ABSTRACT

Introduction: Obesity is a major public health concern affecting more than half a billion people worldwide and also in Nepal in which excess body fat has accumulated to the extent that it may have an adverse effect on health, leading to reduced life expectancy and/or increased health problems. Hence, this study was conducted to identify the factor associated with obesity among middle aged adults in Duwakot, Changunarayan. Methods: A descriptive, cross-sectional research design was used among 109 middle aged adults residing in Duwakot, Changunarayan, Bhaktapur. Probability, systematic random sampling technique was used. Semi structured questionnaire was used to collect data by conducting semi-structured interview schedule as well as anthropometric measurement was also taken to calculate the body mass index. Data was analyzed in descriptive and inferential statistics (chi-square test with odd ratio). Results: The prevalence of obesity among middle aged adults was 12.8%. On the basis of statistical analysis, age (p=0.035), ethnicity (p=0.050), alcoholic consumption (p=0.003), sleeping hours at night (p=0.006), physical activity (p=0.014), presence of chronic diseases (p=0.001), used medicine (p=0.001) and family history of obesity (p=0.005) were significant associated factors for obesity among middle aged adult. Conclusion: Prevalence of obesity among middle aged adult was 12.8%. Significant associated factors of obesity were age, ethnicity, alcoholic consumption, sleeping hours at night, physical activity, presence of chronic diseases, used medicine and family history of obesity. So the concerned municipality, health care personnel and related health organization should conduct awareness raising program regarding importance of maintaining normal weight and consequences of obesity in their health.

Key words: Middle aged adult, Obesity

INTRODUCTION

Obesity is a significant public health concern affecting more than half a billion people worldwide. Obesity rise is not only limited to developed countries, but to developing nations as well.¹

More than 50% of the world’s 671 million obese live in 10 countries (ranked beginning with the countries with the most obese people): US, China, India, Russia, Brazil, Mexico, Egypt, Germany, Pakistan, and Indonesia. In high-income countries, some of the greatest increases in adult obesity have been in the US, Australia (where nearly 30% of men and women are obese), and the UK (where around a quarter of the adult population is obese).²

In 2014, more than 1.9 billion adults aged 18 years and older were overweight. Of these over 600 million adults were obese. Overall, about 13% of the world’s adult’s population (11% of men and 15% of women) were obese in 2014. In 2014, 39% of adults aged 18 years and over (38% of men and 40% of women) were overweight. The worldwide prevalence of obesity more than doubled between 1980-2014.³

Obesity usually results from a combination of causes and contributing factors including genetics, family lifestyles, inactivity, unhealthy diet, medical problems (e.g. prader-will syndrome, Cushing’s syndrome, arthritis), certain medication (such as
some antidepressants, anti-seizure medications, diabetes medications, antipsychotic medications, steroids and beta blockers), social and economic issue, age, pregnancy, quitting smoking, lack of sleep.4

In United States the obesity prevalence was 39.6% among rural adults compared to 33.4% among urban adults. Prevalence of obesity remained significantly higher among rural compared to urban adults controlling for demographic, diet, and physical activity variables. Race/ethnicity and percent kcal from fat were significant correlates of obesity among both rural and urban adults. Being married was associated with obesity only among rural residents, whereas older age, less education, and being inactive was associated with obesity only among urban residents.5

Hence, this study was conducted to identify the prevalence of obesity and to find out the risk factors associated with obesity among middle aged adults residing in Bhaktapur, Katmandu, Nepal.

METHODS

EA community based cross sectional study was conducted among hundred nine middle aged adults (35-55 years) residing in Changunarayan-1, Duwakot, Bhaktapur, Nepal during July to September, 2017. Probability, systematic random sampling technique was used to enrolled sample for this study. Prior to data collection, informed consent was taken from each respondent and ethical clearance was also taken. Semi structured, interview schedule along with anthropometric measurement of the respondents was used to find out prevalence of obesity. Research instrument was developed based on extensive literature reviewed which consisted three parts like socio-demographic, life style related variable, presence of chronic illness, history of used medication and family history of obesity.

Data was analysed using IBM SPSS version 20.0 using descriptive and inferential statistic (chi-square with unadjusted odd ratio).

Table 1: Age, Gender, Ethnicity, Religion and Educational Status of the Respondents (n=109)

| Variables                  | Number | Percentage |
|----------------------------|--------|------------|
| **Age Group (in completed years)** |        |            |
| 36-40                      | 28     | 25.7       |
| 41-45                      | 24     | 22.0       |
| 46-50                      | 27     | 24.8       |
| 51-55                      | 30     | 27.5       |
| **Mean age ±SD = 45.62± 5.83, Min =35 years, Max=55 year** |        |            |
| **Gender**                 |        |            |
| Male                       | 61     | 56.0       |
| Female                     | 48     | 44.0       |
| **Ethnicity**              |        |            |
| Brahmin                    | 46     | 42.2       |
| Chhetri                    | 26     | 23.9       |
| Janajati                   | 37     | 33.9       |
| **Religion**               |        |            |
| Hinduism                   | 105    | 96.4       |
| Buddhism                   | 2      | 1.8        |
| Christianity               | 2      | 1.8        |
| **Educational Status**     |        |            |
| Literate                   | 101    | 92.7       |
### Table 1: Illiteracy and Educational Level (n=101)

| Variables                        | Number | Percentage |
|----------------------------------|--------|------------|
| Illiterate                       | 8      | 7.3        |
| If literate, educational Level   |        |            |
| General literate (can read and write) | 12  | 11.9       |
| Basic level (up to 8 class)      | 18     | 17.8       |
| Secondary level (9-12 class)     | 43     | 42.6       |
| Higher secondary level and above | 28     | 27.7       |

### Table 2: Marital Status, Family Type, Occupation, Income Status and Family Income Sufficient to Support a Year of the Respondents (n=109)

| Variables                        | Number | Percent |
|----------------------------------|--------|---------|
| **Marital Status**               |        |         |
| Married                          | 104    | 95.4    |
| Unmarried                        | 5      | 4.6     |
| **If married (n=104)**           |        |         |
| Living with spouse               | 103    | 99.0    |
| Separated                        | 1      | 1.0     |
| **Family Type**                  |        |         |
| Nuclear family                   | 64     | 58.7    |
| Joint family                     | 45     | 41.3    |
| **Occupation**                   |        |         |
| Service                          | 32     | 29.4    |
| Business                         | 27     | 24.8    |
| Agriculture                      | 12     | 11.0    |
| laborer/ Daily wages             | 11     | 10.0    |
| Home maker                       | 23     | 21.1    |
| Other                            | 4      | 3.7     |
| **Income status (NPR / year)**   |        |         |
| < One lakh                       | 15     | 13.8    |
| One- Two lakh                    | 29     | 26.6    |
| >Two lakhs                       | 65     | 59.6    |
| **Family income sufficient to support year** | | |
| Yes                              | 68     | 62.4    |
| No                               | 41     | 37.6    |

### Table 3: Body Mass Index (BMI) of the Respondents (n=109)

| Variables                        | Number | Percentage |
|----------------------------------|--------|------------|
| Normal (BMI 18.5 - ≤ 24.9 kg/m²) | 74     | 67.9       |
| Overweight (BMI 25.0 - 29.9 kg/m²)| 21     | 19.3       |
| Obesity (BMI ≥ 30 kg/m²)         | 14     | 12.8       |
Table 4: Association between Status of BMI with Selected Socio-demographic Variables (n=109)

| Variables                  | Status of Body Mass index | χ²  | UOR   | p-value |
|----------------------------|---------------------------|-----|-------|---------|
|                            | Obese No.(#) | Non Obese No.(#) |       |         |         |
| Age Group (in years)       |              |                 |       |         |         |
| ≥45                        | 11(19.3)      | 46(80.7)        | 4.446 | 3.906   | 0.035   |
| <45                        | 3(5.8)        | 49(94.2)        |       |         |         |
| Gender                     |              |                 |       |         |         |
| Male                       | 9(14.8)       | 52(85.2)        | 0.451 | 1.488   | 0.502   |
| Female                     | 5(10.4)       | 43(89.6)        |       |         |         |
| Ethnicity                  |              |                 |       |         |         |
| Janajati/ Dalit            | 8(21.6)       | 29(78.4)        | 2.760 | 3.034   | 0.050   |
| Brahmin/Chhetri            | 6(8.3)        | 66(91.7)        |       |         |         |
| Religion                   |              |                 |       |         |         |
| Non Hinduism               | 2(50.0)       | 2(50.0)         | 7.750 | 0.079F  |         |
| Hinduism                   | 12(11.4)      | 93(88.6)        |       |         |         |
| Family Type                |              |                 |       |         |         |
| Joint family               | 8(17.8)       | 37(82.2)        | 1.667 | 2.090   | 0.197   |
| Nuclear family             | 6(9.4)        | 58(90.6)        |       |         |         |
| Educational Status         |              |                 |       |         |         |
| Literate                   | 13(12.9)      | 88(87.1)        | 0.000 | 1.034   | 1.000   |
| Illiterate                 | 1(12.5)       | 7(87.5)         |       |         |         |
| Occupation*                |              |                 |       |         |         |
| Employed                   | 8(13.6)       | 51(86.4)        | 0.059 | 1.150   | 0.808   |
| Self employed              | 6(12.0)       | 44(88.0)        |       |         |         |
| Income status              |              |                 |       |         |         |
| ≥ Two lakhs                | 9(13.8)       | 56(86.2)        | 0.144 | 1.254   | 0.704   |
| < Less than two lakhs      | 5(11.4)       | 39(88.6)        |       |         |         |

UOR: Unadjusted odd ratio; Employment: Service + Business, Self employed: Farming + Laborer/Daily wages + Home maker; F: Fisher exact test; p value significant at <0.05

Table 5: Association between Status of BMI with Selected Lifestyle related Variables (n=109)

| Variables              | Status of Body Mass index | χ²  | UOR   | p-value |
|------------------------|---------------------------|-----|-------|---------|
|                        | Obese No.(#) | Non Obese No.(#) |       |         |         |
| Dietary Pattern        |              |                 |       |         |         |
| Non-vegetarian         | 12(15.8)      | 64 (84.2)       | 1.173 | 2.906   | 0.279   |
| Vegetarian             | 2(6.1)        | 31(93.9)        |       |         |         |
| Cigarette Smoking      |              |                 |       |         |         |
| Yes                    | 6(21.4)       | 22(78.6)        | 1.556 | 2.489   | 0.212   |
| No                     | 8(9.9)        | 73(90.1)        |       |         |         |
| Alcohol Consumption    |              |                 |       |         |         |
| Yes                    | 9(30.0)       | 21 (70.0)       | 8.871 | 6.343   | 0.003   |
| No                     | 5 (6.3)       | 74 (93.7)       |       |         |         |
### RESULTS

#### Socio-demographic Characteristics of Respondents (table 1 & 2)

In regards to socio-demographic characteristics, out of 109 respondents, mean age was 45.62 ± 5.83 and majority of the respondents were belong to 51-55 years (27.5%), male (56.0%), Brahmin (42.2%), Hinduism (96.4%), literate (92.7%), married (95.4%), nuclear family (58.7%), service holder (29.4%) and annual income more than two lakh (59.6%).

#### Body Mass Index of the Respondents and Prevalence of Obesity (table 3)

Body mass index (BMI) of the respondents found that more than half (67.9%) of the respondents had normal body mass index, 19.3% of the respondents were overweight and 12.8% of the respondents were obese. And To determine the prevalence of obesity, merging overweight and normal BMI into one group as Non Obese (87.16%) and the remaining respondents were grouped as obese (12.84).

Association between Status of BMI with Selected Variables (table 4-6)

Similarly, The factors associated between status of BMI with age (p=0.035), ethnicity (0.050), alcohol consumption (p=0.003), sleeping hours at night (p=0.014), physical activity (p=0.034) presence of chronic disease (p=0.001), used medicines (p=0.001) and family history of obesity (p=0.005).

### DISCUSSION:

The present study aimed to find-out prevalence of obesity and associated factors of it among middle aged adults residing in Bhaktapur, Nepal. The major findings were reported 12.84% respondents were obese.

This finding was supported by various studies conducted in different parts of the world like in two studies by Wang et al (2016) reported that 14.6% of respondents found to be obese and by Rodríguez-Martín, Ruiz, Nieto, and Jiménez (2009) reported that prevalence of obesity among adult people was...
The significant factors associated with obesity among respondents were age, ethnicity, alcohol consumption, sleeping hours at night, physical activity, presence of chronic disease, used medicines and family history of obesity.

These findings were consistent with a study conducted by Sidik and Rampal (2009) which revealed that obesity was significantly associated with the ethnicity of the respondents (p=0.001). Whereas inconsistent with a study conducted by Shahi, Rai, Adhikari, & Sharma (2013) reported that there is no association between obesity and age of the respondents. In our study findings male are more prevalent than female to get obesity which is statistically insignificant. These findings were contradictory with a study done by Ogden, Carroll, Fryar & Flegal (2012), which showed Prevalence of obesity was higher in women.

CONCLUSION

It is concluded that prevalence of obesity among middle aged adults in Nepalese population was 12.84%. The significant factors associated with obesity among respondents were age, ethnicity, alcohol consumption, sleeping hours at night, physical activity, presence of chronic disease, used medicines and family history of obesity.

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