ORIGINAL ARTICLE

Prevalence and socio-demographic factors associated with overweight and obesity among adolescents in Kaski district, Nepal

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Abstract | Introduction | Methodology | Results | Conclusion | References | Citation | Tables / Figures

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Abstract

Background: The occurrence of overweight and obesity is at increasing level in low income and developing countries and is not limited to high income countries only. Adolescent is at high risk for its development. **Rationale:** To find out the prevalence and associated socio-demographic factors responsible for overweight and obesity which are unrecognized health problems and are risk factors for non-communicable disease. To date no study has been done focusing overweight and obesity in Kaski district, Nepal and very few in context of Nepal. **Objectives**: To determine the prevalence of overweight and obesity and their association with socio demographic factors among higher secondary school level adolescents in Kaski district, Nepal. **Methods**: A cross sectional study was conducted in Kaski district among 838 adolescents randomly selected from 12 schools using multistage cluster sampling from 24th October to 4th December, 2013 using self-administered questionnaire and anthropometric assessment. BMI for age was calculated using WHO Anthroplus software v.1.0.4 using cut off value of 85th percentile and 95th percentile for overweight and obesity respectively. Statistical analysis was done using SPSSv. 16. **Results**: The study revealed 8.1% prevalence of overweight and obesity of among higher secondary level school adolescents with 5.8% overweight and 2.3% obese. Urban respondents were found significantly more overweight/obese than village respondents (p=0.001, OR=2.360). Adolescents of ethnic/indigenous group (p<0.001, OR=2.56), fathers' with government job (p=0.011, OR=2.08), mothers' with teaching job (p=0.038, OR=2.57) and average monthly family income more than or equal to NRs.25, 000 (p=0.007, OR=1.97) were found significantly more overweight and obese. But, other socio demographic factors like gender (p=0.26), birth order (p=0.404) and parents' education (p=0.121 for fathers' and p=0.282 for mothers' education) weren't significantly associated. **Conclusion:** Overweight and obesity among adolescents was found high with significant association with permanent residence, ethnicity, parents' occupation and average monthly family income.

Key Words

Overweight; Obesity; Prevalence; Socio-Demographic Factors

Introduction

Overweight and obesity is abnormal or excessive fat accumulation that presents a risk to health [1]. Overweight and obesity are epidemic and a public health crisis among adolescents worldwide particularly in developing and low income countries like Nepal [2-4]. Overweight and obesity are major risk factors for a number of chronic diseases, including diabetes, cardiovascular diseases and cancer and are the fifth leading risk factors for global deaths. Fundamental cause of overweight and obesity is an energy imbalance between calories consumed and calories expended. They are linked to

more deaths than underweight worldwide and are fifth leading cause for global deaths [5].

The global age-standardized prevalence of obesity nearly doubled from 6.4% in 1980 to 12.0% in 2008 [6]. At least 35 million overweight children are estimated to be living in developing countries and 8 million in developed countries [7, 8]. Prevalence of overweight and obesity was 4.9% in 2010 in Asia [9]. It was 2.9% among adolescent girls of 15-19 years of age in 2011 in Nepal of which 2.6% were overweight and 0.3% girls were obese [10]. **Rationale:** Adolescents in Nepal cover 23.45 percent of the total population that is nearly a quarter of population whereas they cover 22.34 percent of total population in Kaski district [11]. With pace of urbanization and development, overweight and obesity among adolescents is on increasing trend. Overweight and obesity are unrecognized public health problems in Nepal. Very few research studies have been conducted on overweight and obesity in Nepal so far. To date there is no information on the extent of affliction due to overweight and obesity among children in Nepal although several nationally representative nutrition surveys have been conducted as their focus was on underweight and rates of overweight and obesity were rarely reported [12]. Overweight and obesity are risk factors for non-communicable diseases mainly cardio-vascular diseases and cancer. Adolescent is the most vulnerable group for developing obesity. Moreover, the determinants of adolescent obesity are unclear.

Aims & Objectives

To find out the prevalence of overweight and obesity and associated socio-demographic factors among higher secondary school adolescents in Kaski district, Nepal.

Material and Methods

A cross sectional study was conducted in Kaski district to determine the overweight and obesity among higher secondary school adolescents in Kaski district among 838 adolescents randomly selected from 12 schools using multistage cluster sampling. Data collection was done in between 24th of October to 4th of December, 2013 using self-administered questionnaire and anthropometric assessment. Height and weight were entered in WHO Anthroplus software v.1.0.4 for calculating BMI for age. Cut off value of 85th percentile was used for classification of overweight and 95th percentile for obesity. Collected data from questionnaire and nutritional status were entered in SPSS v. 16 and statistical analysis was done using SPSS. Frequency tabulation, chi square test and odds ratio were done. Pre testing was done among the 10% students of total sample size. Pre-tested samples were excluded from study.

Approval was taken from Department of Public Health, Pokhara University for conduction of research. Approval was also taken from Higher Secondary Education Board (HSEB), Pokhara Branch and District Education Office (DEO), Kaski before study. Written informed consent was taken from school administration as well as from students and their participation in the study was voluntary. Clarity of the purpose of study was done among the school administration and students in every school prior to data collection. Confidentiality of each respondent has been maintained strictly.

Results

The study was carried out among 838 higher secondary school adolescents of age group 16 to 19 years with mean age of 16.97±0.816 years. The prevalence of overweight and obesity among higher secondary level school adolescents in Kaski district was found to be 8.1% of which 5.8% were overweight and 2.3% obese.

Urban respondents were found highly significant more overweight/obese than village respondents (p=0.001, OR=2.360). Adolescents of ethnic/ indigenous group (p<0.001, OR=2.56), fathers with government job (p=0.011, OR=2.08), mothers with teaching job (p=0.038, OR=2.57) were found significantly more overweight and obese. Highly significant association was found between average monthly family income more than or equal to NRs. 25,000 (p=0.007, OR=1.97) and overweight and obesity. But, other socio-demographic factors like gender (p=0.26), birth order (p=0.404) and parents' education (p=0.121 for fathers' education and p=0.282 for mothers' education) were not significantly associated with overweight and obesity.

Discussion

Prevalence of overweight and obesity among school adolescents in Kaski district was found comparatively lower than overweight and obesity studies among adults in Nepal [13-17]. Prevalence of overweight and obesity was also lower than the studies done among adolescents in other South Asian countries – India, Pakistan and Bangladesh. [18-21]. It was lower than study in China [22] but higher than that of African country Ghana [23]. Overweight and obesity

was found significantly higher among municipal respondents than village respondents which are supported by the studies in India [24] and Nigeria [25]. This difference might be due to larger economy, wealthier people and adoption of sedentary lifestyle. Comparatively higher prevalence was found in females than males which are supported by the findings of study in India [26] and on contrary to the findings, higher prevalence was reported among males in the studies in Pakistan [18] and Vietnam [27]. Prevalence among females (9.1%) was found comparatively higher than NDHS 2011 (2.9%) [10]. Higher prevalence of overweight in female might be due to lack of physical activities.

No significant association was found between parental education and overweight and obesity which are supported by study in Bangladesh [28]. On contrary to the findings, study in India [29] found significant association with parents' education. Significantly higher prevalence was found in wealthier families which are supported by studies in India and Botswana [21, 29-32]. This might be explained that adolescents in wealthier families get more love, care, fatty foods, luxurious lifestyle and high daily allowance.

Conclusion

Overweight and obesity among higher secondary school adolescents was found 8.1%. Permanent residence, ethnicity, parents' occupation and average monthly family income were significantly associated with overweight and obesity. But, other socio demographic factors like gender, birth order and parents' education weren't significantly associated with overweight and obesity.

Recommendation

Health programs should be organized by the government, health professionals, civil society and concerned agencies, NGOs, INGOs promoting low intake of fatty foods, regular intake fruits and vegetables and regular physical activities. Further research studies should be done on overweight and obesity to determine and prevent overweight and obesity at regional and national level.

Limitation of the study

The study is confined to the study of prevalence of overweight and obesity and associated socio-demographic factors only. A large study with study of other determinants is recommended at regional and national level.

Relevance of the study

The study explores and describes the prevalence and contributing socio-demographic factors of overweight and obesity among adolescents in Kaski district, Nepal.

Authors Contribution

BA: Conceived the study, data collection and analysis; HSC, SBT, HPK: Supervision, analysis and standardization of study; BA, HSC, DM: Preparation of manuscript; HSC, BA: Finalization of manuscript.

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Tables

TABLE 1 PREVALENCE OF OVERWEIGHT AND OBESITY AMONG STUDENTS

Nutritional status	Frequency(n=838)	Percent
Underweight	128	15.3
Normal	642	76.6
Overweight	49	5.8
Obesity	19	2.3

TABLE 2 SOCIO DEMOGRAPHIC STATUS OF SCHOOL ADOLESCENTS

Socio demographic characteristics	Overweight and obesity		X^2	P value	OR	95% CI
	Yes	No				
Permanent residence (n=838)						
Municipality	45(11.4)	349(88.6)	10.906	0.001**	2.36	1.4-3.98
VDC	23(5.8)	421(94.8)				
Ethnicity (n=838)						
Ethnic/Indigenous	37(13.1)	245(86.9)	14.285	<0.001**	2.56	1.55-4.22
Others+	31(5.6)	525(94.4)				
Gender (n=838)						
Female	40(9.1)	399(90.6)	1.229	0.268	-	-
Male	28(7.0)	371(93.0)				
Birth order (n=838)						
First	26(9.2)	256(90.8)	0.696	0.404	-	-
Middle and last	42(7.6)	514(92.4)				
Father's education- (n=835)						
Primary and above	56(9.0)	566(91.0)	2.408	0.121	-	-
Illiterate/Literate	12(5.6)	201(94.4)				
Father's occupation- (n=835)						
Government job	18(13.7)	113(86.3)	6.506	0.011*	2.08	1.17-3.70
Non government /No job	50(7.1)	654(92.9)				
Mother's education (n=838)						
Primary and above	41(9.1)	412(90.9)	1.159	0.282	-	-
Illiterate/Literate	27(7.0)	358(93.0)				
Mother's occupation (n=838)						
Teaching	6(17.6)	28(82.4)	4.319	0.038*	2.57	1.02-6.43
Other job++/No job	62(7.7)	742(92.3)				
Average monthly family income (n=838)						
≥ Rs. 25,000	37(11.3)	291(88.7)	7.245	0.007**	1.97	1.19-3.24
< Rs.25,000	31(6.1)	479(93.9)				

 # Figures in parenthesis indicate percent
**Statistically significant at p<0.05*
- Fathers of 3 adolescents had expired before the study period
Others+ = so called Dalits, Muslims, Chhetri, Brahmin
***Statistically highly significant at p<0.01*
Other job++=Business, farming, government job, labor