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Prevalence of overweight and its relation with dietary habits and lifestyle practices of home makers

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Abstract

Overweight and obesity has become a major public health problem especially in women, leading to many metabolic disorders. Hence, a study was carried out to analyze the relationship between overweight and dietary habits and lifestyle practices of home makers. Study found that irregular dietary habits such as increased frequency of consumption of non-vegetarian foods and energy dense foods, skipping meals, overeating, late night food

consumption, snacking between meals have positive association with weight gain. Mechanization and increased marketing of ready to eat foods has reduced time spent in household activities and also lack of volunteer exercise has resulted in sedentary lifestyle. Study concluded that dietary habits and lifestyle practices of home makers play a significant role in prevalence of overweight.

Keywords: Prevalence of Overweight, Dietary Habits, Lifestyle, Body Mass Index

1. Introduction

The prevalence of overweight and obesity has increased dramatically during the last three decades with devastating consequences to public health. Overweight, obesity and related diseases need to be delineated in Asian Indian women. Women have higher prevalence of overweight and obesity as compared with men in India and obesity are increasing in the youth (Chopra *et al.*, 2013)^[3]. Overweight and obesity have reached epidemic proportions globally. According to the recent estimates in 2014, approximately 1.9 billion adults were overweight and 600 million were obese. The worldwide prevalence of obesity more than doubled between 1980 and 2014. At least 2.8 million adults die each year as a result of being overweight or obese than underweight (Anon, 2015)^[1].

Obesity results from a positive energy balance, where, intake of calories is greater than caloric expenditure. An individual is considered overweight and obese when his or her body weight is 10 and 20 per cent more than the standard weight for height and age respectively (Srilakshmi, 2011)^[16]. An adult BMI of more than 30 is classified as obese (WHO, 2008)^[18]. Obesity is recognized as a major public health concern internationally, and the prevention and management of obesity is a priority for health care.

A sedentary lifestyle plays a significant role in obesity. Worldwide there has been a large shift towards less physical work, and currently at least 60 per cent of the world's population gets insufficient exercise. This is primarily due to increasing use of mechanized transportation and a greater prevalence of labour-saving technology in the home (Ness and Apovian, 2006)^[11].

Increasing physical activity is an effective way to maintain body composition and potentially prevent obesity. Physical activity has been shown to induce health related benefits in males and females of all age groups. In fact, physical activity appears to be the most beneficial prevention practice (Richardson *et al.*, 2004). Hence a study was carried out to study the association between prevalence of obesity and lifestyle practices along with dietary habits in home makers.

2. Material and methods

Materials

Pre-tested questionnaire was used to collect information on anthropometric measurements and lifestyle practices such as household work, leisure time activities, physical activities and sleeping pattern of subjects to see the prevalence of overweight and its association with lifestyle practices. Anthropometric devices such as weighing balance, vertical rod, measuring tape and calipers were used to measure anthropometric indices.

Methods

Anthropometric measurement

Anthropometric measurement is the measurement of variations of the physical dimensions of the gross composition of the human body at different age levels and degrees of nutrition (Jelliffe, 1966) [8]. Anthropometric measurements included Height (cm), weight (kg), waist measurement (cm), hip measurement (cm), skin fold thickness (mm), mid upper arm circumference (cm), and abdominal circumference (cm). Anthropometric measurements were recorded using appropriate material and methods.

Physical activity

Physical activity included the information regarding their household activity, activities done during their free time and exercises followed to keep them physically fit throughout the day.

Dietary pattern

Dietary pattern reflects the habitual exposure of foods and nutrients which included the type of dietary habit, meal pattern and the pattern of snacking followed by the selected subjects.

Sleep pattern

The selected subjects were asked about the duration of sleep and reasons for inadequate sleep, if they are not getting adequate sleep

Results and discussion

Classification of respondents by anthropometric measurements

Anthropometric measurements of the respondents (Table 2) show that, more than half of the respondents were found between the height 151-160 cm (60.0%) followed by 141-150 cm (21.7 %), 161-170 cm (15.8 %) and only 2.5 per cent were having height 171-180 cm. Weight of respondents shows that, 45.8 per cent of respondents belonged to the range of 61-70 kg of body weight followed by 71- 80 kg (21.7 %), 51-60 kg (20.8 %) and > 80 kg (11.7%). Height and weight are used to calculate Body Mass Index (BMI) of an individual, which is used as measure of overweight/obesity. Individual with increased weight and decreased height tend to be overweight/ obesity.

Table 1: Classification of respondents by anthropometric measurements

(N=120)

Measurements	Category	Respondents	
		Number	Percent
Height (cm)	141-150	26	21.7
	151-160	72	60.0
	161-170	19	15.8
	171-180	3	2.5
Weight (kg)	51-60	25	20.8
	61-70	55	45.8
	71-80	26	21.7
	81+	14	11.7
Body mass index (BMI)	Over weight (23.0-27.9)	59	49.2
	Obese (>28.0)	61	50.8
Waist hip ratio (W/H)	Normal (< 0.86)	38	31.7
	Obese (> 0.86)	82	68.3
Total		120	100.0

Body mass index (BMI) is used as the measure of overall obesity and calculated as body weight divided by the square body height in meters (kg/m²). Half of the respondents (50.8%) belonged to obese category and other 49.2 per cent belonged to overweight category. Since BMI gives the general estimate of the body fatness and adiposity. Overweight/ obesity is caused when the body's intake is greater than output over a period of time due to a sedentary lifestyle (Ogunbode *et al.*, 2011) [12]. Waist to hip ratio (WHR) indicates the abdominal obesity. Majority of the respondents were under the obese category (68.3%) and remaining had normal WHR (31.7%). Waist to hip ratio of less than 0.80 for women and less than 0.95 for men is considered as normal and more than this ratio is considered to be obese.

Anthropometric factors such as weight, height, and body mass index (BMI) have been associated with breast cancer risk. Obesity leads to increased levels of fat tissue in the body that can store toxins and can serve as a continuous source of carcinogens. Body fat is an important locus of endogenous estrogen production and storage, and hence, could increase the risk of breast cancer (Singh *et al.*, 2011) [15].

Dietary pattern of respondents

Dietary pattern followed by respondents is summarized in the Table 11. More than half of the respondents were non-vegetarians (67.5%) and remaining 32.5 per cent were vegetarians. However, equal percentages of respondents (22.5%) were having non- vegetarian food at an interval of twice a week and once a week followed by fortnightly (16.7%) and once a month (5.8%). Respondents consuming non-vegetarian foods were higher than the respondents consuming vegetarian foods. This may be one of the factors contributing to weight gain. Increased frequency of consumption of non-vegetarian food may also have caused weight gain.

Table 2: Response on dietary pattern of respondents

(N=120)

Aspects	Response	Respondents	
		Number	Per cent
Food habits	Vegetarian	39	32.5
	Non-vegetarian	81	67.5
Frequency usage of non-vegetarian (n=81)	Twice a week	27	22.5
	Once a week	27	22.5
	Fortnightly	20	16.7
	Once a month	7	5.8
Meals consumed per day	2 meals	11	9.2
	3 meals	99	82.5
	4 meals	10	8.3
Eating pattern daily	Less than normal	17	14.2
	Normal	90	75.0
	Over eat	13	10.8
Snacks in between meals	Yes	56	46.7
	No	64	53.3
Reasons @	Hungry	20	16.7
	While watching TV	32	26.7
	Boredom	15	12.5

@ Multiple Response

Highest percentage of respondents (82.5%) were following three meals per day followed by two meals (9.2%) and four meals (8.3%). Exactly 75 per cent of the respondents were

having normal eating pattern daily, followed by less than normal (14.2%) and overeating pattern (10.8%). More than half of the respondents (53.3%) were not having any snacks in between the meals followed by having snacks in between the meals (46.7%). Reasons for snacking were due to hungry (16.7%), during television watching (26.7%) and because of boredom (12.5%). Meal pattern characteristics such as frequency, timing (eg, breakfast, late-night eating), or type (eg, main meals, snacks) may play a role in weight control. Positive associations have been observed between snacking frequency and energy intake, suggesting snacking could contribute to weight gain (Kong *et al.*, 2011)^[9].

Food intake has been associated with obesity not only in terms of the volume of food ingested but also in terms of the composition and quality of diet. Furthermore, eating habits have also changed and current habits include low consumption of fruits, green vegetables, and milk; increasing consumption of snacks, sweets, and soft drinks; and skipping breakfast. All these eating habits result in continuous increase in adiposity. Eating habits in addition to environmental differentials represent the most dominant determinant in increasing the tendency of overweight and obesity and modification in the eating habits may be a strategy to more appropriate weight control (Amin *et al.*, 2008)^[2]. Researcher also stated that, regular consumption of breakfast may control body weight due to the decrease in fat content in the diet because of the role it plays in minimizing the intake of high energy snacks.

Classification of respondents by household activities

Physical activities of respondents (Table 4) show that, 76.7 per cent of the respondents were involved in household activities whereas remaining 23.3 per cent were not involved. Reasons for not participating in the household activities were due to the presence of maid servant (15.0 %), medical problems (5.0 %) and do not like to work (3.3%). Among 76.7 per cent of the respondents, 53.4 per cent spent 4-5 hours and 23.3 per cent spent 2-3 hours for household activities.

Women who are not involved in household activities or with less hours of household work are more prone to overweight/obesity due to little or no energy expenditure. A significant correlation existed between low physical activity and higher calorie food consumption enhances greater risk for development of overweight/ obesity (Jayamani *et al.*, 2013)^[6]. Due to decrease in household activity and physical activity, women are lacking to burn sufficient calories and it leads to obesity. Women can also burn calories by doing different household activities such as 15 min cooking can burn 30–35 calories, sweeping floor can burn 40–45 calories and utensils cleaning can burn 22–26 calories. Hence more association with house hold activities can help to prevent weight gain (Saboo *et al.*, 2014)^[13].

Table 3: Classification of respondents by household activities

(N=120)

Activities	Category	Respondents	
		Number	Per cent
Involved in household activities	Yes	92	76.7
	No	28	23.3
Time spent on household activities (n=92)	2-3 hour	28	23.3
	4-5 hours	64	53.4
Reason for not involved in household activities	Medical problems	6	5.0
	Do not like	4	3.3

(n=28)	Have maid servant	18	15.0
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Domestic mechanization of daily tasks (with the advent of labor-saving devices such as washing machines and dishwashers) has reduced energy expenditure over the years. Reductions in housework-related energy expenditure have been substantially contributed to rise in the prevalence of obesity in women. Domestic mechanization has also contributed to increased sedentariness, as time spent in house work has been replaced by sedentary activities such as watching television and use of other screen-based media (Wiklund, 2016). Wanner *et al.*, (2016) reported that sitting time was positively associated with per cent body fat and remaining inactive was associated with obesity. Hence physical activity has an important contribution to weight management.

Sedentary activities of respondents during free time

Sedentary behavior refers to activities that do not increase energy expenditure substantially above the resting level. As sitting appears to be the most common workplace sedentary behavior, it was hypothesized that longer sitting time at work would contribute to weight gain (Lin *et al.*, 2015)^[10]. Sedentary behavior is one of the main causes for overweight and obesity. Sedentary activities include resting position either sitting or lie down on the bed, reading, watching television, playing video games with little or no vigorous physical exercise (Manuha, *et al.*, 2013).

Table 4: Sedentary activities during free time of respondents

(N=120)

S. No	Activities	Respondents @	
		Number	Percent
1	Watch television	108	90.0
2	Reading books	21	17.5
3	Rest and Relaxation	44	36.7
4	Social work	11	9.2
5	Going out with friends	37	30.8
6	Painting & crafts	9	7.5
7	Recreation activities	7	5.8

@ Multiple Response

Sedentary activities of respondents during free time (Table 5) shows that, majority of the respondents watched television (90.0%) followed by rest and relaxation (36.7 %), going out with friends (30.8 %), reading books (17.5%), social work (9.2 %), painting and crafts (7.5%) and recreation activities (5.8%). Prolonged sedentary activities such as watching TV, sitting for long time is linked with mortality and many chronic diseases, independent of physical activity level has significantly associated with higher BMI (Lin *et al.*, 2015)^[10]. Researcher concluded that longer sitting time at work was significantly associated with higher BMI. Jeffrey and French, (1998)^[7], also reported that, TV viewing along with fast food eating was strongly associated with BMI in women. They also found that, energy intake and percentage of energy from fat were positively associated with TV viewing.

Physical activities of respondents

Table 6 shows the physical activities followed by respondents to maintain physical fitness. Physical activity plays a major role in maintaining healthy body weight. The study found that, walking was the most preferred form of

exercise (49.2%) done by the respondents followed by aerobics (14.2 %), yoga (6.7%) and skipping (0.8%). Half of the subjects were not doing any exercise to maintain their physical fitness. 31.7 per cent were doing the exercise daily. Time spent by the respondents on the exercise shows that 23.3per cent of them spent 30-60 minutes per day followed by <30 minutes per day (19.2%) and only 5.8 per cent did the exercise more than 60 minutes. Most of the respondents gave the reason for not engaging in physical activities that, they were not having enough time (28.3 %) followed by not having interest (14.2 %), not having suitable environment (5.0 %) and least reason was having medical problems (2.5%).

Lack of exercise/ physical activity leads to accumulation of fat and hence increases the body weight causing overweight/ obesity. Sedentary lifestyle and less physical activity along with high intake of energy dense foods is a major risk of overweight/ obesity (Saboo *et al.*, 2014)^[13].

According to a theory by Blundell and King, a threshold for physical activity exists above which people are in so called “regulated zone” of energy balance. Those who are in the regulated zone are able to meet high energy expenditure needs with energy intake, thus maintaining body weight. However, those who are below the physical activity threshold have lower energy expenditure, and thus are in the “unregulated zone” without matching decrements in energy intake. In other words, this theory suggests that appetite may not be appropriately regulated at low levels of physical activity. Study of relationship between energy intakes, physical activity, appetite, and weight gain during 1- year follow up reported that individuals with low physical activity had higher levels of cravings for foods compared with those who had high levels of physical activity (Wiklund, 2016).

Table 5: Physical activities followed by respondents to maintain physical fitness

(N=120)

Aspects	Activities @	Respondents	
		Number	Per cent
Physical activities@	Yoga	8	6.6
	Aerobics	17	14.1
	Walking	59	49.1
	Skipping	1	0.8
	No physical activity	35	29.1
Number of times/week	Daily	38	31.7
	Thrice/week	14	11.7
	Twice/week	8	6.7
	No	60	50.0
Time spent	< 30 min	23	19.2
	30-60 min	28	23.3
	> 60 min	7	5.8
	No	60	50.0
Reason for not involved in physical activities	Not interested	17	14.2
	Do not have time	34	28.3
	Medical problems	3	2.5
	No suitable environment	6	5.0

@ Multiple Response

Physical activity and sports contribute between 25 per cent and 50 per cent of total daily expenditure and can thus be important factors for weight control. Active individuals have a healthier body mass and composition than inactive individuals (Wanner *et al.*, 2016). Researcher also reported

that, per cent body fat and waist circumference, parameters of overweight/ obesity, were significantly associated with sitting time.

Shook *et al.*, (2015) examined the relation between energy intake, physical activity, appetite, and weight gain during a 1-year follow up, and reported that individuals with low physical activity had higher levels of cravings for foods compared with those who had high levels of physical activity. Voluntary exercise is the most important discretionary component of total daily energy expenditure, and thus has the potential to affect energy balance. Hankinson *et al.* showed that maintaining high level of physical activity mitigates weight gain significantly, particularly in women. Active individuals gained less weight compared to those who were consistently inactive (Wiklund, 2016).

Sleeping pattern of respondents

Sleeping pattern of the respondents is presented in the Table 17. Almost 3/4th (74.2%) of the respondents were sleeping for 5-8 hours during weekdays whereas 60.8 per cent of respondents were sleeping for 5-8 hours during weekends. High percentage of respondents were getting sleep of < 5 hours during weekdays (16.7%) compared to weekends (15.0%) and high percentage of respondents were sleeping for > 8 hours during weekends (24.2%) than compared to weekdays (9.2%). More percentage of respondents (13.3%) were not getting adequate sleep because of household work followed by caring of children (4.2%), stress and sleeping disorder were complained by equal percentage of respondents i.e., 1.7 per cent and only 0.8 per cent of respondents were not getting adequate sleep due to watching television.

Table 6: Sleeping pattern of respondents

(N=120)

Sleeping duration	Response	Respondents	
		Number	Per cent
Weekdays	< 5 hrs	20	16.7
	5-8 hrs	89	74.2
	> 8 hrs	11	9.2
Weekends	< 5 hrs	18	15.0
	5-8 hrs	73	60.8
	> 8 hrs	29	24.2
Reason for inadequate sleep	Household work	16	13.3
	Stress component	2	1.7
	Caring for children	5	4.2
	Television	1	0.8
	Sleeping disorder	2	1.7

@ Multiple Response

Similar findings are reported by researcher in the literature. Lack of sleep may also contribute to obesity. Recent studies suggest that people with sleep problems may gain weight over time. On the other hand, obesity may contribute to sleep problems due to medical conditions such as sleep apnea, where a person briefly stops breathing at multiple times during the night. The hours of sleep at night are inversely proportional to obesity. Short sleep duration is associated with obesity and weight gain among children and adults. Sleep deprivation results in increased hunger and appetite as well as endocrine changes including decreased leptin and thyroid stimulating hormone secretion, increased ghrelin levels and decreased glucose tolerance leading to

increased risk of obesity (Harmanjot kaur, 2013) [5]. Gangwisch *et al.*, (2005) [4] observed an increase in the prevalence of obesity with day time sleep and inadequate sleep during nights. Sleep duration less than 7 hours had higher average body mass indexes and were more likely to be obese than subjects with sleep durations of 7 hours.

Generally, weight gain results from an increase in caloric intake or a decrease in energy expenditure. Appetite is regulated by the interaction of metabolic and hormonal signals and neural signals. Leptin, an appetite inhibiting hormone derived from adipocytes, signals satiety to the hypothalamus while ghrelin, an appetite stimulating hormone increases appetite and food intake. Circulating levels of leptin act to counter regulate those of ghrelin, and appear to be markedly increased during sleep. Hence sleep restriction is associated with overweight. Short sleep duration also increases caloric intake and decrease energy expenditure by affecting lifestyle activity. Sleep loss was associated with a lack of exercise and irregular eating habits. Longer sleep duration i.e., over 9 hours is significantly associated with weight gain because of reduced energy expenditure due to increased time in bed (Watanabe *et al.*, 2010) [17].

3. Conclusion

Overweight and obesity are developed over a period of time due to poor dietary habits and lifestyle choices. Hence a study was conducted to analyze the association between overweight with dietary habits and lifestyle practices. Following an imbalanced diet with calorie dense foods deficient in micronutrients and lack of physical activity are the leading causes of increased weight gain in recent years. Further overweight/ obesity lead to many health problems such as hypertension, diabetes, coronary artery diseases etc. and affects healthy life of an individual.

4. References

1. Anon. WHO website, 2015.
2. Amin TTK, AL-Sultan AI, Ali A. Overweight and obesity and their association with dietary habits, and socio demographic characteristics among male primary school children in Al-Hassa, Kingdom of Saudi Arabia. *Indian J. of Community Med.* 2008; 33(3):172-181.
3. Chopra SM, Misra A, Gulati S, Gupta R. Overweight, obesity and related non-communicable diseases in Asian Indian girls and women. *Euro. J. Clin. Nutr.* 2013; 67(7):688-696.
4. Gangwisch JE, Malaspina D, Boden-Albala B, Heymsfield SB. Inadequate sleep as a risk factor for obesity: analyses of the NHANES I. *Sleep.* 2005; 28(10): 1289-1296.
5. Human obesity: A study of genetical and environmental influences, Harmanjot kaur, Punjab University, Thesis, 2013.
6. Jayamani V, Gopichandran V, Lee P, Alexander G, Christopher S, Prasad JH. Diet and physical activity among women in urban and rural areas in south India: A community-based comparative survey. *J Fam Med Primary Care.* 2013; 2:334-338.
7. Jeffery RW, French SA. Epidemic obesity in the United States: Are fast foods and television viewing contributing? *Am. J. Pub. Health.* 1998; 88(2):277-280.
8. Jelliffe DB. The assessment of nutritional status of community, WHO Monography Series, WHO, Geneva, 1966, 53.
9. Kong A, Beresford SAA, Alfano CM, Foster-Schubert KE, Neuhouser ML, Johnson DB, *et al.* Associations between snacking and weight loss and nutrient intake among postmenopausal overweight to obese women in a dietary weight-loss intervention. *J. Am. Diet Assoc.* 2011; 111:1898-1903.
10. Lin T, Courtney TK, Lombardi DA, Verma SK. Association between sedentary work and BMI in a U.S. national longitudinal survey. *Am. J. Prev. Med.* 2015; 49(6):117-123.
11. Ness AR, Apovian CM. Diet modification for treatment and prevention of obesity. *Endocrine.* 2006; 29(1):5-9.
12. Ogunbode AM, Ladipo MMA, Ajayi IO, Fatiregun AA. Obesity: An emerging disease; Review article, 2011.
13. Saboo B, Talaviya P, Chandarana H, Shah S, Vyas C, Nayak H. Prevalence of obesity and overweight in housewives and its relation with household activities and socio-economic status. *J. Obesity and Metabolic Res.* 2014; 1(1):20-24.
14. Shook RP, Hand GA, Drenowatz C, Hebert JR, Paluch AE, Blundell JE. Low levels of physical activity are associated with dysregulation of energy intake and fat mass gain over 1 year. *Am. J Clin. Nutr.* 2015; 102(6):1332-1338.
15. Singh P, Kapil U, Shukla NK, Deo S, Dwivedi SN. Association of overweight and obesity with breast cancer in India. *Indian J. Community Med.* 2011; 36:259-262.
16. Srilakshmi B. Dietetics, Sixth Edition, New Age International (P) Limited Publishers, 2011.
17. Watanabe M, Kikuchi H, Tanaka K, Takahashi M. Association of short sleep duration with weight gain and obesity at 1-year follow up: A large-scale prospective study. *Sleep.* 2010; 33(2):167-167.
18. WHO Expert consultation. Appropriate Body Mass Index for Asian Populations and its implications for policy and intervention strategies. *Lancet.* 2008; 363:157-163.