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Prevalence of and Socio-Demographic Factors Related with Overweight

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Abstract: The objective of the study is to determine the prevalence of overweight and to describe the socio-demographic factors related with overweight. A cross-sectional survey was conducted at women's college Kathmandu, Nepal from January to April 2019 using a convenient sampling technique to select the subjects. The study was conducted among 202 female students aged 18 to 23 years with the self-administered questionnaire. The questionnaire comprises questions on socio-demographic factors related to the weight status. The height and weight of subjects were self-reported to calculate the body mass index (BMI) and to group them into overweight, normal weight, and underweight according to the guidelines of the world health organization. The prevalence rate of overweight among the female students was 12.9% (CI: 8.4 – 17.8, $p < 0.05$). The average BMI for overweight students is $26.4 \pm 0.973 \text{ kg/m}^2$ with 95% confidence interval: 26- 26.79, $p < 0.05$. Most of the students are conscious about their health. The socio-demographic factors behind overweight among the female students were physical inactivity, unhealthy food consumption pattern, and moderate average family monthly income.

Keywords: Body Mass Index, Nepal, Overweight, Prevalence, Socio demographic, Students

I. INTRODUCTION

The global prevalence of overweight and obesity is increasing with greatest problems, such as economic, social and health, in developing countries. The young population of Nepal has the movement towards urbanization, replacing the traditional food by junk foods, carbonated drinks, and less physical activities, thus increasing the risk of developing serious health conditions. The previous literature and survey shows that there is significant increase in overweight and obese female in Nepal. The non-communicable diseases risk factors survey of Nepal (2008) shows that the prevalence of overweight and obesity were 7.1% and 2.4% for the women ($n=2200$) between the age group 15 to 64 years [1]. The STEPS survey Nepal (2013) indicates that out of $n = 2756$ female respondent between the age group 15 to 69 years, 12% were underweight and 17.3% and 4.8% were overweight, obese respectively [2]. Nepal demographic and health survey report (2016) shows that out of $n=12862$, 22% women were overweight and 17% underweight between the age group 15 to 49 years [3]. The report of Nepal health research council (2019) depicts that the higher prevalence of overweight (BMI: 25.0 to 29.9 kg/m^2) is $n=7649$, 24.1% and underweight (BMI: $<18.5 \text{ kg/m}^2$) is $n=7649$, 12.3% for the female between the age group 20 to 59 years [4]. On a brighter note, most of the students of college and universities seem to be more health conscious and wants to be fit and healthy. There are several factors in a student's life that makes difficult to maintain a good health condition. The college students are facing problems with the dietary choices, health challenges, and adjustment to the social and geographical changes. With the consideration of this fact, the present paper pondered the socio-demographic factors such as age, education, geographical area, ethnicity, religion, family income, pocket money, parent's education, food consumption, and other physical activities that are important to describe the characteristics of the sample under study [5]. Therefore, the study is conducted to determine the prevalence of overweight and to describe the socio-demographic factors related with overweight among female students.

II. MATERIALS AND METHODS

This cross-sectional study was conducted among 202 females with a bachelor's level education and between the age group 18 to 24 years in P. K. Campus, Kathmandu. It is a women's college located in the central part of the capital city of Nepal. The sample size calculation was based on the following premises: an estimated proportion of 50% of the population, 95% confidence level in the estimation of confidence interval, a 5% sampling error, indicating that the amount between the estimated sample and the population parameter should not exceed 5%, and the population size 424 students. Hence, the calculated sample size for the study was 202 students [6]. A convenience sampling method was used to select the participants of the study, which was approved by the research committee of the college. At first, the researcher visited the classes to explain the purpose of the study. A pre test survey on questionnaire was done with the few students who were not included in the sample. Piloting was used to clarify the questionnaire and suitability of the participants. After reconstruction or correction, the survey questionnaire was distributed among the students with their written consent.

The survey instrument includes four sections that are personal information, family information, food consumption pattern, and physical activity information. These factors are important to describe the characteristics of the sample under study. The questionnaire consists of direct close end questions for easy administration and understanding. The height and weight of subjects were self-reported to calculate the body mass index ($BMI = \text{weight in kg} / \text{height in m}^2$) according to the guidelines prescribed by the world health organization. The subjects were divided into three groups on the basis of body mass index (BMI) values as follows: $BMI < 18.5 \text{ kg/m}^2$ as underweight, 18.5 to 24.99 kg/m^2 as normal weight, 25.0 to 29.99 kg/m^2 as overweight, and $\geq 30 \text{ kg/m}^2$ as obese [7]. The collected data entry and statistical analysis was done using Excel and Statistical Package for Social Science (SPSS) for Mac version 23, IBM Corporation. The socio-demographic characteristics were evaluated using coding. The monetary value is expressed in Nepalese currency (Rs.). The frequency, minimum, and maximum values were calculated to determine the possible errors in the data entry process. The descriptive statistics such as mean and standard deviation were used to summarize the quantitative variables with 95% confidence interval (CI). The p-value < 0.05 was considered for statistical significance. The percentage was used to determine the prevalence rate of overweight, normal weight and underweight among female students and also to summarize categorical variables.

III.RESULT AND DISCUSSION

The present study sample included total 202 female students; the average age for all the subjects was 20.75 ± 1.782 years with 95% CI: 20.5-20.99, $p < 0.001$. The ethnicity of subjects was Bramhan ($n=35, 17.3\%$), Chettry ($n=33, 16.3\%$), Kirat ($n=17, 8.4\%$), Newar ($n=107, 53\%$), and Tharu ($n= 10, 5\%$). The religion of subjects was Buddhist ($n=51, 25.2\%$), Christian ($n=1, 0.5\%$), and Hindu ($n=150, 74.3\%$). Both the parents of majority of the students were well educated and some of them were literate only. Regarding location, 86.6% ($n=175$) and 13.4% ($n=27$) of the subjects were the residence of urban and rural geographical area respectively. At the time of survey, the students were studying bachelor's level.

The survey result in Table I illustrates that the overall average BMI was $21.5 \pm 2.8 \text{ kg/m}^2$ with 95% CI: 21.10-21.88, $p < 0.001$. On the basis of BMI, the subjects were categorized in the group of Underweight, ($n= 30, 14.9\%$), Normal weight, ($n=146, 72.3\%$), and Overweight, ($n= 26, 12.9\%$).

TABLE I. Descriptive Statistics of BMI

Group (BMI: kg/m^2)	n	%	BMI in Kg/m^2				95% CI		P-value
			Min	Max	Mean	SD	Lower	Upper	
Overweight (BMI: 25.0 to 29.99)	26	12.9, CI: 8.4-17.8	25	28.47	26.4	0.973	26.0	26.79	0.001
Normal Weight (BMI: 18.5 to 24.99)	146	72.3, CI: 66.3-78.2	18.53	24.97	21.43	1.77	21.14	21.72	0.001
Underweight (BMI: < 18.5)	30	14.9, CI: 9.9-19.3	15.04	18.45	17.54	0.698	17.28	17.80	0.001
Overall BMI	202	100	15.04	28.47	21.49	2.807	21.10	21.88	0.001

The average monthly family income of majority of the students (53%) was between Rs. 50,000 to Rs. 100,000 (69.23% of overweight, 53.42% of normal weight, and 36.7% of underweight students). Less number of subjects reported to have average monthly family income as less than Rs. 50,000 and more than Rs. 100,000. Most of the students were getting Rs. 500 to Rs. 2000 as a pocket money per week. The 53.85% of overweight, 54.11% of normal weight, and 43.3% of underweight students were most likely to get Rs. 500 to Rs. 1000 as a pocket money per week. Similarly, 38.46% of overweight, 29.45% of normal weight, and 40% of underweight students were found to get Rs. 1000 to Rs. 2000 as a pocket money per week. Very few students mentioned they get more than Rs. 2000 for a pocket money per week. On the basis of food consumption pattern, there were more similarities among the subjects who were grouped as overweight, normal weight and underweight. It was observed that a large number of overweight ($n=24, 92.3\%$) and normal weight ($n=128, 87.67\%$) subjects consume energy dense foods such as dried fruit, cheese, sweets, burgers, fried food etc. one to four times per week but the underweight subjects ($n=19, 63.3\%$) were found to consume three to four times per week. Some of the students take energy dense foods more than five times per week. Similarly, 53.85% of overweight and 41.1% of normal weight students eat meat and fish one to two times per week but 46.7% of underweight students eat three to four times per week. The subjects were asked about the habit of skipping their regular food; it was found that 46.15% of overweight and 60% of underweight students skipped their food one to two times per week and 27% of overweight and 13.3% of underweight students skipped their food three to four times per week. 77% of the students mentioned that sometimes they eat food while

watching television. On their regular college days, maximum numbers of subjects take breakfast in the college canteen but some of them at home. 73.08% of overweight and 46.7% of underweight students eat breakfast in their college canteen and the rest of them at home. The subjects were found to consume carbohydrates, protein, fat, fruit, and vegetables, on average, two times a day in their regular meal. This result is obvious because the Nepalese cuisine comprises a variety of foods based upon the geographical area, climate, religion, and ethnicity. The most common food is a combination of lentils, rice, vegetables, pickles and meat (optional), which is very favourite staple that Nepalese people eat two times a day. To understand the physical activities of the students few questioned were included in the questionnaire. Among overweight students, 77% spent up to 6 hours in academic activities but 88.4% enjoy sleeping up to 8 hours per day. Among underweight students, 90% spent up to 6 hours in academic activities and 70% love to sleep up to 8 hours per day. Now a day's some of the students use Bike/ Scooter or public vehicle for getting to college. Among subjects grouped into overweight, 42.31% use bike/scooter, 19.23% use public vehicle, and 38.46% come to college on foot. While 43.3% of underweight subjects go to college on foot, 30% by public vehicle and 26.7% by their own vehicle but for the normal weight subjects the percentage for the three options were similar. In terms of exercise, they were less interested in physical exercises such as yoga, cycling, aerobics, household work etc. The social media or television has a great impact on people. The students were asked about the time spent on watching television and engaged on Internet. The survey result highlights that the average 58.3% of students spent one to three hours per day on television and social media and sometimes they eat snacks while watching television. Regarding health consciousness, in the survey questionnaire, students were asked a question about their perception on health. The first question was: Do you think you are healthy? The answer options were extremely healthy, healthy and not at all healthy and the second question was; How do you describe your weight? The choices were overweight, normal weight and underweight. The result was found very interesting; those students who think they were healthy (84.62%) and slightly overweight (46.15%), were truly overweight. Indeed, the subjects who self reported to be healthy (80.14%) and about the right weight (50.68%), were essentially having normal weight. Likewise, the subjects who think they were healthy (76.7%) and slightly underweight (53.3%) were categorized underweight on the basis of BMI. The percentage of female students categorized on the group of overweight, normal weight and underweight is compared with the previous national survey results of Nepal. The STEPS survey (2013) shows that 12.3% of female were overweight with CI: 9.5-15.1, 12.3% were underweight with CI: 9.5-15.1 and 73.4% were normal weight female with CI: 69.7-77.2 for the age group 15 to 29 years [2]. The survey conducted by NHRC in 2019 shows 10.6% students was overweight with confidence interval 6.8-16.0, 20.3% underweight with CI: 15.3-26.6, 68.3% normal weight with CI: 61.0-74.7 [4]. On comparing with earlier result, it is found that the percentage of student lie on the confidence interval given by previous survey. The present study illustrates 12.9% overweight students with CI: 8.4-17.8, 14.9% underweight with CI: 9.9-19.3, and 72.3% normal weight with CI: 66.3-78.2.

IV.CONCLUSION

This study presented that the female students who belong to urban area, educated family, satisfactory family income, suitable food consumption pattern and involve in some of the physical activities were found to be more conscious about their health and healthy lifestyle. The highest percentages of subjects were found to have normal weight (n=146, 72.3%), slightly underweight (n= 30, 14.9%), and slightly overweight (n= 26, 12.9%). The prevalence of overweight was 12.9%. There were more similarities of the socio-demographic characteristics among the subjects who were classified into underweight, normal weight, and the over weight but the nutrition and healthy lifestyle knowledge was higher among normal weight students. The finding of this study is limited by the sample from only one women's college with the similar lifestyle, which may not be a representative for all the students of Kathmandu. Furthermore, to describe the association of various factors or causes with the greater body mass index, it is highly recommended to carry out clinical research because the study of socio- demographic characteristics is necessary but not sufficient for detail study.

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