

Knowledge of Obesity and its Relationship with Cancer Development among Individuals attending the Annual General Meeting of Nigerian Union of Journalists, Akwa Ibom State Chapter

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ABSTRACT

Public knowledge of the causal relationship between obesity and cancer is still limited. This study sought to assess the knowledge of the role played by obesity as a causative risk factor for cancer among individuals attending the Annual General Meeting of Nigerian Union of Journalists, Akwa Ibom State Chapter. Data from this descriptive cross-sectional study was collected through a self-administered questionnaire given to randomly selected individuals attending the Annual General Meeting of Nigerian Union of Journalists, Akwa Ibom State Chapter in December 2019. A total of 184 respondents were recruited. The age group of 31-40 years had the highest proportion (37.5%) with a mean of 39.6 ± 2.8 years. Almost 99.0% of the respondents indicated that they were previously aware of obesity, with 57.1 % tracing the source of information to the period of secondary school studentship. Over 52.0% of the respondents had defined obesity as excess body fat. Only 27.5% of the respondents have sufficient knowledge regarding the Body mass Index (BMI) and 24.2% of respondents were knowledgeable of the relationship between obesity and cancer with 56.5% of them indicating a link between obesity and cancers of the breast, digestive system, endometrium, prostate and kidney. Our study showed that respondents in the young age group were significantly more aware of the relationship between obesity and cancer (p -value < 0.0001). Our study concluded that only 24.2% of respondents were knowledgeable about the causal relationship between obesity and cancer.

Keywords: Knowledge, Relationship, Individuals, Obesity, Cancer

INTRODUCTION

Public knowledge of the role of lifestyle and obesity in the development of cancer is still limited and worsened by beliefs and misconceptions about the diagnosis, treatment and prognosis of cancer.¹⁻⁴ Furthermore, it has been shown that assessing the knowledge about the relationship between obesity and cancer is beneficial in the prevention of the disease because of its increasing incidence, incurability, lethal nature and the dismal outcome of cancer.²⁻¹⁶

This study sought to assess the knowledge of the role played by obesity as a causative risk factor for cancer among individuals attending the Annual General Meeting of Nigerian Union of Journalists, Akwa Ibom State Chapter from 10th to 11th December, 2019.

MATERIALS AND METHODS

Survey Design and Administration

This descriptive, cross-sectional study was conducted from 10th to 11th December, 2019. Respondents were consenting individuals attending Annual General Meeting of Nigerian Union Journalists, Akwa Ibom State Chapter. Recruitment into the study was done using a simple random technique and the sample size was estimated using the formula: $n = z^2pq/d^2$ (where: n = desired sample size when population > 10,000, z = level of significance at 95% CI (=1.96), p = proportion of the study population who are aware of the relationship between cancer and

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obesity from a similar previous study = 0.21 [17], $q - 1p = 0.79$ and $d =$ degree of accuracy desired, usually set at 0.05). Sample size (n) = $z^2pq/d^2 = (1.96)^2 \times (0.21) \times (0.79) / (0.05)^2 = 3.84 \times 0.21 \times 0.79 / 0.0025 = 0.6371 / 0.0025 = 255$. The minimum sample size required for this study was reduced from 255 to the nearest round figure of 250 administered questionnaires for convenience. Survey items in the questionnaires included respondents' socio-demographic information, questions about the level of awareness and sources of information on obesity, awareness of body mass index (BMI) and the relationship with obesity as well as symptoms of obesity and awareness of the causal relationship between obesity and cancer. Demographic information included age, marital status, ethnicity, religion, occupation, and education.

Age was categorized as 21-30 years, 31-40 years, 41-50 years, 51-60 years, and 61-70 years. Highest educational qualification obtained by respondents was measured as Doctor of Philosophy (PhD), Master Degree (M.Sc), Bachelor Degree, Higher National Diploma (HND), Ordinary National Diploma (OND), Secondary School Certificate Examinations and Primary School Certificate Examinations.

The inclusion criteria for the study population were consenting individuals attending the Annual General meeting of the Nigerian Union of Journalists who were aged 21 years and above. Non-consenting individuals and those younger than 21 years were excluded from the study. A pretest using a set of questions was used to measure knowledge of obesity and its relationship with cancer for assessing their face validity before actual data collection.

Statistical Analysis

The data was collated using Microsoft Excel and descriptive analysis was performed using statistical package for social sciences version 20 (Chicago IL, United States). The results were described in terms of frequencies and percentages for the categorical variables. Inferential statistics (Chi square and Fischer's

exact test) were used to explore the association between two variables. $P \leq 0.05$ was considered statistically significant. These data were presented in tables and figures.

Ethical Consideration

Ethical approval to conduct the study was obtained from the University of Uyo Teaching Hospital, Uyo Institutional Health Research Ethical Committee (IHREC). Written informed consents were obtained from all respondents before embarking on the study. Brief education on the purpose and nature of the study was given to all respondents. All respondents were assigned a unique code to ensure confidentiality. Only the lead researcher had access to the information linking the identity of the study respondents to the study codes to ensure anonymity and prevent stigmatization.

Respondents were reliably informed that the information provided shall be strictly kept secret and he/she is at liberty to withdraw from the study at any time they wished without any negative consequences to them. The study was fully self-sponsored by the researchers.

RESULTS

Socio-Demographic Characteristics

There were a total of 184 respondents with a resultant response rate of 73.6%. The mean age of the respondents was 39.6 ± 2.8 years with the highest proportion of respondents within the 31- 40 years age group (37.5%). However, 2nd peak age of the respondents was observed in the 41-50 years age group (31.5%). Males had a significantly higher proportion than females (53.8% vs 46.2%) but the age range of both sexes was similar, being 21-70 years. (Table 1)

Majority of the respondents were graduates of Polytechnic school ($n = 104$, 57.1%) with HND being the predominant highest qualification (88.5%). Those with senior school certificates accounted for 28.6% of the respondents. The remaining respondents had either a University degree

(9.9%) or primary school certification (4.4%) as their highest educational qualification.

Half of the respondents were married (n = 92, 50.0%) which is a higher proportion than single respondents (n = 85, 46.2%). The remaining respondents were widowed in 7 cases (3.8%).

Level of Awareness and Sources of Information on Obesity among the Respondents

Of the 184 respondents, 98.9 % indicated that they had been aware of obesity, and 57.1% stated that they had heard about obesity at the level of secondary school education as compared to 28.6% who became aware of it during primary school education. Eight-five percent (85.0%) of the respondents were aware of obesity at the completion of secondary education. Over two-fifths of respondents (40.7%) could not specify who first mentioned the word "obesity" to them. Also, 22.5% and 12.1 % of respondents first heard about obesity from their relatives and Nurses, respectively. Thirty-five percent of the respondents first heard the word "obesity" in the classroom (35.2%) while 29.7% of these respondents could not specify where they first heard the word "obesity". More than 55.0% of respondents had never attended a health talk or seminar on obesity (56.2%) while the remaining respondents had attended a health talk or seminar on obesity (43.8%). (Table 2)

Awareness of Body Mass Index (BMI) and its Relationship with Obesity among the Respondents

Of the 182 respondents concerning knowledge acquired regarding obesity, 52.2% had defined obesity as excess body fat, 28.0% had defined obesity as when a person carries excess weight and 19.8 % had defined obesity as the person's weight in relation to height.

The inability to cope with sudden physical activity was the most common symptom of obesity identified (41.2%). Inability to breathe well and snoring were acknowledged as suggestive symptoms of obesity in 17.0% and 14.8% of respondents respectively. (Table 2)

We found that 27.5% of the respondents have sufficient knowledge regarding the Body Mass Index(BMI), as compared to 51.6% that did not know about BMI. Of the respondents who were knowledgeable about BMI, only 34.1% knew their BMI.

Awareness of the Causal Relationship between Obesity and Cancer among the Respondents

Among respondents, 75.8% were not knowledgeable about the relationship between obesity and cancer whereas only 24.2% of respondents were knowledgeable of this relationship. Majority of the respondents did not think cancer could result from obesity (74.7%) whereas the minority of the respondents thought cancer could result from obesity (25.3%).

Of the 46 respondents who recognized that cancer could result from obesity, 56.5% had indicated a relationship between obesity and cancers from breast, digestive system, endometrium, prostate and kidney, as compared to 17.4% indicating a relationship between obesity and cancer of the digestive system only. (Table 4).

This study showed that the younger age groups were significantly more aware of the relationship between obesity and cancer (p-value < 0.0001) whereas there was no statistically significant difference in awareness of the association between obesity and cancer among respondents of different gender and marital status. (Table 4).

Table 1: Socio-demographic Characteristics of the Respondents

| Variable | Sex n (%) | | Statistical indices |
|-----------------------|-------------|---------------|-------------------------|
| | Male (n=99) | Female (n=85) | |
| Age (years) | | | |
| 21-30 | 18(50.0) | 18(50.0) | Df=4 |
| 31-40 | 34(49.3) | 35(50.7) | |
| 41-50 | 32(55.2) | 26(44.8) | X ² = 3.5908 |
| 51-60 | 6 (66.7) | 3(33.3) | P-value=0.476 |
| 61-70 | 9(75.0) | 3(25.0) | |
| Marital status | | | |
| Single | 42(49.4) | 43(50.6) | Df=2 |
| Married | 56(60.9) | 36(39.1) | |
| Widowed | 1(14.3) | 6(85.7) | P-value=0.032+* |

*Fischer's exacttest,+ significant p-value

Table 2: Sources of information on obesity among the Respondents who were aware of obesity

| Variables | Frequency (n=182) | Percentage |
|--|-------------------|------------|
| At what level of education did you hear about obesity? | | |
| Primary | 52 | 28.6 |
| Secondary | 104 | 57.1 |
| Polytechnic | 15 | 8.2 |
| University | 3 | 1.6 |
| Non-specific | 8 | 4.4 |
| Who first mentioned the word "obesity" | | |
| Medical doctor | 21 | 11.5 |
| Nurse | 22 | 12.1 |
| Other Health worker professional | 21 | 11.5 |
| Relative | 41 | 22.5 |
| Journalist | 3 | 1.6 |
| Non-specific | 74 | 40.7 |
| Where did you first hear of Obesity | | |
| Classroom | 64 | 35.2 |
| During Health talks/seminar | 39 | 21.4 |
| Internet | 3 | 1.6 |
| Mass media | 22 | 12.1 |
| Non-specific | 54 | 29.7 |
| Have you had any health talks or seminars on obesity before now | | |
| Yes | 77 | 43.8 |
| No | 105 | 56.2 |

Table 3: Awareness of BMI and its relationship of Obesity with cancer among the respondents who were aware of Obesity.

| Variable | Frequency (n=182) | Percentage |
|--|------------------------------|-------------------|
| What do you think about obesity | | |
| Excess body fat | 95 | 52.2 |
| When a person carries excess weight | 51 | 28.0 |
| The persons weight in relation to height | 36 | 19.8 |
| Which of the symptoms is highly suggestive of obesity | | |
| Inability to breathe well | 31 | 17.0 |
| Increased sweating | 15 | 8.2 |
| Snoring | 27 | 14.8 |
| Inability to cope with sudden physical activity | 75 | 41.2 |
| Feeling tired every day | 19 | 10.4 |
| Back and Joint pain | 3 | 1.6 |
| | 12 | 6.6 |
| Have you heard of BMI | | |
| Yes | 50 | 27.5 |
| No | 94 | 51.6 |
| Not sure | 38 | 20.9 |
| Do you know your BMI (n=50) | | |
| Yes | 15 | 34.1 |
| No | 35 | 65.9 |
| Are you aware of any relationship between obesity and cancer? | | |
| Yes | 44 | 24.2 |
| No | 138 | 75.8 |
| Do you think cancer could result from obesity? | | |
| Yes | 46 | 25.3 |
| No | 136 | 74.7 |
| If yes what is the most common cancer (n=46) | | |
| Digestive system | | 17.4 |
| | 8 | 6.5 |
| Breast | 3 | 6.5 |
| Endometrium | 3 | 6.5 |
| Prostrate Kidney | 3 | 6.5 |
| All of the above | 26 | 56.5 |
| None of the Above | 3 | 6.5 |

Table 4: Socio-demographic and awareness of relationship between cancer and obesity among the respondents.

| Socio-demographic | Is there a relationship between obesity and cancer? | | Statistical indices |
|-----------------------|---|-------------|-------------------------|
| | Yes (n=46) | No (n= 136) | |
| Sex | | | |
| Male | 29(32.6) | 60(67.4) | Df=1 |
| Female | 17(22.7) | 58(77.3) | X ² = 1.9837 |
| | | | P-value=0.159 |
| Age (years) | | | |
| 21-30 | 18(54.6) | 15(45.4) | Df=3 |
| 31-40 | 18(27.3) | 48(72.7) | P-value< 0.0001+* |
| 41-50 | 10(20.4) | 39(79.6) | |
| Above 50 | 0(0.0) | 16(100.0) | |
| Marital status | | | |
| Single | 25(31.7) | 54(68.3) | Df=2 |
| Married | 21(26.2) | 59(73.8) | P-value=0.351* |
| Widowed | 0(0.0) | 5(100.0) | |

*Fischer's exact test, + significant p-value

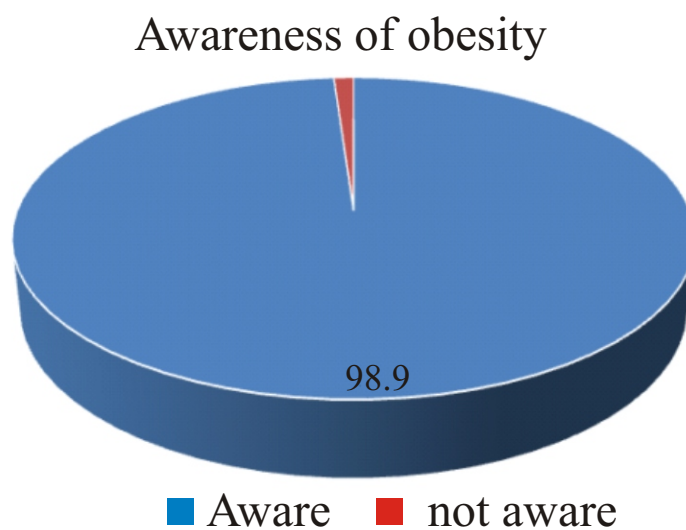


Figure 1: Awareness of obesity among the respondents

DISCUSSION

Public knowledge of the role of lifestyle including obesity in predisposing to cancer is still limited and worsened by misconceptions about the diagnosis, treatment and prognosis of cancer.¹⁻⁴ The response rate for our study was 73.6%. This is, however, higher than the response rates of 65.5% among Nurses in India recorded by Rao *et al.* And lower than 77.0% reported in a

sample of Omani adults by Al-Azri *et al.*^{4,13} This notable response rate in our study may be adduced to a desire to know more about their health status and the fact that majority of respondents were observed to be belonging to either upper- or mid- socio-economic class owing to their level of education and location of residence within the state capital city of Uyo, which is the seat of socio-economic, political and administrative power of Akwa

Ibom State. This finding is further corroborated by results of the index study indicating that the majority of respondents were either graduates of Polytechnic or University (67.0%) which is in accordance with the finding of a study from Oman.¹⁸ The relatively low response rates reported in other centres may be related to the diversity of studied subjects or a mere coincidence.

In the index study, a slightly larger proportion (37.5%) were in the 31-40 years age group which conforms with a mean age of 39.6 years in the index study. However, 2nd peak age of the respondents was observed in the 41-50 years age group (31.5%). These findings compare with the results of other studies. Omotola *et al.* in Ile-Ife, South-Western Nigeria, Akkour *et al.* in Riyadh, Saudi Arabia and Arunachalam *et al.* in Chennai, India indicated that the majority of respondents were in the 13-16 years (56.7%), 18-34 years (64.7%) and 25-45 years age groups (56.0%), respectively.^{3,10,18} On the other hand, Shrivastava *et al.* in India recorded that most of the respondents were 18 years of age (68.1%).⁹

Within the present study, there were more males (53.8%) than females (46.2%). This is in agreement with reports from Kancheepuram, India (58.0% vs 42.0%), and Karnataka, India (55.2% vs 44.8%).^{8,9} On the contrary, Rao *et al.* in Delhi, India, Al-Azri *et al.* in Oman, Arunachalam *et al.* in Chennai, India and Omotola *et al.* in Ile-Ife, South-Western Nigeria reported a female preponderance in varying proportions viz: 91.4% vs 8.6%, 59.9% vs 40.1%, 52.0% vs 48.0% and 53.6% vs 44.2% respectively.^{4,10,13,18}

It is a well-known fact that knowledge is power as highlighted in our study herein 98.9% of the respondents had prior knowledge of obesity mostly at the level of secondary school education (57.1%). These results compare relatively with a study in Ile-Ife, South-Western Nigeria wherein 73.1% of the respondents heard a prior knowledge of obesity mostly at the level of secondary school education (53.8%).¹⁸ Major sources of first information about obesity were from the relatives (22.5%), and Nurses (12.1%) in the

present study. Based on these findings, it is understood that most respondents had prior knowledge of obesity as well as the fact that close relatives and healthcare workers play a significant role in health education. In addition, two highest levels of education certification of the respondents in the index study were at the polytechnic (57.1%) and secondary schools (28.6%) with a preposition that exposure to classes on subjects such as Biology and Home economics/Nutrition would have broadened their knowledge on complications relating to obesity including cancer, degenerative diseases, cardiovascular diseases, diabetes mellitus, cataract, brain and immune dysfunction. Furthermore, the possibility of personal experience of either living with a close relative with obesity or seeing obese persons outside their homes may create an awareness of obesity. In addition, the role of formal health education in the classroom and attendance at various health-related seminars have been observed, similar to results of the index study indicating that 35.2% and 43.8% of respondents confirmed their source of information on obesity to be from the classroom and health-related seminars respectively.

Obesity was defined as either excess body fat (52.2%) or when a person carries excess weight (28.0%) or the person's weight with height (19.8%) in the index study. This finding compares relatively with a result from Arunachalam *et al.* in India reporting that 60.0% of the respondents thought that obesity is a disease as compared to 40.0% of them who disagreed.¹⁰ On the other hand, Shrivastava *et al.* reported that 15.9% of respondents were able to define obesity correctly and relate it to the degree of excess fat and its distribution in the body that determines the health risks associated with the condition.⁹ Omotola *et al.* in Ile-Ife, South-Western Nigeria reported that obesity is linked to a range of psychological and physiological health conditions that affects and impairs health as well as the quality of life of humans severely.¹⁸ In addition, it is important to highlight warning symptoms of obesity including those indicated by the

respondents in varying frequencies within the present study. They included inability to cope with sudden physical activity (41.2%), inability to breathe (17.0%), snoring (14.8%), feeling tired every day (10.4%), increased sweating (8.2%) and back and joint pain (1.6%).

It has been reported that body mass index (BMI) is the sole measure that estimates body composition and it is routinely used as a common indicator to quantify adiposity for all ages.¹⁰ Within the present study, good knowledge of the importance of BMI measurement was ascertained in 27.5% of the respondents when compared to 51.6% of respondents who did not know the importance of BMI measurement. Of the respondents who were knowledgeable about BMI, only 34.1% knew their BMI. The knowledge of BMI as a diagnostic tool for obesity is still poor in our environment similar to other studies including Ile-Ife, South-Western Nigeria where none of the respondents knew the meaning of BMI.¹⁸ Thus, health education advocacy on the importance of BMI as a diagnostic tool should be encouraged among different age groups and genders.

Within the present study, 24.2% of respondents were knowledgeable of the relationship between obesity with cancer, as compared with 75.8% who were not knowledgeable about the relationship between obesity and cancer. Furthermore, our study showed that the majority of the respondents did not think cancer could result from obesity (74.7%) compared to the minority of the respondents who thought cancer could result from obesity (25.3%). These findings compare with a result of a study conducted by Ryan *et al* indicating that only 32.0% of respondents were aware of the relationship between obesity and cancer, as well as findings from other studies reporting that 4.0% to 39.0% of the public were aware of the relationship between obesity and cancer.^{2,5-7}

Of the 46 respondents who recognized that cancer could result from obesity, 56.5% had indicated a link between obesity and cancers of the breast, digestive system,

endometrium, prostate and kidney, as compared to 17.4% indicating a relationship between obesity and cancer of the digestive system only. This finding compares relatively with similar studies that have shown that obesity is a well-identifiable risk factor for the development of breast cancer, as well as cancers of oesophagus, small intestine, colon, hepatobiliary system, gallbladder, prostate, kidneys and endometrium.^{8-12,17,19,20}

In addition, Al-Azri *et al.* In Oman reported that 21.6% of respondents thought that eating less than five portions of fruit and vegetables a day, 30.2% believed that eating red or processed meat once a day or more, 32.0% agreed that being overweight with Body Mass Index (BMI) over 25 and 31.0% indicated that doing less than 30 minutes of moderate physical activity five times a week (31.0%) were risk factors for cancer.¹³ Furthermore, it has been identified that the increased risk of cancer among obese individuals is often influenced by diet, weight change and body fat distribution together with physical activity as well as four main cancer-promoting systems including insulin, insulin-like growth factor-I, sex steroids, and adipokines have been described.^{3,12,14,15}

The present study showed that the young age group were significantly more aware of the relationship between knowledge of obesity and cancer (p value < 0.0001). This finding is following a study indicating that younger respondents were more knowledgeable about cancer's risk factors than older respondents²¹ but this finding is in discordance with a study in India where older women were more aware of cancer's risk factors than younger women.³ Furthermore, Bisschop *et al.* have shown that men with moderate weight gain had a higher risk of developing colonic cancer than women of the same description.¹⁹ From the foregoing, it is obvious that the knowledge of the causal association between obesity and cancer could be influenced by socio-demographic factors including age, gender, marital status, education status, occupational status, income, geographical location, sample size and methods. Consequently, it is important to

address the knowledge gap as observed in the index and other studies through health education about modifying lifestyle. This could be achieved through social media channels, printing mass media, radio and television as well as door-to-door health advocacy campaigns aimed at promoting healthy diets and regular exercise. In addition, implementation of policies promoting healthy lifestyles such as taxes on high-calorie foods and non-alcoholic beverages, restricting marketing and advertising, imposing bans on unhealthy foods as well as the incorporation of healthy nutrition into primary and secondary schools' curricula and engagement in regular exercise to burn-out excess fats.

CONCLUSION

This study demonstrated that the knowledge of obesity and its relationship with cancer among individuals who attended the annual general meeting of the Nigeria union of journalists in Uyo, Akwa Ibom State is low. This poor level of knowledge could reflect misconceptions and poor dietary choices in the general population. Thus, awareness programs promoting healthy dietary behaviour and regular exercise must be instituted for the general population, as well as incorporation of nutrition education into the educational curriculum for schools.

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