and physiologically? What

would be the effect of damage to any of these structures of circulation? Are there congenital or acquired abnormalities associated with impaired blood circulation? What signs and symptoms would you see in a patient that would raise your suspicion about an underlying disease condition? What could be the possible explanation for those signs and symptoms? As you try to provide answers to these questions without looking at the study material before you, you would be able to integrate the new material you are studing to things you already know thereby consolidating what you are learning. After using elaborative interrogation, you should double-check your class materials to make sure that you correctly described and explained the ideas.

4. ADEQUATE SLEEP, A NECESSITY FOR MEMORY CONSOLIDATION

A research published by Harvard University titled, "Sleep, Learning

and Memory," suggests that sleep plays an important role in memory, both before and after learning a new task. [3] When you are sleep deprived, your focus, attention, and vigilance drift, making it more difficult to learn. Without adequate sleep and rest, over-worked neurons which helps you to learn can no longer function to coordinate information properly, and you lose your ability to access previously learnt information. Most of the things learnt under such condition will either not be properly stored or might take a longer time or worse still, may not be stored at all. In conclusion they stated, "Being sleep deprived reduces one's ability to learn." Why would you prefer to learn when your brain has the least ability to learn? You may try to satisfy the guilt of not reading enough by forcing yourself to read when you are sleep deprived. But to what end, if you would not be able to remember and retrieve most of the things you read in such a state. Hence, for efficient memory maximization, proper learning and effective consolidation, one should study when one is not sleep deprived. This requires a lot of discipline and consistency on the part of the student, so that he will not have to do a crash course when it is time for exam

CONCLUSION

Maximizing one's memory is an interplay of many factors but basically involves using study techniques that provides optimal encoding of which multiple encoding technique is the best. Effective memory consolidation of what is learnt is also another strategy in maximizing one's memory. Techniques that enhance memory storage and consolidation include sel-quizzing, teaching, elaborative interrogation and adequate sleep.

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ONCOLOGY EDITION

MEDIKKA Extras

Source: https://images.app.goo.gl/UneCHWj48yuuJKAy8
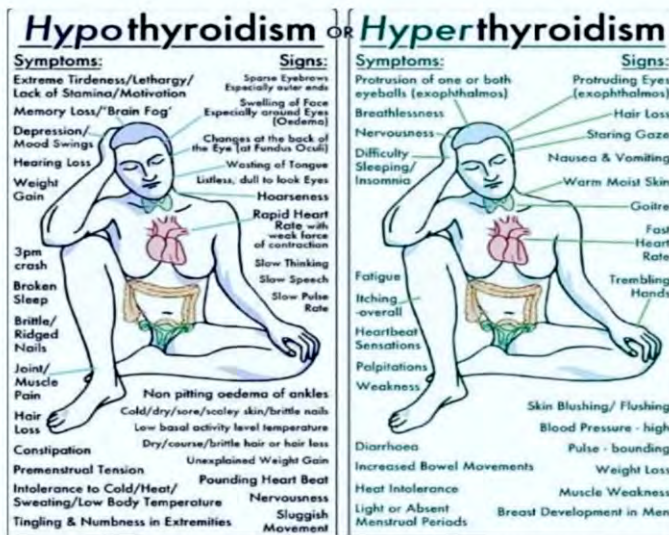
Nigerian National Immunization Schedule for Children

MINIMUM AGE OF CHILD	TYPE OF VACCINE
At birth	• BCG • Oral Polio Vaccine (OPV)0 • Hep B birth
6 weeks	• Oral Polio Vaccine (OPV) 1 • Pentavalent (DPT, Hep B and Hib) 1 • Pnemococcal Conjugate Vaccine (PCV) 1
10 weeks of age	• Oral Polio Vaccine (OPV) 2 • Pentavalent (DPT, Hep B and Hib) 2 • Pnemococcal Conjugate Vaccine (PCV) 2
14 weeks of age	• Oral Polio Vaccine (OPV) 3 • Pentavalent (DPT, Hep B and Hib) 3 • Pnemococcal Conjugate Vaccine (PCV) 3 • Inactivated Polio Vaccine (IPV)
6 months of age	• Vitamin A 1st dose
9 months of age	• Measles • Yellow Fever

*BCG should be given preferably at birth (within 2 weeks) but can be given up to 11 months of age
**OPV0 must be given before the age of two weeks
***Hep B birth to be given within 24 hours after birth preferably, but can be given up to 14 days of birth

Vaccinated communities; Healthy communities!

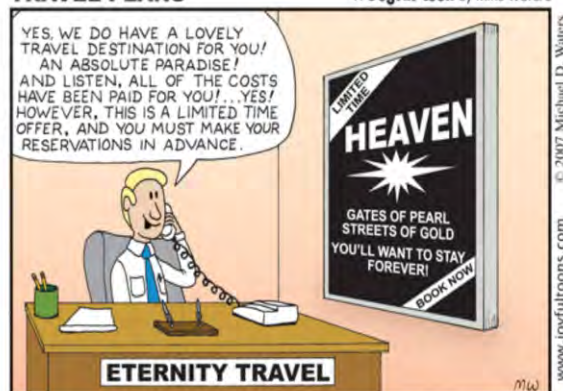Visit any government health center to complete your Child's immunization NOW

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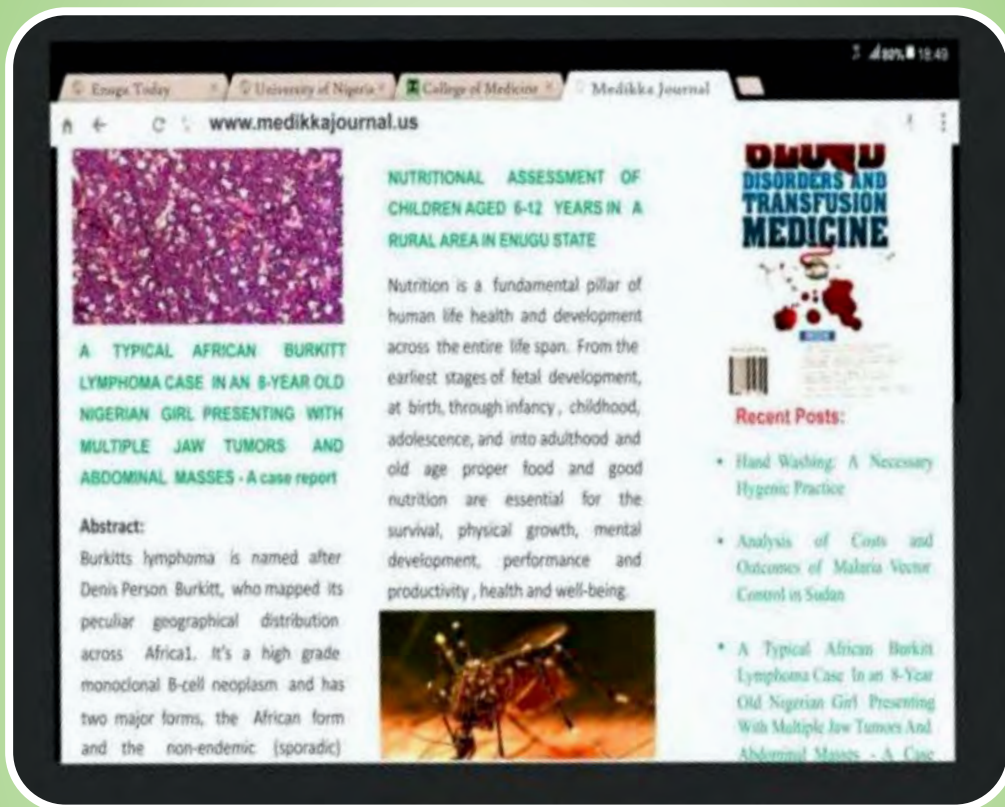
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