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Obesity Prevalence and Physical Inactivity among Adults of Karari Locality, Khartoum State Sudan, 2014

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Abstract: **This is cross sectional studies conducted in Karari locality in Khartoum state of Sudan to measure the prevalence of obesity among adults and it is associated risk factors. Sample sizes of 283 adults aged 20-45 years were participated in the study. The data was collected through questionnaire. Data was analyzed using SPSS version 19.0.**

The results of the study revealed that more than half of the respondents were females (53.4%) and 46.6% were males. The majority of the respondents (32.9%) aged 41-45 years, 21.6% aged 36-40 years, and 12% aged 16.3% while 17.3% aged between 20-25 years. Approximately 56% of the respondents were practiced physical activity. The majority of the respondents practiced walking (57.6%), 41.1% practiced sport. More than 57% of the respondents practiced physical activity daily, 10.1% of them practiced once per week and 32.3% practiced twice per week. The high consumption of white bread daily was (33.9%), whole meal bread daily (89.4%), rice once (43.8%), pasta once (40.3%), porridge once (58.7%), chips daily (2.8%), yoghurt daily (65.7) and sweets daily consumption (40.6%). Most of the respondents were eating once (58.7%) away from their homes. (43.1%) of adults found normal, (6%) were underweight, (36.4%) were overweight and (14.5%) were obese. Only (28.3%) of the respondents were suffered from chronic diseases. The majority of respondents suffered from diabetes (43.7%) followed by hypertension (42.5%). Male adults were statistically significant more practiced for physical activity once per week compared to females.

Keywords: **Physical activity obesity Adults Karari Locality, Khartoum Sudan.**

1. INTRODUCTION

Globally, nearly 1 billion people are classified as overweight, 300 million of them being clinically obese (WHO, 2002). Numerous factors lead to overweight and obesity. Key among them is urbanization which brings with it a reduction in daily energy expenditure through reduction of physical activity and a shift to a higher caloric content diet and (BeLue et al., 2009). A recent study conducted by Hala et al, 2013 in Sudan revealed that, twenty nine (76.3%) of the cases were obese, 8 (21.1%) overweight and only one (2.6%) had normal BMI, only 4 (10.5%) were stunted, thirty one cases (81.6%) had a canthosis nigricans. Worldwide, more than 60% of adults do not engage in sufficient levels of physical activity which is beneficial to their health. Lack of physical activity in leisure time, that leads to people spending increasing amount of time on sedentary behaviors such as watching television, using computers, and excessive use of "passive" modes of transport (cars, buses and motorcycles) has also contributed (albeit partly) to problem of overweight and obesity (WHO, 2003). Physical inactivity is more prevalent among women, older adults, individuals from low socio-economic groups (especially in developed countries), and the disabled (WHO, 2003). Obesity plays a significant role in causing

poor health in women, negatively affecting quality of life and shortening quantity of life (American Obesity Association, 2002).

There are many obesity-related conditions, which uniquely or mostly affect women. These include: osteoarthritis, birth defects, breast and endometrial cancers, cardiovascular and gall bladder diseases, infertility and gynecological complications, urinary stress incontinence, and stigma/discrimination (American Obesity Association, 2002). Women who are overweight or obese are at a higher risk of developing these conditions compared to those who are not. A direct association has been found between body weight and deaths from all-causes in women, ages 30 to 55. According to the American obesity association, when BMI exceeds 30 kg/m relative risk of death related to obesity increases by 50 percent (American obesity Association, 2002). Obesity, especially abdominal obesity, is central to the metabolic syndrome and is strongly related to polycystic ovary syndrome (PCOS) in women. Obese women are particularly susceptible to diabetes, and diabetes, in turn, puts women at dramatically increased risk of cardiovascular disease (Hu, 2003). , the Overweight and obesity in developing countries, has been neglected as most attention is concentrated on famine and under nutrition or malnutrition of children [(Riley, (2001); Phillip and James, (2005); WHO, (2000)].

2. MATERIAL AND METHODS

2.1. Study design:

The study was employed as a cross-sectional analytical design to explain overweight and obesity in Karari locality. The study is descriptive in that the prevalence of overweight and obesity will be calculated as well as the risk factors for overweight and obesity among adults in the study. The study is also cross-sectional in that it allows for statistical comparisons of the various characteristics of the study population.

2.2 study area:

The Locality is an extended flat area inundated by some cropping out hills and mountains with valleys. It has a total area of 813 km^2 with a total of 105 quarters (planned and non-planned) and 70 villages at the Northern Rural part. Its geographical boundaries extend to the North till Wad Hamid in River Nile State at Abu Shambala village. For 100 km to the South, it is bordered by Omdurman and to North-Western side bordering North Kordofan State. To the West it is bordered by Um Badda Locality and to the East by the river Nile. It also includes Alfateh areas 1 and 2 as well as the popular house at its Northern side to around 10 km.

It has a total population of around one million now. The illegal housing and non-planned areas were significantly reduced and almost non-existing now.

2.3. Research variables:

The dependent variable in the study is overweight and obesity as defined by:

2.3.1.1. Body mass index (BMI)-(kg/m^2)

Adults with a BMI of 25.0 to 29.9 kg/m with a BMI greater or equal to 30.0 kg/m^2) will be classified as overweight; while those will be classified as obese based on WHO standards of classification(Gallagher et al, 2000) as shown in below table:

Indicator	Underweight	Normal	Overweight	Obesity
BMI-Kg/m^2	< 18 Kg/m^2	18-24.9 Kg/m^2	25-29.9 Kg/m^2	≥30 Kg/m^2

Independent variables: Socio-demographic and socio-economic characteristics, Physical activity and Dietary intake

Study population:

The study was target adults between the ages 20-45 years residing in Karari Locality.

2.4. Inclusion criteria: Adults aged 20-45 years whom residing in Karari Locality.

2.5. Exclusion criteria: Those who aged less than 20 years and more than 45 years and Those who don't found during the time of data collection.

Sample size and sample size calculation:

A Stratified sampling was used due to the heterogeneity of the population.

$$n = Z^2 P (1-P)/ (\alpha)^2$$

n' = minimum sample size with finite population correction

Z = Z statistic for 95% level of confidence (1.96)

P = Estimated obesity prevalence (from a recent studies conducted by Hala et al. 2013 which indicated the prevalence was 23.0%.

ɑ = Precision with a 95% confidence interval which gives a margin of error of 0.05.

n = (1.96)2 * 0.23(1-0.23)/ (0.05)2 = 272 rounded to 283 considered the refuse rate 4% which estimated to be 11 subjects.

3. SAMPLING TECHNIQUE

The Stratified random sampling method was used to obtain the total number of adults required. The areas where the adults resided will be used as the basis for stratification (that is each residential area represented a stratum). Data will be collected from 283 adults, from the the three administrative units. The systematic random sampling method was used to select the respondents from each administrative unit depends on the number of households in each administrative unit to determined the interval by dividing number of households/ no. of sample required in each area (283).

4. DATA COLLECTION

The main instrument of data collection was an interviewer-administered, structured questionnaire (Appendix 1). The questionnaire was divided into four parts. The first part is used to collect socio-demographic data. The second part was used to collect data on physical activity during work, transportation and leisure time in a typical week. The third part was used to collect information on dietary intake and feeding habits. The final part of the questionnaire was used to collect anthropometric data (Weight, height) to calculate the Body Mass Index.

5. DATA ANALYSIS

The data was later exported into the SPSS programme for further analysis.

Chi-square tests were performed to establish the association between categorical variables like age group, marital status, and sex. Both descriptive (mean, standard deviations, frequencies, and percentages) and inferential statistics were used to describe quantitative data and to examine the relationship between overweight and obesity and the other variables. A P value of less than 0.05 is considered significant.

Ethical consideration:

The proposal was presented to University for approval. Informed consent will be sought from all study participants after having explained the aim and the purpose of the study. Confidentiality was ensured for all study participants by using codes rather than names on data entry.

6. RESULTS

Figure 1 shows gender distribution of the respondents where females were (53.4%) and 46.6% were males. Karari Locality, 2014 n=283

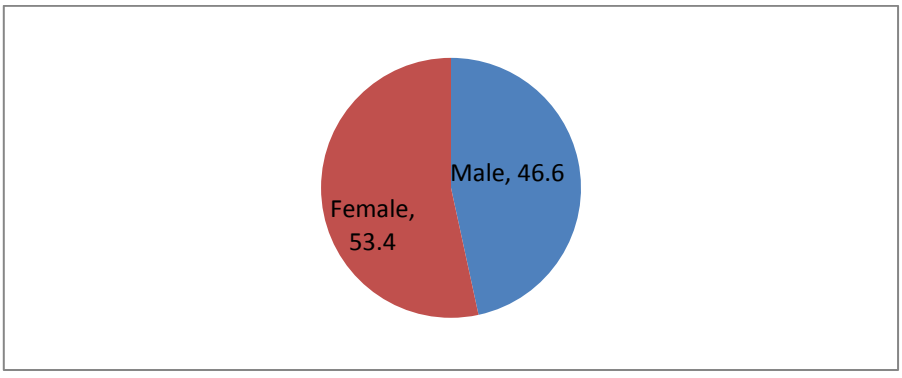

Figure 2 : shows distribution of respondents according to their age, Karari Locality, 2014 n=283

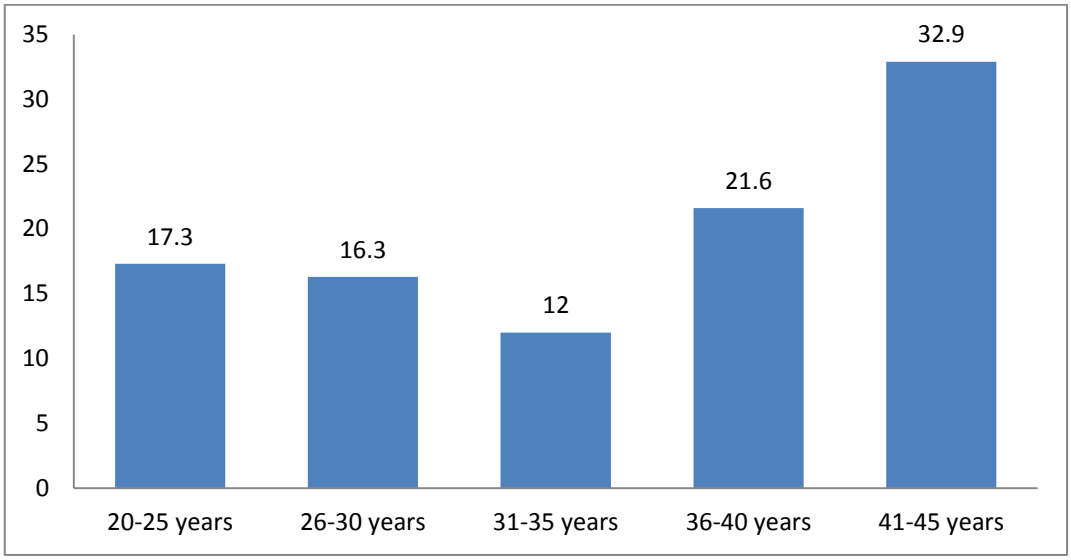

Figure 3 shows practicing physical inactivity by respondents Karari Locality, 2014 n=283

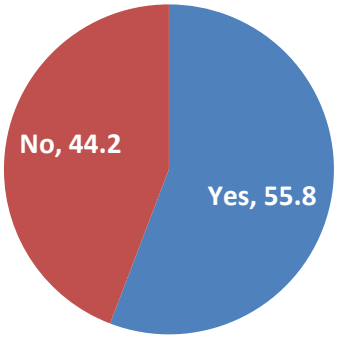

Figure 4 shows the type of physical activities practiced by respondents (walking (57.6%), 41.1% practiced sport while 1.3% practiced other physical inactivity) Karari Locality, 2014 n=283

n=158

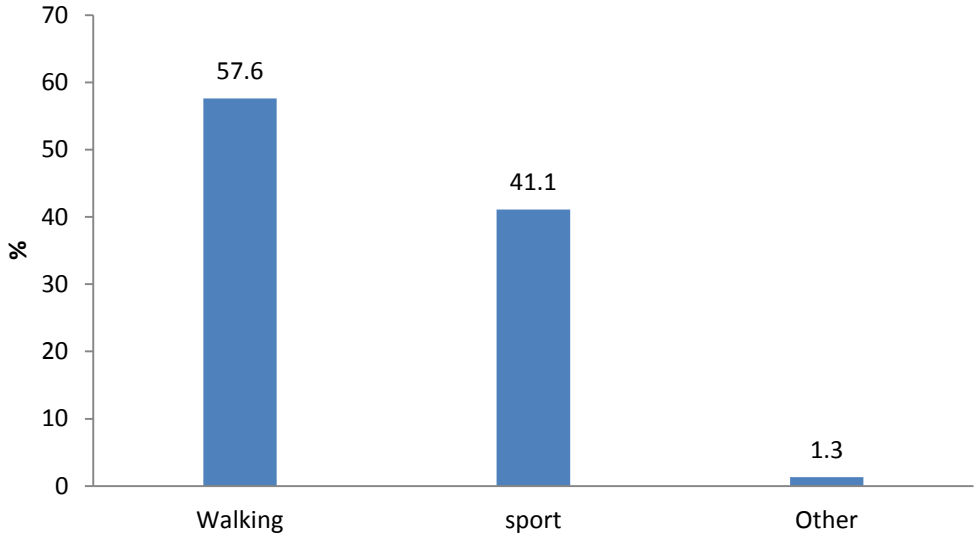

Figure 5 shows respondent's nutritional status, Karari Locality, 2014 n=283

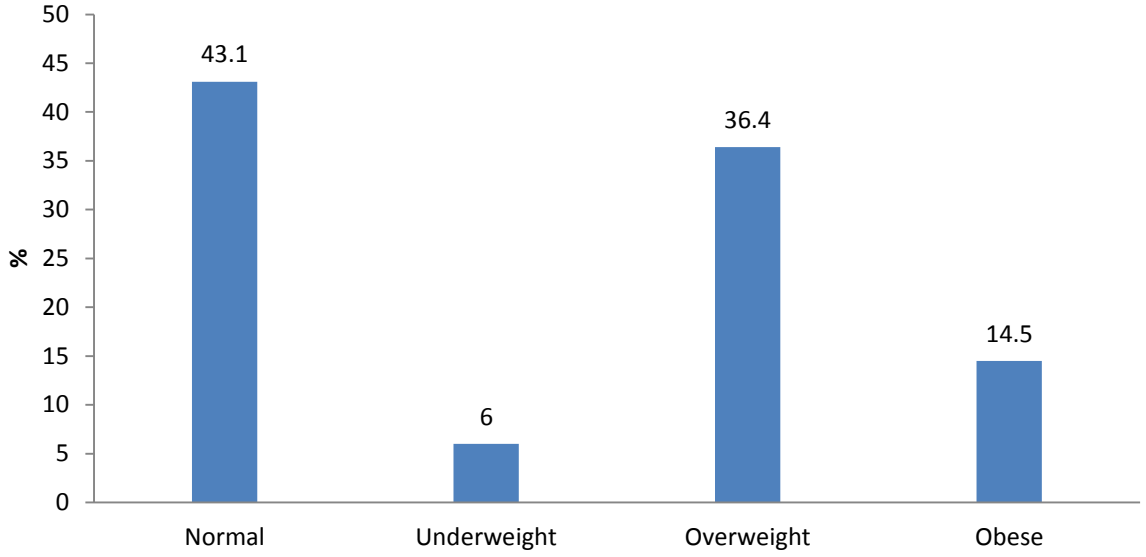

Table (5): Cross tabulation between age, sex and frequency of practicing physical activities, Karari Locality, 2014

Frequency physical inactivity		Age/years										Total		P-value
		20-25		26-30		31-35		36-40		41-45				
		No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	
Daily	Male	12	60	7	43.7	5	50	6		20	35.3	50	94.9	.145
	Female	8	40	9	56.3	5	50	11		8	64.7	41	5.1	
Total		20	100	16	100	10	100	17	100	28	100	91	100	
Once / week	Male	4	100	4	100	0	0	1	100	4	80	13	81.2	.030
	Female	0	0.0	0	0.0	2	100	0	0.0	1	20	3	19.8	
Total		4	100	4	100	2	100	1	100	5	100	16	100	
Twice/ week	Male	5	55.5	2	66.7	5	71.4	9	60	10	58.8	31	60.8	.972
	Female	4	44.5	1	33.3	2	29.6	6	40	7	42.2	20	39.2	
Total		9	100	3	100	7	100	15	100	17	100	51	100	

7. DISCUSSION

The current study showed that more than half of the respondents were females (53.4%) and 46.6% were males. However the majority of the respondents (32.9%) aged 41-45 years. That means most of participants aged more than 40 years which considered the phase of adulthood. However, obese youth are more likely to have risk factors for cardiovascular disease, such as high cholesterol or high blood pressure the similar result was observed by Freedman who noted that 70% of obese youth had at least one risk factor for cardiovascular disease (Freedman et al, 2007) and . 68% of the respondents were worked,

The study reported that the mean height was found 163.6 cm and the mean respondent's weight were 68.4 kg while the mean of BMI was found 25.7kg/body weight. The findings indicated that the respondents were overweight. Adults were classified as being overweight if their BMI was greater than 25.00 but less than 29.99. Adults were classified as being obese if their BMI was 30.00 or more (Australian Bureau of Statistics, 2010).

Approximately 56% of the respondents were practiced physical inactivity and 44.2% did not practiced with mean average of 71.8 minutes. The result indicates high percent of adults did not practiced physical activity; therefore high percentage of overweight and obese adults detected is justified. But the time for those who practiced is above of the recommended. However inadequate physical activity (PA), and excessive calorie consumption are the main risk factors that contribute to the increased prevalence of overweight and obesity (Lowell, 2004). The study in agreement with recent study done by Al-Hazzaa et al., in Saudi Arabia, among 2,906 adolescents (1,400 males and 1,506 females), about 50% of the males and more than 75% of the females did not meet the recommendation of 60 minutes of daily moderate-intensity physical

activity. In addition, results showed that overweight/obesity were significantly and inversely associated with vigorous physical activity levels. The majority of the respondents practiced walking (57.6%), 41.1% practiced sport while 1.3% practiced other physical activities. However, more than 57% of the respondents practiced physical activity daily, 10.1% of them practiced once per week and 32.3% practiced twice per week. The results not in line with a study results among 2,908 Saudi school students from grades 10, 11, and 12, data were collected during October and November 2009, revealing that 60% of children and more than 70% of adolescents do not engage in sufficient physical activity (Al-Hazzaa et al, 2011). It is well known that physical activity plays a leading role in preventing overweight and obesity. However, physical activity measurement is difficult to interpret and evaluate (Tremblay et, 2011).

8. CONCLUSION

Overweight and obesity has become a global issue in both developing and developed countries. It has no geographical limits. Preventing this worldwide health issue is critical for all health agencies. The prevalence of overweight and obese among adult was found higher. However the majority of adults who were overweight and obese suffered from chronic diseases (diabetes, hypertension and other chronic diseases). Still there was more than forty percent of the adults did not practiced physical inactivity. Males adult aged 41-45 years were statistically significant more practiced for physical inactivity once per week. Unhealthy habits of consumption of carbohydrates (rice, white bread on last one week daily or once more compared to other foods may increase the risk of overweight and obesity.

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