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Research Paper

Prevalence Rate of Obesity and Overweight among Pupils With Blindness in Special Education Schools in Akwa Ibom State Nigeria

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ABSTRACT
The prevalence rates (PRs) of overweight and obesity among the pupils with blindness in Special Education Schools (SES) in Akwa Ibom state, Nigeria was investigated as a case study. Standing height, body weight, body mass index; and the prevalence of ideal weight, overweight and obesity among them were the objectives. Six research questions and hypotheses were formulated for the study. Accordingly, literatures relevant to the study were extensively reviewed. The expost facto survey research design was used. Seventy-one (34 males and 37 females) pupils were the subjects from the SES located at Uyo after obtaining Consent Protocol from the school authorities. A purposive sampling technique was used. The mean age was 12 years (12 ± 1 yrs). Each pupil was measured of the Standing Height and the Body Weight, then the Body Mass Index was calculated from them. The BMIs taken from the CDC BMI Percentile Charts for boys and girls (2 to 20 years); respectively provided the PRs of the Underweight; Ideal Weight; Overweight and Obesity health implications. The Descriptive, the Z- and T-test statistics were used to compare mean differences between the genders; set at P≤ 0.05 Alpha level. The findings and conclusions were that males were descriptively but insignificantly taller ($\bar{x}$ = 0.6 cm.); heavier ($\bar{x}$ = 1.7 kg.); but significantly with higher BMI ($\bar{x}$ = 2.6). The Charts showed none was underweight; hence no PR in Underweight class. In the Ideal weight class, the females scored better (PR=70.3) against the males (PR=38.2); while both genders had 54.9 PR. In the Overweight class, the females were higher (PR=18.9) against the males (PR=14.7) and both genders obtained 16.9 PR. In the Obesity class, the males were higher (PR=50) against the females (PR=10.8); while both genders obtained 29.6 PR. That meant few male and female blind pupils could be susceptible to overweight and obesity health risk factors in future if it is not checkmated from now. The study recommended among others that the three tiers of governments should assist the school managements to cater for the needs of the blind pupils.

KEYWORDS; Obesity, Overweight, Pupils with Blindness

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I. INTRODUCTION

Among those with disability are the blind technically called the visually impaired (VI) The term visually impaired according to Yang, Yang, Liu, Peng, Bei, Gao and Tan (2016) and Pascolini and Mariotti (2012) is used for the blind to differentiate them from the partial or near visually impaired ones (PVI), where there may be a loss of one eye or some minor vision defects. The blind are among the persons with disability that are of great public health concern and needs serious interventions. The pupil with blindness is one with a complete loss of sight, a condition that keeps the person in perpetual darkness throughout one' s lifetime. There were nearly 285 million people with Visual Impairment (VI) worldwide in 2010 (Pascolini and Mariotti. 2012). The VI in school-age persons is a major public health problem (Cheng, Shan., Song Fan and Yuan,. 2016; Muhammad and Adamu, 2014; Gordois, Cutler, Pezzullo, Gordon, Cruess, Winyard, Hamilton and Chua,2012). Good vision is critical to pupils' well-being and VI has many negative effects on all domains of the development of the

individuals. The World Health Organization (WHO) has identified VI as one of the five priority areas in VISION 2020, especially in school-age children of developing countries (Dandona and Dandona, 2016).

Overweight and obesity are currently important health problems affecting school-age persons. Overweight children are more likely to become overweight adults and have greater risk of obesity in adulthood than normal weight children (Serdula, Ivery, Coates, Freedman, Williamsona and Byers, 2013). The causes of blindness according to WHO (2011), may come from congenital (also called genetic), infective and traumatic sources. The congenital (genetic) blindness is the type that a person is born with (i.e. it occurs in the womb before birth) by defective chromosomes, infection or by physical or accidental harm as in an unsuccessful abortion. The pathetic conditions of the VIs, especially children and youths, have caused all countries to establish Special Education schools for them. Nigeria and Akwa Ibom State, in particular, is not left behind in establishing Special Education schools. Special Education schools have been established in the State by the State Government and Voluntary Organisations. These schools have the responsibility to meet all the needs of the children and youths with disabilities.

However, it has been observed that such schools are mostly concerned with academic needs and some other health problems rather than obesity and overweight problems of the blind ones (Ellis, Lang, and Shield, 2016). So, the blind people are not only affected by loss of sight, they may experience communicable diseases and may also experience the non-communicable diseases like obesity and overweight (Chen, Kim, Houtrow and Newacheck, 2010). One of the diseases that are often overlooked and ignored is the conditions of obesity and overweight which WHO (2015) has identified as overtaking the communicable diseases as leading causes of morbidity and mortality in the world and Nigeria is not exempted. Ellis, Lang and Shield (2016) identified some challenges facing people with disabilities which would include the blind. The authors noted that people with disabilities can find it more difficult to eat healthily, control their weight, and be physically active. The authors submitted this might be due to certain factor like: a lack of healthy food choices and dependence on some other person, difficulty with chewing or swallowing food, or its taste or texture, medications that can contribute to weight gain, weight loss, and changes in appetite and physical limitations that can reduce a person' s ability to exercise. Others are pain and lack of energy, a lack of accessible exercise-environments (for example, sidewalks, parks, and exercise equipment) that can enable them undertake physical exercises, and lack of resources (for example, money, transportation, and social support from family, friends, neighbours, and community members).

Overweight and obesity are common terms for ranges of weight that are greater than what is generally considered ideal and healthy weight for a given height. The terms also identify ranges of weight that have been shown to increase the likelihood of certain diseases and other health problems in youth and children (ADA, 2012). Obesity and overweight are a combination of public health problems that have since attracted the concern of the World Health Organisation (WHO, 1995). To meet with the awareness of these " physical status" disorders, the World Health had developed a BMI classification to determine the prevalence rates and levels of obesity and overweight in all individuals including children and youth (WHO, 2011; Goon, Toriola, Uever, Wuam, and Toriola, 2011). It is because obesity and overweight are associated with major and minor diseases and risk factors which include hypertension, diabetes, atherosclerosis, cancer and other complications, it becomes imperative to take precautions to avoid and or remedy the conditions. The medical costs associated with being obese and overweight are enormous in terms of morbidity and mortality costs, that many persons have not noticed the relationship between them (Wang and Dietz. 2012; Finkelstein, Trogdon, Cohen and Dietz, 2015). Socially the overweight and the obese also do suffer from stigmatization occasionally. Some persons see them as being lazy and clumsy people.

The BMI used in determining the level of thinness and obesity is not commonly applied to children, very physically active people and trained athletes, the elderly and the infirm but to the sedentary youth and adults. The BMI is generally used as a means of correlation between two groups related by general body mass and can serve as a means of estimating adiposity status (classification) and not directly used to determine the actual percentage of fats. The index is suitable in recognizing trends within sedentary individuals as there is a smaller margin for error (Brook, 2016). According to WHO, 1995 and 2016, consideration for BMI is acceptable, if the population studied is homogenous in the common food they eat consistently; similar body proportion in the racial group; living in the same environment under same climatic conditions, occupation or activity of the population.

Determining obesity and overweight is also done through the waist-height ratio (WHtR) according to (Amole, OlaOlorun, Odeigah and Adesina, 2012), but particularly most suitable for the adults. A number of research works have shown that a higher level of abdominal fats, which WHtR would show are positively and directly associated with obesity and overweight (Akarolo-Anthony, Walter, Donna and Clement, 2014; Amole, OlaOlorun, Odeigah and Adesina, 2012). Abdominal fats pose problems in the internal organs which eventually would limit proper functioning of these vital organs of the body. As Kosti and Panagiotakos (2016) and WHO (2012) had noted, the prevalent rate of adiposity among children and youth is increasing due to physical

inactivity and feeding patterns, and the rate in the blind children and adolescents in special schools in Akwa Ibom may not be excluded from the trend. The physical, mental, social, psychological and motor health of the blind are important if they are to have proper and comfortable life with a happy sense of belonging in the society.

Accordingly, Nkangude (2015) had noted the great ancient Greek philosopher, Plato' s belief that *" a sound mind must exist in a sound body" ,* as was stated by Plato as *" mens sana en corpora sano"* . It shows that an obese body definitely cannot be a sound body, and may not allow the person have a sound mind. To combat the problem, sports and physical fitness programme, adequate and balanced diets have the potentiality in developing a good body physique devoid of the extraneous fats associated with obesity and overweight (Ene-Obong, Ibeanu, Onuoha and Ejekwu, 2012). Gender research provides a new approach to understanding obesity. It is generally recognised that multiple factors contribute to excess weight, and medical, nursing and psychological literature have all considered this issue. The rapid increase in obesity rates worldwide suggests genetic causes alone are not sufficient to account for the epidemic and the importance of technology and sedentary lifestyles is well recognised (Power and Schulkin, 2008).

Gender research has the potential to investigate the heterogeneity between and amongst men and women that may explain or give insight into why lifestyle behaviours are generally not altered by obese people. The body is a reproductive arena through which social practice occurs and gender is constructed. The body is both a recipient of social practice as well as an agent in social practice. As embodied beings we are recipients of emotions from others' actions, while simultaneously able to act in ways that create emotions in others. Social embodiment refers to the way bodies, as agencies, participate in society, and how in turn society affects bodies (Connell, 2002). Some bodies for example encounter violence, accidents and sickness as a result of social practices, and this contributes to their configuration of gender (Connell, 2002). To this end, obese bodies are constituted in social processes that are created in history and subject to change, and therefore could be explored as patterns of gendered social embodiment.

To the blind it is more complicated with the problem of having no sight to see how the body looks like, except and perhaps only through a feeling of heaviness of the body as body size increases. The blind like any other persons with disability need to have a sound health too. Studies on public health problems are needed to identify the problems of obesity and overweight of the blind and the precautions to be taken to avoid or find remedy for the conditions.

Statement of the Problem

Overweight and obesity according to WHO (2015), are preventable conditions that have been identified as primary contributing factors in some chronic diseases like diabetes, high blood pressure and renal failure to mention but a few. The WHO further stated that in overweight, the body weight and the height measurement would provide a Body Mass Index (BMI) of 25-30 while obesity is considered to have a BMI range of 31 and above. In fact, weight gain has been identified as contributing to more than 34 percent of mortality in people younger than 60 years of age in most third world countries (WHO, 2015). Therefore, understanding the factors that are associated with the prevalence of overweight and obesity among children and adolescents with disabilities is critical to the development and implementation of effective prevention and management strategies. The blind ones are members of the society and needed to be cared for like any other human being.

Admittedly that for the blind, they may not easily become aware of the social stigma associated with the people who are seriously obese and overweight. The blind is also susceptible to same health problems associated with these two " physique disorders" (Ellis, Lang and Shield, 2016). To the blind ones, obesity and overweight also entails health risks with potential effects in their physical wellbeing and to their family. Despite the fact that obesity and overweight are identified as serious physical and social health problems with academic and economic impacts all over the world, studies on the prevalence rate on the persons with blindness are quite limited in the world including Akwa Ibom Special Education schools that may not identify theses health problems among their pupils. A number of studies on the prevalence of these problems in children and youths have shown the impacts on their learning ability (Ellis, Lang and Shield, 2016; Chen, Kim, Houtrow and Newacheck 2010).

Observing that the blind is always cautious of participating or exercising in physical movements, sports and games may not be a part of their involvement in leisure activities (NSCH, 2012). The blind is equally entitled to maintaining suitable body mass index and controlling abdominal fats. There is the saying that " there is ability in disability" , and the blind needs the cooperation of the school, family and the society at large to assist the blind have the ability to maintain good health. To combat the menacing effects of the blind becoming obese and overweight there is need to have a good knowledge of the prevalence rate of the disorders so as to provide appropriate remedy or precaution for them. There is however dearth of articles on this topic about the blind school children globally and perhaps none yet on the Nigerian blind pupils which includes those in the Special Education Schools in Akwa Ibom.

This study was to explore the prevalence rate of obesity and overweight among the blind pupils in special schools as a case study. Hence it will find out the risk factors for overweight and obesity among blind pupils. The study would examine the rate at which the blind children are obese and overweight. The role of the school, the school medical personnel (if any), the parents and government in tackling obesity among children generally and with greater attention to the blind need not be over-emphasized. Hence, this study aimed at informing the appropriate authorities the state of health of the blind children and to provide appropriate policies to respond to their serious health problem. It is against this backdrop and filling the gap of providing the needed literature that the researcher attempted an investigation on the prevalence rate of obesity and overweight among the blind pupils in the Special Education schools in Akwa Ibom State.

Purpose of the Study

The purpose of the study was to investigate the prevalence rate of obesity and overweight among the pupils with blindness in the Special Education schools in Akwa Ibom State. Specifically, the study sought to:

1. determine the difference in the means of standing height between the male and the female pupils with blindness in the Special Education schools in Akwa Ibom State.
2. assess the difference in the means of body weight between the male and the female pupils with blindness in the Special Education schools in Akwa Ibom State.
3. determine the difference in the means of BMI between the male and the female blind pupils in the Special Education schools in Akwa Ibom State.
4. assess the difference in the prevalence rate of the ideal weight pupils between the male and female pupils with blindness in the Special Education schools in Akwa Ibom State.
5. determine the difference in prevalence rate of the overweight pupils between the male and female pupils with blindness in the Special Education schools in Akwa Ibom State.
6. determine the difference in the prevalence rate of the obese pupils between the male and female pupils with blindness in the Special Education schools in Akwa Ibom State.

Hypotheses

The following hypotheses were formulated to guide the study and tested at .05 level of significance:

1. There is no significant difference in the means of standing height between the male and the female pupils with blindness in the Special Education schools in Akwa Ibom State.
2. There is no significant difference in the means of body weight between the male and the female pupils with blindness in the Special Education schools in Akwa Ibom State.
3. There is no significant difference in the means of BMI between the male and female pupils with blindness in the Special Education schools in Akwa Ibom State.
4. There is no significant difference in the prevalence rate of Ideal Weight pupils between the male and female pupils with blindness in the Special Education schools in Akwa Ibom State.
5. There is no significant difference in the prevalence rate of Overweight pupils between the male and the female pupils with blindness in the Special Education schools in Akwa Ibom State.
6. There is no significant difference in the prevalence rate of Obese Weight pupils between the male and the female pupils with blindness in the Special Education schools in Akwa Ibom State.

Design of the Study

Ex-post facto survey research design was adopted for the study. This design is considered suitable for the study because the variables under investigation are assumed to have occurred and could not be experimentally manipulated in the process of the study (Ali, 2006). The design also enabled the researcher to collect detailed and factual information on the anthropometric characteristics of the subjects that were already on ground at the study area.

Area of the Study

The study was carried out in Akwa Ibom State. Akwa Ibom State which is one of the 36 States in the Federal Republic of Nigeria, created on September, 1987. Akwa Ibom has both urban and rural settlements located in the humid tropic in Nigeria, therefore like any Nigerian coastal rain-forest-area, is characterized by the dry season (3-4 months) and wet seasons (8-9 months) with a mean temperature of 26^{o} C to 28^{o} C. Politically it is divided into 3 Senatorial districts, namely North-East, North-West and South-East; all with 31 Local Government Areas. The State is located in the South-South geo-political zone of the country. The people of the area are mostly Christians with different denominations; having 60 percent occupations in fishing and farming, and petty trading; while the rest are in artisanal, Civil Service and public service sectors. They speak the four main dialects of Ibibio, Annang, Oro and Andoni.

The State is situated between Latitude 4° 21' and 5° 35' north of Equator; and between Longitude 7°25' and 8°25' East of the Greenwich meridian (Akwa Ibom State bulletin, 2015). It shares common boundaries with Cross River State (in the North-East); Abia (in the North and North-West); Rivers State (in the West); and the Atlantic Ocean in the South). The population of the State stood at 2,817,626 citizens (2006 National Population Commission office, Uyo). Uyo is the State capital. The State is an oil producing State; it has one Federal University and a State University, one Federal Polytechnic, one College of Education and School of Health Technology; and 4 special education schools. It has a landmass of 23,074,425 square kilometres (Akwa Ibom State bulletin, 2015). The justification for selecting the study area is by its position as the State capital and Local Government area, where special Education schools are available as in other States of the Federation.

Population of the Study

The population of the study comprised 71 pupils with blindness in the 3 Special Education Schools which are located at Ikot Ekpene (one school); and Uyo (two schools).

Sampling and Sampling Technique

A sample size of 71 pupils with blindness (34 males and 37 females) identified from the Special Education schools selected through purposive sampling technique was used for the study.

Instrumentation

Being a design of ex-post facto survey research design with measurements, standard-constructed equipment were used to measure the body weights and the standing heights. These instruments have been used variously by some experts on the same health problems (Wang, 2012; Wang and Lim, 2012; Watts, Jones, Davis and Green, 2015).

1. A standardized weighing scale, HANA Model FA-01419; made in China.
2. A standard-constructed stadiometre.

Validation of the Instrument

The instruments for the study were already standardized instruments. The weighing scale is purposively meant for measuring body weights.; and the stadiometre for measuring the standing height.

Reliability of the Instrument

The instruments have been used in various studies in Nigeria and abroad (Akarolo-Anthony, Walter, Donna and Clement,, 2014; Ellis, Langand Shield, 2016; Ene-Obong, et.al.,2012; Goon, Toriola, et al.2011; WHO, 2011). As they are standard equipment, their reliability had been ascertained by these authors. In practical term, for an example the weighing scale will be re-tested for its reliability by applying a-one-kg. barbell weight and adjusting the scale of measurement at 0 kg. before it is used. There was the need to carry out a pilot study to enable the researcher become fully conversant with the equipment for measurement procedures and calculation from the BMI percentile Charts of the males and the females respectively for 2 to 20 years of age. That was successfully carried out in St. Louis Inclusive School, Ikot Ekpene, with 20 pupils (10 males and 10 females) within the same age group. The researcher used 3 research assistants to help in administering the instruments, thereby earlier been taught during the pilot study. The 2000 CDC CHART Data Collection Form was used to collect the data.

Method of Data Collection

The subjects were subjected to body measurements as follows:

1. **Body Weight**: The weighing scales will be reassessed for proper calibration each time before weighing will be done. The weight of each student will be measured, with the student standing bare footed and with light clothing, using the weighing scale.
2. **Standing Height**: The students were asked to stand erect with the heels, buttocks, upper back and occiput against the stadiometer. The measurements were recorded to the nearest 1 cm.
3. The BMI were then computed using the standard formula [BMI= weight (kg)/height (h^2)]. Each BMI percentile was matched with the 2000 Centers for Disease Control and Prevention Growth Charts for pupils mean age which was 12 years. Therefore the BMI was used differently for the blind pupils. It is calculated in the same way as for adults, but then compared to typical values for other children of the same age. Instead of comparison against fixed thresholds for underweight and overweight, the BMI is compared against the percentile for children of the same sex and age. The USA 2000 CDC percentile chart meant for American children was also valid for study as the American children included the Negro race [commonly called ***blacks***] that are of African origin too.

Method of Data Analysis

The BMI were first calculated and matched against the 2000 Centers for Disease Control and Prevention Growth Charts at the mean age of 12 years (12± 1 yrs) to establish the prevalence rate of overweight

and obesity. Again the data collected were sorted out and analyzed using the mean and standard deviation for answering the research questions while the Z-test and T-test statistics were used to test the null hypotheses at .05 level of significance.

Testing the Hypotheses

Hypothesis One

There is no significant difference in the means of standing height between the male and the female pupils with blindness in the Special Education schools in Akwa Ibom State.

Table1: Summary of Z-test of no significant difference in Standing Height (SHT)

Variables Gender	N	SHT ($\bar{x}$)	SD	SE	Z- cal.	Z-crit.	Decision
Standing M	34	142.6 cm.	11.9	2.9	0.12*	1.980	H_0. Accepted.
Height F	37	142 cm.	12.4				

*Significant at $P \leq 0.05$, df. 69.

Result in Table 1. revealed that the Z-test calculated value of 0.12 is less than the Z-critical value of 1.980. The hypothesis that there is no significant difference in the means of standing height between the male and the female pupils with blindness in the Special Education schools in Akwa Ibom State is accepted. This implies that there is no significant difference in the means of standing height between the male and the female pupils with blindness in the Special Education schools in Akwa Ibom State.

Hypothesis Two

There no significant difference in the means of body weight between the male and female pupils with blindness in the Special Education schools in Akwa Ibom State.

Table 2: Summary of Z-test of no significant difference in means of Body Weight (BWT)

Variables Gender	n	BWT ($\bar{x}$)	SD	SE	Z- cal.	Z-crit.	Decision
Body M	34	45.7 kg.	16.5	3.7	0.46*	1.980	H_0. Accepted
Weight F	37	44 kg.	13.4				

*Significant at $P \leq 0.05$, df. 69.

Result in Table 2, the Z-test calculated value of 0.46 is less than the Z-critical value of 1.980. The hypothesis that there no significant difference in the means of standing height between the male and the female pupils with blindness in the Special Education schools in Akwa Ibom State is accepted. This implies that there no significant difference in the means of standing height between the male and female pupils with blindness in the Special Education schools in Akwa Ibom State.

Hypothesis Three

There no significant difference in the means of BMI between the male and female pupils with blindness in the Special Education schools in Akwa Ibom State.

Table 3: Summary of Z-test of no Significant Differences in Body Mass Index (BMI)

Variables Gender	n	BMI ($\bar{x}$)	SD	SE	Z-cal.	Z.crit.	Decision
BMIM	34	24	4.5	1.2	2.2*	1.980	H_0. Rejected
F	37	21.4	5.6				

*Significant at $P \leq 0.05$, df. 69.

Result in Table 3 indicated that the Z-test calculated value of 2.2 is greater than the Z-critical value of 1.980. Thus, the hypothesis that there is no significant difference in the means of standing height between the male and female pupils with blindness in the Special Education schools in Akwa Ibom State is rejected. This implies that there is a significant difference in the means of standing height between the male and the female pupils with blindness in the Special Education schools in Akwa Ibom State

Hypothesis Four

There is no significant difference in the prevalence rate of Ideal Weight pupils between the male and female pupils with blindness in the Special Education schools in Akwa Ibom State.

Table 4. Summary of Z-test of no significant differences in the prevalence rate of Ideal Weight (IDWT) pupils

Variables Gender	N	IDWT ($\bar{x}$)	SD	SE	Z- cal.	Z-crit.	Decision

IdealM	13	7	4.2	1.7	3.5	2.021	H_0. Rejected
Weight F	26	13	5.4				

*Significant at $P \leq 0.05$, df. 37.

Result in Table 4, indicated that the Z-test calculated value of 3.9 is greater than the Z-critical value of 2.021. Thus, the hypothesis which states that there is no significant difference in the prevalence rate of IDWT pupils between the male and the female pupils with blindness in the Special Education schools in Akwa Ibom State is rejected. This implies that there is a significant difference in the prevalence rate of IDWT pupils between the male and the female pupils with blindness in the Special Education schools in Akwa Ibom State.

Hypothesis Five

There is no significant difference in the prevalence rate of Overweight pupils between the male and the female pupils with blindness in the Special Education schools in Akwa Ibom State.

Table 5, Summary of t-test of no significant differences in the prevalence rate of Overweight (OVWT) pupils

Variables Gender	N	OVWT ($\bar{x}$)	SD	SE	T- cal.	T-crit.	Decision
OverweightM	5	3	1.4	1.01	1.98	2.228	H_0. Accepted
F	7	4	2.1				

*Significant at $P \leq 0.05$, df. 10.

Result in Table 5, revealed that the t- calculated value of 1.01 is less than the t-critical value of 2.228. Thus the hypothesis which states that hypothesis that there is no significant difference in the prevalence rate of OVWT pupils between the male and the female pupils with blindness in the Special Education schools in Akwa Ibom State is accepted. This implies that there is no significant difference in the prevalence rate of OVWT pupils between the male and the female pupils with blindness in the Special Education schools in Akwa Ibom State.

Hypothesis Six

There is no significant difference in the prevalence rate of Obese Weight pupils between the male and the female pupils with blindness in the Special Education schools in Akwa Ibom State.

Table 6, Summary of t-test of no significant difference in the prevalence rate of Obese Weight pupils (OBWT)

Variables Gender	n	OBWT ($\bar{x}$)	SD	SE	T-cal.	T-crit.	Decision
ObeseM	17	9	2.5	1.8	3.9	2.093	H_0 Rejected
WeightF	4	2	3.3				

*Significant at $P \leq 0.05$, df. 19.

Result in Table 4.12 showed that the t-test calculated value of 3.9 is greater than the t-critical value of 2.093. Thus the hypothesis which that there is no significant difference in the prevalence rate of OBWT pupils between the male and the female pupils with blindness in the Special Education schools in Akwa Ibom State is rejected. This implies that there is a significant difference in the prevalence rate of OBWT pupils between the male and the female pupils with blindness in the Special Education schools in Akwa Ibom State.

II. FINDINGS

The summary of the findings were as follows:

i. There is no significant mean difference between the male and the female pupils with blindness in the Standing Height; though the males were descriptively taller by 0.6cm mean height.
ii. There is no significant mean difference between the male and the female pupils with blindness in the Body Weight; though the males were descriptively heavier by 1.7 kg mean Body Weight
iii. There is a significant mean difference between the male and the female pupils with blindness in the Body Mass Index where the males were descriptively with higher mean BMI by 2.6.
iv. There is a significant mean difference in the number of Ideal Weight pupils between the male and the female pupils with blindness and the females were with superior prevalence rate of 70.3%, against the males with 38.2%. Both genders had 54.9 prevalence rate in the Ideal Weight class.

v. There is a significant mean difference in the number of overweight pupils between the male and the female blind; but the females pupils with blindness descriptively had higher prevalence rate of 18.9 % against 14.7% of the males. Both genders had obtained an Overweight prevalence rate of 16.9 %.
vi. There is a significant mean difference in the number of obese Weight pupils between the male and female pupils with blindness; where the males with blindness had higher prevalence rate of 50% against 10.8% of the females. Both genders had obtained an obese weight prevalence rate of 29.6%.

III. CONCLUSIONS

The study findings justified the conclusions that there was no significant mean difference between the male and the female pupils with blindness in the Standing Height and Body Weight; though the males were descriptively taller and heavier. There was significant mean difference between the male and the female blind pupils in the Body Mass Index and the males were with higher mean BMI showing the blind males were more endomorphous. There was no blind pupil in the BMI Underweight class so there was a prevalence rate of 0%. The females were with superior prevalence rate of 70.3%, against the males with 38.2% in the BMI Ideal Weight class. The female pupils with blindness had higher prevalence rate of 18.9 % against 14.7% of the males in the BMI overweight class; while the blind males had higher prevalence rate of 50% against 10.8% of the females in the Obese weight prevalence class. That meant more male blind pupils could be susceptible to overweight and obesity health risk factors in future.

Recommendations

On the basis of the findings of this study, the researcher therefore makes the following recommendations:

1. The government should continue to assist the school managements of these " special" pupils to cater for the needs of the pupils, on both communicable and non-communicable health risk factors.
2. The school management should sustain the level of care given to the pupils and to provide programmes of organized physical activities to include the visually impaired ones.
3. Parents should be encouraged to send their physically challenged children to the Special schools to be brought up better than at their homes.

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