ASSESSMENT OF RISK FACTORS OF OBESITY AMONG RESIDENTS OF CLASS IV EMPLOYEES’ QUARTERS OF A TERTIARY CARE HOSPITAL

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ABSTRACT

BACKGROUND

There is very little information available on various risk factors responsible for obesity among class IV workers working in a health institute. Present study was conducted to assess the risk factors of obesity among residents of Class IV employees’ quarters of a tertiary care hospital.

METHODS

This was cross sectional study carried out in a practice field area of tertiary care hospital. Study population was adults (male and female) between ages of 30 years to 59 years. Approval from the institutional ethics committee was taken.

RESULTS

On analysis, excess calorie intake was found to be a significant risk factor for overweight/obesity (OR= 3.00, 95% CI 1.47 – 6.138, p= 0.0022). Intake of non-vegetarian diet for ≥ 3 days was not found to be significant risk factor for overweight/obesity (χ²=0, df=1, p= 0). On analysis, more intake of junk food i.e., for ≥ 3 days was found to be a significant risk factor for overweight/obesity (χ²= 27.39, df= 1, p < 0.0001). Not doing any exercise was found to be a significant risk factor for overweight/obesity (χ²= 8.958, df= 1, p= 0.0028).

CONCLUSIONS

Excess of calorie intake, intake of junk food i.e. for ≥ 3 days, not doing any exercise and hypertension were found to be significantly associated with overweight/obesity.

KEY WORDS

Risk Factor, Obesity, Junk Food, Exercise, Calorie

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RESULTS

| Risk Factor | Overweight/ Obese N (%) | Non-Obese N (%) | p Value |
|-------------|-------------------------|-----------------|---------|
| Exercise    |                         |                 |         |
| Mild        | 52 (86.67)              | 55 (61.11)      | <0.01   |
| Moderate    | 08 (13.33)              | 35 (38.09)      |         |
| Hypothyroidism |                   |                 |         |
| Present     | 04 (6.67)               | 06 (6.67)       | 0.07    |
| Absent      | 30 (50)                 | 34 (58.99)      |         |
| Hypertension |                       |                 |         |
| Present     | 30 (50)                 | 20 (22.22)      | <0.01   |
| Absent      | 10 (16.67)              | 15 (25.81)      |         |
| Diabetes    |                         |                 |         |
| Present     | 06 (10)                 | 06 (6.67)       |         |
| Absent      | 24 (39.67)              | 34 (58.99)      |     0.46 |

Table 3B. Distribution of Study Subjects According to Risk Factors, Comorbidities and Obesity

Pilot Study

The questionnaire was tested on few study participants and that data were not included in final analysis. The necessary changes in the questionnaire were made based on the pilot study.

Consent and Ethics Approval

This study was beginning after approval from the institutional ethics committee. Informed written & valid consent from all the participants were taken before enrolling them in the study. Confidentiality of the study participants was maintained.

Methodology

The present study was undertaken in Class IV employees’ quarters of a tertiary health care hospital and the households in Class IV employees’ quarters were sampled by a systematic random sampling method. A semi-structured questionnaire was used to collect the information regarding Personal history, Dietary history, and Disease were collected by using a questionnaire. The waist circumference was measured at the midpoint between the lower border of the rib cage and the iliac crest by using a flexible inch tape and hip circumference was measured around the widest portion of the buttocks, with the tape parallel to the floor. As per the WHO the following cut off values of the waist-hip ratio were used to assess the abdominal obesity: waist–hip ratio above 0.90 for males and above 0.85 for females. Body mass index was calculated as weight (kg) divided by squared height (m). Measuring cup was used for measuring volume of tea for calorie purpose.

Statistical Analysis

The data entry was made in the Excel software and the analysis was done by using the Statistical Package for Social Science (SPSS), version 20.

Table 1 shows distribution of study participants according to their nutritional status. Nutritional status was assessed by measuring Body Mass Index (BMI). Criteria given by WHO were used to measure the nutritional status of study participants. Of the 150 study participants, 117 (73.3%) gave history habit of alcohol intake. All of them were males. Only one study participant was a smoker and was a female. Most common substance use i.e. 33 (22%), found among the study participants was tobacco chewing. Table 3A shows association of overweight/obesity with frequency of having junk food. On analysis, there was no significant trend seen in less intake of fruits and overweight/obesity (χ² for trend = 0.2916, df= 1, p = 0.5892). Table 3A shows association of overweight/obesity with consumption of green leafy vegetables. On analysis, there was no significant trend seen in less intake of green leafy vegetables and overweight/obesity (χ² for trend = 0.2671, df= 1, p = 0.6053). Table 3A shows association of overweight/obesity with frequency of intake of non-vegetarian diet. On analysis, intake of non-vegetarian diet for ≥ 3 days was not found to be a significant risk factor for overweight/obesity (χ²= 0.5892, df= 1, p = 0.46).

Table 3B shows association of overweight/obesity with exercise. Of the 60 overweight or obese study participants, only 08 (13.33%) were doing daily exercise for at least 30 minutes. Majority 52 (86.67%) were not doing any routine exercise. Of the 90 non-obese study participants, 35 (38.89%) were doing daily exercise for at least 30 minutes. 55 (61.11%) were not doing any routine exercise. On analysis, not doing any exercise was found to be a significant risk factor for overweight/obesity (χ²= 27.39, df= 1, p < 0.0001).

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to be a significant risk factor for overweight/obesity ($\chi^2= 0.02844, df=1, p=0.8661$).

Of the 50 study participants who were known cases of hypertension, 30 (60%) were overweight/obese and 20 (40%) were non-obese. Of the 100 study participants who were not known cases of hypertension, 30 (30%) were overweight/obese and 70 (70%) were non-obese. On analysis, overweight/obesity was found to be a significant risk factor for hypertension ($\chi^2= 12.50, df=1, p= 0.0004$). Only 12 study participants gave the history of diabetes mellitus diagnosed with investigations. Of them, 06 (50%) were overweight/obese and 06 (50%) were non-obese. Of the 138 study participants who did not give the history of diabetes mellitus, 54 (39.13%) were overweight/obese and 84 (60.87%) were non-obese. On analysis, overweight/obesity was not found to be a significant risk factor for diabetes ($\chi^2 = 0.5435, df=1, p=0.4610$).

**DISCUSSION**

In present study there was distribution of study participants according to their nutritional status. Nutritional status was assessed by measuring Body Mass Index (BMI). Criteria given by WHO were used to measure the nutritional status of study participants. Falling et al (2014)$^4$ conducted cross-sectional study and found that the mean BMI for the total sample at screening was 25.4 kg/m$^2$. The general characteristics (age, height, weight and BMI) of the male and female patients studied according to somatic and psychiatric departments. Gupta R et al (2012)$^6$ conducted cross-sectional studies among adult (male and female) between age of 20-59 years in urban populations in Jaipur and Delhi. They found that there is a significant linear association of multiple cardiovascular risk factors with BMI. This is confirmed by linear regression, quadratic regression, and non-linear analyses. Body mass index was correlated significantly with weight (0.80, 0.64). Dua S et al (2014)$^7$ conducted cross-sectional study. BMI and fat percentage were calculated. BMI was classified according to the proposed criteria of WHO Health Organisation (WHO). BMI is most widely used to estimate the prevalence of obesity or overweight within a population. Of the 150 study participants, 117 (73.3%) gave history habit of alcohol intake. All of them were males. Only one study participant was a smoker and was a female. Most common substance use i.e., 33 (22%), found among the study participants was tobacco chewing.

Agrawal S et al (2014)$^8$ conducted cross-sectional study. 19 (1.8%) of women participants gave history of smoking and 323 (31.2 %) of men participants gave history of smoking. 1 (0.1%) of women participants gave history of alcohol intake and 59 (5.7%) of men gave history of alcohol intake.

In our study of the 60 overweight or obese study participants, 45 (75%) consumed more than recommended total calorie intake per day according to the 24-hour recall method. Of the 90 non-obese study participants, 45 (50%) consumed more than recommended total calorie intake per day according to the 24-hour recall method. On analysis, excess of calorie intake was found to be a significant risk factor for overweight/obesity (OR= 3.00, 95% CI 1.47 – 6.138, p= 0.0022). Kim SH et al (2012)$^9$ conducted cross-sectional study and found that for analysis of the association between nutrient intake and obesity, 1,887.2 ± 415.8 obese men consume more than recommended total calorie intake and 1,854.8 ± 391.0 non-obese men consume more than recommended calorie intake ($p= 0.15$). And 1,612.8 ± 413.2 obese women consume more calorie than recommended and 1,617.8 ± 395.8 non-obese women consume more calorie than recommended ($p=0.80$).

In present study of the 60 overweight or obese study participants, 30 (50%) study participants used to consume fruits for ≥ 4 days per week, 15 (25%) for 2-3 days and 15 (25%) for ≤1 day per week. Of the 90 non-obese study participants, 37 (41.11%) study participants used to consume fruits for ≥ 4 days per week, 32 (35.56%) for 2-3 days and 21 (23.33%) for ≤1 day per week. On analysis, there was no significant trend seen in intake of fruits and overweight/obesity ($\chi^2$ for trend= 0.2916, df= 1, p= 0.5892). Hazzaa M Al-Hazzaa et al (2012)$^{10}$ conducted cross-sectional study among adolescent [aged 14-19 years] males and females. Of the total participants 34.0± 2.4 overweight male participants used to consume fruits and 3.16± 2.3 obese male participants used to consume fruits. 2.71± 2.2 overweight female participants used to consume fruits and 2.51± 2.1 obese male participants consume fruits. ($p=0.05$).

In our study of the 60 overweight or obese study participants, 35 (58.33%) study participants used to consume green leafy vegetables for ≥ 4 days per week, 23 (38.34%) for 2-3 days and 02 (3.33%) for ≤1 day per week. Of the 90 non-obese study participants, 59 (65.56%) study participants used to consume green leafy vegetables for ≥ 4 days per week, 26 (28.88%) for 2-3 days and 05 (5.56%) for ≤1 day per week. On analysis, there was no significant trend seen in intake of green leafy vegetables and overweight/obesity ($\chi^2$ for trend= 0.2671, df= 1, p= 0.6053). Agrawal S et al (2011)$^8$ conducted cross-sectional study. Among study participants 538 (51.3%) women consume green leafy vegetables daily and 107 (10.3%) men consume green leafy vegetables daily ($p=0.001$). and 360 (34.3%) women consume green leafy vegetable weekly and 346 (33.4%) men consume green leafy vegetable weekly. ($P=0.001$).

In present study we showed association of overweight/obesity with frequency of intake of non-vegetarian diet. Of the 60 overweight or obese study participants, 34 (56.67%) used to take non-vegetarian diet for ≥ 3 days per week and 26 (43.33%) for ≤ 2 days/week. Of the 90 non-obese study participants, 53 (58.89%) used to take non-vegetarian diet for ≥ 3 days per week and 37 (41.11%) for ≤ 2 days/week. On analysis, intake of non-vegetarian diet for ≥ 3 days was not found to be a significant risk factor for overweight/obesity ($\chi^2= 0.2739, df=1, p< 0.0001$). Sharma D et al (2012)$^{11}$ conducted A cross-sectional survey among AIIMS administrative employees (Group A, B and C) and their family members aged 30 years or above. Among all participants 211 (46.6%) were non-vegetarian.

In our study of the 60 overweight or obese study participants, 20 (33.33%) used to have junk food for ≥ 3 days per week and 40 (66.67%) for ≤ 2 days/week. Of the 90 non-obese study participants, 05 (5.56%) used to have junk food for ≥ 3 days per week and 85 (94.44%) for ≤ 2 days/week. On analysis, more intake of junk food i.e. for ≥ 3 days was found to be a significant risk factor for overweight/obesity ($\chi^2= 27.39, df=1, p< 0.0001$). Hazzaa M Al-Hazzaa et al (2012)$^{10}$ conducted cross-sectional. 3.40± 2.4 overweight male used to have junk food and 3.16 ± 2.3 obese male used to have junk food. And 2.71 ± 2.2 overweight female used to
CONCLUSIONS
Excess of calorie intake, intake of junk food i.e. for ≥ 3 days, not doing any exercise and hypertension were found to be significantly associated with overweight/obesity in Class IV Employees’ Quarters of a Tertiary Care Hospital.

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