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RESEARCH ARTICLE

PREVALENCE OF OVERWEIGHT AND OBESITY AMONG RURAL PRESCHOOL SCHOOL CHILDREN CAMEROON.

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Abstract

Background: Pediatric obesity is becoming a public health issue across several countries. Childhood obesity has immediate and long-term impacts on physical, social, and emotional health. Limited data concerning obesity among preschool children are available in rural Cameroon.

Aim: The aim of this study was to determine the prevalence and risk factors associated with overweight and obesity among rural nursery school children in Ngog-Mapubi Cameroon.

Material and Methods: This was a cross sectional study conducted in nursery school children aged between 2-5 years during the month of March 2016 at the public rural nursery school of Ngog-Mapubi Cameroon. Obesity and overweight were defined according WHO. Data were analyzed using Stata version 11. The Chi-square test was used to assess the association between respondent characteristics and the prevalence of overweight and obesity. Logistic regression was used for determination of risk factors of childhood overweight and obesity.

Results: Out of total 100 children recruited in this study, The overall prevalence of overweight is 40% (55.10% for boys and 25.49% for girls) while the overall prevalence of obesity is 13% (8.16% for boys and 17.64% for girls).

Conclusion: Finally, the cumulative prevalence of obesity is 53% in the studied population. Parent rentals and Child watches television after school were significantly associated to overweight while Parent rentals and Child eats snacks were significant predictor of obesity.

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Introduction:-

Overweight and obesity among preschool children is becoming an emerging public health issue. It recognized that all their life, childhood obesity is associated with immediate and long-term impacts on psychological, physical, social, and emotional health troubles. Children with obesity are at higher risk for having other chronic health such as asthma, sleep apnea, bone and joint problems, type 2 diabetes, and risk factors for heart disease and diseases that impact physical health, [1, 2, 3-5]. Children with obesity are bullied and teased more than their normal weight peers, [6] and are more likely to suffer from social isolation, depression, and lower self-esteem. [7] In the long term, childhood obesity also is associated with having obesity as an adult, [8] which is linked to serious conditions and diseases such

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as heart disease, type 2 diabetes, metabolic syndrome, and several types of cancer. ^[9-10] In developed countries, many reports, have shown increasing numbers of overweight children ^[11-13]. Developing countries are facing the double burden of under nutrition over nutrition and the extent of the problem remains unknown. Projections show that prevalence among children of less than 5 years) obesity will attend the magnitude of 12.7% in Africa by 2020 ^[14] In Cameroon, scarce childhood obesity data are available ^[15]. This study was carried out to estimate the prevalence of overweight and obesity among rural preschool children of 2 to 5 years

Materials and Methods:-

Ethics:-

The study was conducted during the month of March 2016 at the public rural nursery school of Ngomapubi Cameroon. Admission to the study was based solely on voluntary authorization of the parents or the guardians who provided their verbal informed consent. The study was approved by the Education Planning Commission of the hospital of Ngomapubi.

Subjects:-

Our cross sectional study was carried out on 100 healthy preschool aged children the aged between 2 and 5 years. Data were collected during the month of March 2016 by applying a standard questionnaire to the mothers, the fathers or guardians. The parents filled the questionnaire regarding age, sex, education and occupation of the parent, family size, family history of chronic diseases, eating habits of junked food.

For each child anthropometric measurement of weight, Height, health examination and blood pressure measurement. Height and weight measurements were taken for each subject using adequate methodology of Weiner and Lourie 1981 et al [16]. The height was measured in standing position using tape meter while the shoulder was in a normal position to the nearest. Body weight were determined in participants (with very light clothing on and without shoes) using a Jocca™ scale.

The blood pressure was measured by one nurse with Labell™ electronic blood pressure on the wrist. If one child was crying, the blood pressure was not taken until he or she became calm. The determined systolic and diastolic pressures were ascertained from three readings using the mean value of the three. Blood pressure was measured 3 times on the left arm and in the sitting position, with at least 10 min of rest before the first measurement and a two-minute interval between measurements, according standardized techniques.

Definition of Overweight and Obesity:-

Body mass index (BMI) was calculated as weight in kilograms divided by square of height in metres. International criteria for BMI percentiles for age and sex (Cole et al. 2000^[17]). BMI is a measure used to determine childhood overweight and obesity. Overweight is defined as a BMI at or above the 85th percentile and below the 95th percentile for children and teens of the same age and sex. Obesity is defined as a BMI at or above the 95th percentile for children and teens of the same age and sex.

Statistical Analysis:-

The survey sample was categorized according to age and gender, All data were analyzed by STATA version 13. The data were classified into four age groups, each of one-year duration, i.e., age group 2+ included children from age 2.00-2.99 years, the age group 3+ from 3.00-3.99 years and so on. Categorical variables are presented as percentages or numbers. The chi-square test respectively, P value <0.05 was considered statistically significant.

Logistic regression was performed with adjustment for all variables for identification of risk factors for overweight and obesity

Results:-

Of the 100 children, were (49%) were males and 51% females. Their age ranged from 2-5 years. Table 1 shows the distribution of the studied population according to age. Most of the girl assessed had 4 years while the majority of the boys had five years. Table 2 reports the prevalence of overweight among boys and girls, the highest prevalence of overweight was reported among boys of 5 years while the lowest was noted among girls of 5 years. They were a significant difference among overweight prevalence of boys and girls of 5 years.

Table 3 reports the prevalence of obesity among boys and girls, the highest prevalence of obesity was reported among girls of 3years while the lowest was noted among girls of 5years and boys of 3years. They were a significant difference among obesity prevalence of boys and girls of 3years.

Table 4 show factors associated with overweight. Parent rentals and Child watches television after school were significantly associated to overweight.

Table 5 show factors associated with obesity. Parent rentals and Child eats snacks were significant predictor of obesity.

According to table 4 and 5, boys exhibit higher significant prevalence of overweight but lower prevalence of obesity comparatively to girls. The overall prevalence of overweight is 40% (55.10% for boys and 25.49% for girls) while the overall prevalence of obesity is 13% (8.16% for boys and 17.64% for girls). Finally, the cumulative prevalence of obesity is 53% in the studied population.

Table 1:- Characteristics of nursery school children

Age(years)	Boys(°/°)	Girls(°/°)	Total (°/°)
2+	7(33.33)	14(66.67)	21
3+	11(40.74)	16(59.26)	27
4+	10(37.07)	17(62.96)	27
5+	21(84.00)	4(16.00)	25
2+3+4+5+	49(49.00)	51(51.00)	100

Table 2:- Prevalence of overweight among boys and girls

Age(years)	Boys(°/°)	Girls(°/°)	P value
2+	28.57	21.42	0.717
3+	27.27	31.25	0.840
4+	10.00	29.41	0.241
5+	100	0.00	0.000*
2+3+4+5+	55.10	25.49	0.029*

Table 3:- Prevalence of obesity among boys and girls

Age(years)	Boys(°/°)	Girls(°/°)	P value
2+	14.28	7.14	0.599
3+	0.00	43.75	0.011*
4+	10.00	5.88	0.693
5+	14.28	0.00	0.420
2+3+4+5+	8.16	17.64	0.034*

Table 4:- Risk factors for overweight among nursery school

Variables	Odd ratio (95%CI)
Parent rentals	1.26(0.55-2.99)*
Parent Fatnesss	0.71(0.23-2.21)
Child watches television after school	1.55(0.60-4.00)*
Full meal from appetizer to dessert	0.84(0.36-1.96)
Child eats snacks regularly	0.84(0.34-2.06)

* $P < 0.05$ considered significant

Table 5:- Risk factors Obesity for among nursery school

Variables	Odd ratio (95%CI)
Parent rentals	1.77 (0.53-5.86)*
Parent Fatnesss	0.68 (0.12-3.65)
Child watches television after school	1.30 (0.35-4.87)
Full meal from appetizer to dessert	0.60 (0.18-2.04)
Child eats snacks regularly	1.64(0.49-5.48)*

Discussion:-

Childhood obesity is becoming a worldwide serious public health problem. Obesity in childhood is tend to be maintained in adulthood with series of unhealthy events such as dyslipideamia, hypertension, type 2 diabetes, metabolic syndrome and psychosocial disorders. Obesity has reached pandemic proportion in Cameroon and to limit that pandemic, prevention of adult obesity induced morbidity and mortality should be trigger as early as possible in childhood. Scarce studies have been conducted on overweight and obesity prevalence and risk factors among preschool children in rural areas of Cameroon. This study was carried out to estimate the prevalence of overweight and obesity among rural preschool children aged between 2 and 5years old of Ngog Mapubi nursery school and to contribute to find effective ways to prevent childhood obesity.

The prevalence of overweight and obesity in our study is too high and does not favour comparison with others studies. This prevalence was higher than the previous Cameroonian (8.0%) study[15] and others sub-Saharan African studies done in Ivory Coast (4.4% in 2012), in Nigeria (6.3% in 2013), in Senegal (6.8% in 2013), and Democratic Republic of Congo (5.6% in 2014) [18]. Many reason can justified this great prevalence, the small sample size, the definition used, the age of participants and the socio-economic status.

In our study, prevalence of obesity varies with gender difference, it was noted that boys were more at risk of overweight while girls were more obese. This finding is consistent with many studies [19,20,21], but in contrast with reports with girl obesity predominance[22-26] and no gender difference noticed among boys and girls [27,28]. It is well known that overweight is a result of interactions between genetic and environmental factors, metabolism, eating and physical activity behaviour, and social and individual psychology[29-32] It has been found that parent rental is a risk factor of obesity, infact our study area is a rural area where only civil servant with high incomes are transferred for professional reasons and are obliged to rent houses because they are not in their native village. This is supported by the reports show that in developing countries, a positive association is noted has between obesity and children of high parents having a high socioeconomic status, [33].

Inactivity through watching television after school and eating snacks regularly are obesity risk factors in our study. Television influence the dietary behaviors of children and reduces their daily physical activity level and consuming more energy from snack with added sugars or solid fats than the body uses for healthy functioning, growth, and physical activity, leads to obesity. [34,35,36].

This study has some major limitations, the small sample size of population recruited only in Ngog Mapubi and it cross-sectional nature prevents it to be generalized in all rural preschool children.

Conclusion:-

These findings brings out the reality of child obesity among preschoolers in rural Cameroon and support the need for practical actions to be taken at the level of schools, parents and children to bar the way to obesity epidemic.

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Declaration of Conflicting Interest:-

The authors declare that there are no conflicts of interest.

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