

*Araştırma / Research Article***Adelösanlarda beden imaj memnuniyeti, ağırlık algısı ve obezite bilgisi; Kaski bölgesi, Nepal****Body image satisfaction, weight perception and knowledge of obesity among adolescents in kaski district, Nepal**Bishwas Acharya<sup>1</sup>, Hoshier Singh Chauhan<sup>1</sup>, Indu Bala<sup>1</sup>, Hari Prasad Kaphe<sup>2</sup>, Surya Bahadur Thapa<sup>2</sup>**ÖZET**

**Background:** Body image dissatisfaction and incorrect body weight perception are raising problems among the adolescents worldwide. They are at increasing level in developing countries undergoing economic and nutritional transition like Nepal. **Objectives:** To find out the body image satisfaction, body weight perception and knowledge of obesity among adolescents in Kaski district, Nepal. **Materials and Methods:** A cross sectional study was conducted among 838 adolescents in Kaski district, Nepal from 12 schools selected randomly using multistage cluster sampling. Data collection was done in between October to December, 2013 by using anthropometric assessment and self-administered questionnaire through use of pretested tools. Data was entered and analyzed using WHO anthropo software v.1.0.4 and SPSS v. 16. **Results:** Majority of the adolescents, 630(75.2%) were found satisfied with their body image and 208(24.8) weren't. The body image satisfaction rate was comparatively found higher among adolescents with normal BMI for age, 509(79.3%) and the underweight, 86(67.2%). More than half of the overweight adolescents, 27(55.1%) perceived themselves as normal, 19(38.8%) perceived as overweight and 3(6.1%) perceived as obese. Majority of the adolescents had right knowledge on obesity however no significant association was found. **Conclusion:** Body image satisfaction among the adolescents was found high. Overweight and obese were found likely to underestimate their body weight. Interventions focusing on behavioral modifications and regular anthropometric assessment are essential.

**ABSTRACT**

**Amacı:** Beden imajı memnuniyetsizliği ve hatalı beden ağırlığı algısı tüm dünyada ergenler arasında artmaktadır. Nepal gibi ekonomik ve besinsel açıdan gelişmekte olan ülkelerde durum daha belirgindir. Bu çalışmanın amacı Nepal, Kaski bölgesinde ergenlerin beden imaj memnuniyetleri, beden ağırlık algıları ve obezite bilgilerini değerlendirmektir. **Yöntem:** Kesitsel bu araştırma Nepal'in Kaski bölgesindeki 12 okuldan çok aşamalı küme örnekleme ile seçilmiş 838 ergen ile çalışılmıştır. Veri toplama Ekim-Aralık 2013 tarihleri arasında antropometrik değerlendirmeler ve kendi kendine uygulanan soru formlarından oluşan gereçler ile yapılmıştır. Veriler Dünya Sağlık Örgütü anthropo yazılımı v.1.0.4 ve SPSS v. 16. ile işlenmiş ve analiz edilmiştir. **Sonuçlar:** Ergenlerin çoğunluğunun (630 kişi, %75,2) beden imajından memnun olduğu, 208 (%24,8) ergenin ise memnun olmadığı saptanmıştır. Beden imajı memnuniyeti normal beden kitle indeksine sahip grupta 509 (%79,3), zayıf gruba göre daha yüksekti (86 (%67,2). Kilolu ergenlerin yarıdan fazlası (27, %55,1) kendini normal olarak algılar iken 19(%38,8) kilolu ve 3 (%6,1) obez olarak algılıyordu. Ergenlerin çoğunluğunun doğru obezite bilgisi olmasına karşın, obezite bilgisi ile beden imajı algısı arasında ilişki bulunmadı. **Tartışma:** Ergenler arasında beden imajı memnuniyeti yüksek bulundu. Kilolu ve obezler beden ağırlıklarının düşük algılamaktadırlar. Davranış değişikliği ve düzenli antropometrik ölçüm değerlendirmelerine odaklanan müdahaleler önemlidir.

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**Anahtar Kelimeler:**  
Ergen, beden imajı memnuniyeti, memnuniyetsizlik, bilgi, ağırlık algısı

**Key Words:**  
Adolescents, Body image satisfaction, dissatisfaction, knowledge, weight perception

**Gönderme Tarihi/Received Date:**  
04.02.2016

**Kabul Tarihi/Accepted Date:**  
16.03.2016

**Yayınlanma Tarihi/Published Online:**  
02.08.2016

**INTRODUCTION**

Body Image is the subjective individual sense of satisfaction or dissatisfaction with one's personal body or physical appearance (1,2). Adolescence is the period in human growth and development that represents one of the critical transitions in the life span which is characterized by a tremendous pace in growth and

change that is second only to that of infancy (3). The concern for the ideal body image is at rising level among the adolescents both in the developed and developing countries.. Adolescents cover 1.2 billion of world's population which is about 18% of total population with more than half from Asia (4). With the pace of rapid urbanization and economic transition there is a rapid

emergence of overweight and obesity in developing countries which has been recognized as a major public health problem in most regions of the world (5). Overweight and obesity are major risk factors for a number of chronic diseases, including diabetes, cancer and cardiovascular diseases and are the fifth leading risk factors for global deaths (6). On the other hand, under nutrition is still at a peak level and impose a threat to children and adolescents in developing world. So, a dual burden of nutritional disorders exists in developing countries which undermine the health of children and adolescents.

Underweight, overweight and obesity are well established factors for body image dissatisfaction among the adolescents. Several studies conducted in the developing countries have found a significant association of overweight and obesity with the body image dissatisfaction (7-9). Overweight and obese adolescents are often found to underestimate their body weight while underweight and normal adolescents over estimate their body weight (10). Body weight perception isn't always correct. Faulty weight perceptions lead to dissatisfaction. Adolescents dissatisfied with their body image often involve in weight reduction activities like dieting, vigorous physical activities and exercises and many have eating disorders like anorexia nervosa and bulimia nervosa. Body image dissatisfaction and incorrect weight perception are triggered by mental, social and cultural factors.

Nepal, itself is a developing country undergoing the phase of economic and nutritional transition. Body image dissatisfaction and incorrect body weight perception are the rising problems among the adolescents in Nepal which lay undiscovered, unrecognized and hidden in the community as like iceberg. On the other hand, obesity is an emerging issue with adolescents as vulnerable group who cover 23.45 percent of the total population of Nepal that is nearly a quarter of population and 22.34 percent of total population in Kaski district (11). So, this study was carried to find out the body image satisfaction, body weight perception and knowledge of obesity among adolescents in Kaski district, Nepal.

## MATERIALS AND METHODS

A cross sectional study was conducted in Kaski district, Nepal to assess body image satisfaction, weight perception and knowledge of obesity among 838 higher secondary school adolescents in Kaski district, Nepal selected from 12 schools using multistage cluster sampling. 12 schools were selected from the cluster of 114 higher secondary schools of Kaski district with 3 from each electoral area using cluster sampling in such a way that 8 were from municipality and 4 from Village

Development Committees (VDCs). Among 8 schools from Municipality, private and public were in equal number and two to three classes of Grade 11 and 12 were selected from each school with average number of students equal to 75.

Sample size was calculated by using formula,  $N = \frac{z^2pq}{d^2}$  by taking a precision (d) of 5%, prevalence (p) of 50% at 95% level of confidence which was obtained as 384. An addition was done with assumption of 10% non response rate and finally calculated value was multiplied by 2 for adjusting the sample size with design effect. The final calculated sample size was 844. School students of Grade 11 and 12 who were available in the school at the time of data collection were included in the study and those who crossed 19 years of age during time of data collection and those who refused to participate in the study were excluded.

Data collection was done in between of 24th of October and 4th of December, 2013 using self-administered questionnaire and anthropometric assessment. Weight and height were taken in standing position at the same time after removal of shoes and bulky body wears. Weight was measured to nearest 0.5 kg after calibration to zero and height to nearest 0.1 cm. 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, 95th percentile for obesity and < 5th percentile for underweight. Collected data from questionnaire and nutritional status were entered in SPSS version 16 and statistical analysis was done using SPSS. Frequency tabulation was done to determine frequency and percentage. Chi square test were done to find out the association between knowledge and overweight. Pre-testing was done among the 10.19% (86) students of total sample size in Bal Mandir Higher Secondary School, Pokhara. Pre-tested samples were excluded from study.

Pretested instrumental reliability was assessed. Questionnaire was constructed after literature review and discussion among the authors which was translated into Nepali language. Approval was taken from Department of Public Health, School of Health and Allied Sciences, Pokhara University along with Higher Secondary Education Board (HSEB), Pokhara Branch and District Education Office (DEO), Kaski for the conduction of research. Written informed consent was taken from school administration as well as from students. The participation of the students 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

### General Information

The study had 838 respondents as 6 (0.71%) were non respondents. Out of 838 adolescents, 444 (53%) were from village followed by 394 (47%) from municipality. Mean age of the respondents was  $16.97 \pm 0.816$  with age group 16-19 years. More than half, 439 (52.4%) were female and 399 (47.6%) were male.

### Self reported body image satisfaction and weight perception

**Table 1.** Body image satisfaction and weight perception.

Characteristics	Frequency	Percent
<b>Satisfaction with body image (n=838)</b>		
Yes	630	75.2
No	208	24.8
<b>Self-perception of body weight (n=838)</b>		
Very low weight	18	2.1
Low weight	95	11.3
Right weight	640	76.4
Overweight	81	9.7
Obese	4	0.5
<b>Activity for body weight (n=838)</b>		
Reduction	86	10.3
Increase	148	17.7
Nothing	604	72.1
<b>Activity for weight reduction (n=86)</b>		
Exercise	72	83.7
Medications	1	1.2
Fasting	13	15.1

Majority of the adolescents, 630 (75.2%) were found satisfied with their body image and 208 (24.8) weren't. Out of 838 respondents, 18 (2.1%) perceived their body weight as very low, 95 (11.3%) perceived as low weight, 640 (76.4%) perceived as right weight, 81 (9.7%) perceived as overweight and 4 (0.5%) perceived as obese. Out of 838 respondents, 86 (10.3%) were doing weight reduction activities, 148 (17.7%) weight increment activities and 604 (72.1%) were doing nothing. Out of 86 respondents who were doing weight reduction activities,

majority 72 (83.7%) were doing exercise, 13 (1.6%) fasting and 1 (0.1%) was taking medications (Table 1).

### Nutritional status and body image satisfaction and weight perception

The body image satisfaction rate was comparatively found higher among adolescents with normal BMI for age, 509 (79.3%) and the underweight, 86 (67.2%). Likewise, dissatisfaction rate was found higher among obese, 11 (57.9%) (Table 2).

**Table 2.** Nutritional status and satisfaction of body image (n=838).

Nutritional status	Satisfaction of body image	
	Yes n (%)	No n (%)
Underweight	86 (67.2)	42 (32.8)
Normal	509 (79.3)	133 (20.7)
Overweight	27 (55.1)	22 (44.9)
Obese	8 (42.1)	11 (57.9)

More than half of the overweight adolescents, 27 (55.1%) perceived themselves as normal, 19 (38.8%) perceived as overweight and 3 (6.1%) perceived as obese. Among obese, 3 (15.8%) perceived themselves as normal, 15 (78.9%) perceived as overweight and 1 (5.3%) perceived as obese. Only 47 (7.3%) normal weight adolescents perceived themselves as overweight (Table 3).

### Knowledge of Respondents

Most of the respondents, 770 (91.9%) had right knowledge on the meaning of obesity whereas, 68 (8.1%) had wrong/no knowledge. Similarly, majority of the respondents 599 (71.5%) were found having right knowledge on cause of obesity, 239 (28.5%) had wrong/no knowledge. More than half 507 (60.5%) of the respondents were found having right knowledge on consequence of obesity, 331 (39.5%) had wrong/no knowledge. No significant association was found between knowledge and overweight and obesity ( $p > 0.05$ ) (Table 4).

**Table 3.** Nutritional status and perception of body weight (n=838).

Nutritional Status	Perception of Body Weight				
	Very Low n (%)	Low n (%)	Normal n (%)	Overweight n (%)	Obese n (%)
Underweight	8 (6.2)	38 (29.7)	82 (64.1)	0 (0)	0 (0)
Normal	10 (1.6)	57 (8.9)	528 (82.2)	47 (7.3)	0 (0)
Overweight	0 (0)	0 (0)	27 (55.1)	19 (38.8)	3 (6.1)
Obese	0 (0)	0 (0)	3 (15.8)	15 (78.9)	1 (5.3)

**Table 4.** Obesity knowledge and its association with overweight and obesity among respondents (n=838).

Knowledge related factors		Frequency (%)	Overweight and Obesity		$\chi^2$	p
			Yes n (%)	No n (%)		
Meaning of obesity	Right knowledge	770 (91.9)	63 (8.2)	707 (91.8)	0.058	0.810
	Wrong/No knowledge	68 (8.1)	5 (7.4)	63 (92.6)		
Cause of obesity	Right knowledge	599 (71.5)	49 (8.2)	550 (91.8)	0.012	0.912
	Wrong/No knowledge	239 (28.5)	19 (7.9)	220 (92.1)		
Consequence of obesity	Right knowledge	507 (60.5)	43 (8.5)	464 (91.5)	0.231	0.63
	Wrong/No knowledge	331 (39.5)	25 (7.6)	306 (92.4)		

# Figures in parenthesis indicate percent

## DISCUSSION

Majority of the adolescents in the study, 630 (75.2%) were found satisfied with their body image. However, dissatisfaction is also high, 208 (24.8%). Dissatisfaction of body image might be due to numerous factors like increasing modernization, social stigma, personal perception and cognition and promotion of slim figures by advertisements and movies. Out of 838 adolescents, 86(10.3%) were found performing weight reduction activities which is greater than the total number of overweight or obese adolescents. It provides a hint that underweight and normal weight adolescents are also having weight reduction activities and might have eating disorder like anorexia nervosa. Rate of dissatisfaction was found high among overweight (44.9%) and obese (57.9%) in comparison with underweight (32.8%) and normal (20.7%) adolescents. A study conducted in Botswana in 2012 found greater dissatisfaction among overweight and obese in comparison with normal and underweight adolescents (7).

The present study reported high underestimation among obese (94.7%) and overweight adolescents (55.1%) and high overestimation among underweight adolescents (64.1%). A similar study in Karnataka, South India found high weight underestimation among the overweight adolescents (12). Similar findings were reported by another study in Karnataka in 2013 (10). This might be due to social stigma. Normal and underweight might be more accepted in society than overweight. The adolescents might also have eating disorders like bulimia nervosa and night eating syndrome in which they underestimate their body weight. None of the underweight adolescents in the present study perceived themselves as overweight or obese and none of the overweight or obese adolescents perceived themselves as underweight. On contrary to the findings, a study conducted in Serrville, Spain in 2013 found 7.30% underweight adolescents perceived themselves overweight or obese (13). The present study found 55.1% of the overweight adolescents and 15.8%

of obese adolescents perceived themselves as being normal. A similar study conducted in Serrville, Spain in 2012 found 59% overweight or obese perceived themselves as at a normal weight and 24% as slightly underweight (13). Accurate body weight perception was higher among the normal weight adolescents (82.2%) than in overweight (38.8%), underweight (35.9%) and obese (5.3%). A similar study conducted in 2008 in New South Wales, Australia found higher accuracy of body weight perception in obese adolescents compared with overweight adolescents (69.5% vs. 44.0%) (14).

Overweight and obesity among adolescents wasn't significantly associated with knowledge of obesity ( $p>0.05$ ). No association might had been found as adolescents do receive nutritional education at their school level as health education is taught up to grade 10 in Nepal as compulsory part of school curriculum. Students in the study were of grade 11 and 12 who had already been taught on the subject matter. Moreover, they might have got knowledge from family and media like radio and television. Studies conducted among the adolescents. in Philadelphia, United States also found no significant relationship between knowledge and overweight and obesity (15,16). Another study conducted among children in Korea too reported no association of obesity related knowledge with obesity (17). This might be assumed that knowledge of obesity has no role or limited role on developing body fat and becoming overweight and obese as having knowledge simply is not sufficient. Behavioral changes and lifestyle modifications are too required for avoiding excessive body fat and preventing overweight and obesity (18-20).

## CONCLUSION

Body image satisfaction among the adolescents was found high. Dissatisfaction was found high among overweight and obese adolescents. Overweight and obese were found likely to underestimate their body weight. Majority of the adolescents had right



knowledge on obesity. Interventions focusing on behavioral modifications are essential and regular anthropometric assessment should be done in school and at the community level to minimize the problems of dissatisfaction and incorrect body weight perception.

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Source of Support: Nil, Conflict of Interest: None declared