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OVERWEIGHT AND OBESITY;
COMORBIDITIES AMONG 25-60 YEARS WOMEN IN LAHORE, PAKISTAN

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ABSTRACT… Introduction: The upsurge in occurrence of overweight and obesity is explored with the passage of time as the corresponding diseases are increasing rapidly. **Objectives:** The main objectives of this instant research study were to explore the comorbidities and their association with overweight and obesity among 25 to 60 years old women. **Study Design and Setting:** Descriptive cross sectional study was carried out in Lahore, Pakistan from January 2016 to May 2016. **Material and Methods:** All the non-pregnant and non-lactating women 25 to 60 years of age belonging to different socio-economic groups were included in our study. **Results:** Based on cluster sampling technique and sample size, there were 1555 women in 20 clusters in which 1106 overweight and 449 obese women were found for the further research. IBM SPSS statistics version 21 was used to analyze our research findings. **Conclusion:** The study leads to the interesting exposition of the various overwhelming diseases related to overweight and obesity. Significant achievements were obtained by considering different comorbidities with respect to which the topic can be easily summarized to some extent.

Key words: Comorbidities, Overweight, Obesity, Women (25 to 60 years of age).

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INTRODUCTION

Overweight and obesity are the potential risk factors for various devastating diseases. Type 2 diabetes mellitus[1,2] or non-insulin-dependent diabetes mellitus has strong association with overweight and obesity; which is common in those who have a family history of diabetes, but diabetes decreases with weight loss.[3] Obesity and hypertension[4] have shown significant increase depending upon the progression of populations.[5] Numerous studies show the indication of obesity in the individuals with high cholesterol levels.[6] Increase in illness/disease and death from coronary heart disease is also related with abdominal fat and obesity.[7,8] The risk of stroke is suggested high by overweight and obesity without depending on hypertension, high cholesterol level and diabetes.[9,10] Obesity is also associated in developing certain types of cancer and often causes breast cancer in older women.[11] 25% to 30% of cancers like breast cancer[12], colon cancer[13] and endometrium cancer[14] are associated with physical inactivity resulting in obesity.[15] In obese patients, decrease in lungs size causes respiratory impairment that may disturb their mechanism of gaseous exchange. Due to this abnormality, obese individuals complain suffocation, which results in asthma.[16] Peptic ulcer (gastric and duodenal) disease.[17,18] has been a major danger to the world's inhabitants from the last two centuries, with a high illness/disease and substantial death. Helicobacter pylori are responsible for the development of both gastric and duodenal ulcer, in the west and developing countries. Obesity is also associated with the increased risk of developing non-alcoholic fatty liver disease (NAFLD)[19,20] which in turn causes the development of various chronic liver diseases in developed countries.[21] Obesity increases the risk of Type II diabetes mellitus and hypertension which results in chronic kidney diseases (CKD).[22,23] World Health Organization[24] investigated that even moderate overweight may upsurge the menace of gallbladder stones. Urinary incontinence (UI) affects women of advanced age as well as multiparous women[25]

and less than 50% of women with urinary incontinence report this problem to the healthcare professionals.[26] The increase in societal burden of the chronic musculoskeletal conditions.[27,28] such as osteoarthritis, low back pain, disability, ill health causes increase in risk factors of obesity. Weight reduction is an important step in improving some of the manifestations of musculoskeletal disease.[29] The upper body obesity is particularly the major risk factor for sleep apnea.[30,31] The increased sympathetic tone, cardiac arrhythmias, arterial hypoxemia, recurring awakenings from sleep, pulmonary and systemic hypertension are major pathophysiologic consequences of severe sleep apnea.[32] Obese adults often face itching, irritation, redness, rashes, cuts in the skin[33] due to 20% loss of the dermal thickness. The two main reasons of the skin problems were perspiration and friction. Groin, limbs and under breasts were identified as the most troubling areas[34] and sometimes, the increasing age, frail skin and obesity may increase the menace of pressure sores in older obese individuals.[35]

MATERIALS AND METHODS

Study Design, Subjects and Setting

Descriptive cross sectional study was conducted in Lahore, Pakistan from January 2016 to May 2016. Lahore is divided into ten towns which were further sub-divided into several union councils. From each union council two neighboring localities were selected through multi-stage cluster sampling technique. Multistage sampling technique involves two steps, firstly clusters were randomly selected and secondly women (25 to 60 years of age) were randomly selected from each cluster. The inclusion criteria of sample were all non-pregnant and non- lactating women (25 to 60 years of age) suffering from overweight and obesity belonging to different socio-economic groups whereas, women below 25 years of age, more than 60 years of age and with normal weight, pregnant women, lactating women in the range of 25 to 60 years of age were excluded from the research study.

Sample Size

The sample size was calculated with the following formula:

Sample Size (n) = pqZ^2 / d^2

p= anticipated population proportion: 36%
Z= Level of significance: 95%
q= 1-p = Probability of failure
d= absolute precision required on either side of the proportion: 10%

Based on cluster sampling technique and the sample size calculated there were 20 clusters sampled in Lahore, Pakistan from which 880-1760 overweight/obese women may be observed to analyze the topic of research.

TOOLS OF DATA COLLECTION

Structured Questionnaire

For the data collection, a structured questionnaire was prepared in the light of research objectives and was prepared in English language.

Anthropometric measurement

The researcher did anthropometric measurements of weight and height by using weighing scale and height scale for the research questionnaire form.

i. Weight measurement

Potable weighing machine was used to weigh the targets by removing the zero error when needed.

ii. Height measurement

Height was measured with retractable steel measure tape ruler.

After examine the filled questionnaires, from all the ten towns the following information's for overweight/obese women were computed (Table-I). Furthermore, out of 1555 overweight/obese, 1106 women were overweight and 449 obese women from 25 to 60 years of age were observed for our research study.

Data analysis

IBM SPSS Statistics Version 21 was used to analyze the obtain data for getting the statistical results.

The design based analysis in the form of

Towns N=10	Clusters N=20	Women (25-60 years) N=1555
Aziz Bhatti Town	Sadar Bazar and Badian Road	146
Lahore Cantt	Tufail Road and Sarwar Road	145
Data Gunj Bakhesh Town	Gulshan Ravi and Muzang Chungi	137
Gulberg Town	Gulberg III and Model Town	256
Allama Iqbal Town	Johar Town and Wapda Town	157
Nishtar Town	Cavalry Ground and DHA	145
Ravi Town	Bhatti Gate and Kashmiri Bazar	128
Samanabad Town	Allama Iqbal Town and Muslim Town	154
Shalimar Town	Baghbanpura old and Shadbagh	145
Wagha Town	Darogh Wala and Rivaz Garden	142

Table-I. Number of Overweight/Obese Women (25-60 years of age) from each town

percentage and cross-tabulations were used to estimate the frequency distributions and summary statistics. The selected data was analyzed through bi-variate logistic regression. Odd ratios were calculated with 95% confidence interval (CI), whereas, the two-sided p-value less than 0.05 was considered as statistically significant.

Ethical approval

For this study, informed consent was applied in two ways; a. oral and b. written to avoid the reduction of population so that illiteracy could not show up as a barrier. However, illiterate women who participated in the research, these procedures followed in verbal forms. The privacy and anonymity of participants were also maintained throughout the research and will be remained confidential in future. It was ensured that data collection process be conducted in a comfortable environment, in which the individuals group may be able to speak openly. Although the research study did not provide any intervention or medication directly, but we may hope that, the subjects and the target population will be aware in future about their health. In this way, they were slightly benefited through the research.

RESULTS

The comorbidities (Table-II) observed in overweight and obese women were high sugar level (diabetes), high level of cholesterol, blood pressure (hypertension), heart diseases and stroke (cardiovascular diseases), respiratory problems (more commonly observed was asthma), liver disease (enlargement of liver/liver dysfunction), gastric and duodenal ulcers (peptic ulcers), kidney diseases, gallbladder stones, cancer, urinary incontinence, musculoskeletal pain (muscles, knee and joint pains), difficulty in breathing during sleep (sleep apnea) and skin problems (more commonly observed were rashes, redness and bed sores). The results (Table-II) concluded that high sugar level, blood pressure and raised cholesterol level was found more in obese women as compared to overweight women.

Diabetes, heart trouble, kidney and liver diseases, stomach problems, muscular pains were sometimes told by the respondents. Diabetes is divided into two categories. Among them, overweight women 187 (17%) were diabetic patients and 919 (83%) were non- diabetic whereas, in obesity 155 (34%) obese women had diabetes and 1213 (78%) were non- diabetic. High blood pressure patients mostly suffer from heart trouble, kidney disease and liver damage. 435 (39%) overweight women have high blood pressure and 671 (61%) were not suffering from hypertension whereas, 189 (42%) obese women were hypertension patients and 260 (58%) do not have raised blood pressure. In comparison with overweight and obesity both diabetes and blood pressure was found more in obese patients as compared to overweight women. Among them blood pressure was found more as compared to diabetes.

The women having high cholesterol level reported blood pressure, heart trouble and muscular pains.

Cholesterol was divided into three categories.

Comorbidities with overweight and obesity (N= 1555)			
Overweight (n= 1106) Obese (n= 449)			
Comorbidities	**Overweight (%)**	**Obese (%)**	**Total (%)**
Diabetes			
Yes	187 (17)	155 (34)	342 (22)
No	919 (83)	294 (66)	1213 (78)
Blood pressure			
Yes	435 (39)	189 (42)	624 (40)
No	671 (61)	260 (58)	931 (60)
Cholesterol			
Yes	140 (13)	124 (28)	264 (17)
Do not know	259 (23)	104 (23)	363 (23)
No	707 (64)	221 (49)	928 (60)
Heart disease			
Yes	327 (30)	124 (28)	451 (29)
No	779 (70)	325 (72)	1104 (71)
Cancer			
Yes	93 (8)	31 (7)	124 (8)
No	1013 (92)	418 (93)	1431 (92)
Asthma			
Yes	125 (11)	93 (21)	218 (14)
No	981 (89)	356 (79)	1337 (86)
Peptic ulcer disease			
Yes	373 (34)	31 (7)	404 (26)
No	733 (66)	418 (93)	1151 (74)
Liver disease			
Yes	140 (13)	47 (10)	187 (12)
No	966 (87)	402 (90)	1368 (88)
Kidney disease			
Yes	155 (14)	47 (10)	202 (13)
No	951 (86)	401 (90)	1353 (87)
Gallbladder stones			
Yes	202 (18)	93 (21)	295 (19)
No	904 (82)	356 (79)	1260 (81)
Urinary incontinence			
Yes	191 (17)	102 (23)	293 (19)
No	915 (83)	347 (77)	1262 (81)
Muscle pain			
Often	475 (43)	109 (24)	584 (38)
Sometimes	589 (53)	303 (68)	892 (57)
Never	42 (4)	37 (8)	79 (5)
Sleep apnea			
Often	151 (14)	36 (8)	187 (12)
Sometimes	916 (83)	399 (89)	1315 (85)
Never	39 (3)	14 (3)	53 (3)
Skin problems			
Often	213 (19)	118 (26)	331 (21)
Sometimes	514 (47)	228 (51)	742 (48)
Never	379 (34)	103 (23)	482 (31)

Table-II. Comorbidities with overweight and obesity

Among them 264 (17%) women have high cholesterol level, of which 140 (53%) women were overweight while 124 (28%) women were obese, 928 (60%) women do not have information about cholesterol rather they have high or normal, of which 707 (64%) were overweight while 221 (49%) were obese and 363 (23%) women do not have high level of cholesterol level, of which 259 (23%) of women were overweight while 104 (23%) women were obese. Maximum obese women were found complaining of raised cholesterol as compared to overweight women. In heart disease, 451 (29%) women have heart disease, of which 327 (30%) women were overweight while 124 (28%) women were obese and 1104 (71%) women have no heart disease of which 779 (70%) of women were overweight while 325 (72%) women were obese. In cancer, 93 (8%) overweight and 31 (7%) obese women were observed as cancer patient whereas, 1013 (92%) overweight and 418 (93%) obese women had not reported any certain type of cancer. In comparison with overweight and obesity, heart disease and cancer overweight women was found more as compared to obese women. Among them heart disease was found more as compared to cancer.

The setting up of industrial centers and factories in areas close to cities and towns in which the burning of chemicals and giving out of carbon dioxide and other gases by heavy machines cause health disorders like asthma, skin problems and sleep apnea. In addition to it, shortness of breath also results in heart attack. 218 (14%) women have asthma, of which 125 (11%) women were overweight while 93 (21%) were obese and 1337 (86%) women have no asthma, of which 733 (66%) women were overweight while 418 (93%) were obese. Asthma was observed more in obese as compared to overweight women.

Peptic ulcer was observed in those women who have usually sad views of life and were not satisfied with their living styles. In addition, the women who like spicy food, and use pain killers were also suffering from peptic ulcer disease. 373 (34%) overweight and 31 (7%) obese women have peptic ulcer disease whereas, 733 (66%) overweight and 418 (93%) obese women were not suffering from gastric and duodenal ulcer. Patients with liver disease sometimes have diabetes and high cholesterol level and common in those women whose gallbladder was removed. 140 (13%) overweight and 47 (10%) obese whereas, 966 (87%) and 402 (90%) have no liver disease. In some areas of Lahore, women complaints about the contaminated water due to which their daily water intake was not fulfilled and consequently they were susceptible to kidney disease. 202 (13%) women have been observed with kidney disease, of which 155 (14%) women were overweight while 47 (10%) were obese and 1353 (87%) women have no kidney disease, of which 951 (86%) were overweight while 401 (90%) were obese. In comparison with overweight and obesity, peptic ulcer disease, liver and kidney disease overweight women was found more as compared to obese women. Among them peptic ulcer disease was found more as compared to liver and kidney disease.

Stomach problems and diabetes was usually seen in-patient of gallbladder stones. 295 (19%) women have gall bladder stones, of which 202 (18%) women were overweight while 93 (21%) were obese and 1260 (81%) women have no stones in gall bladder, of which 904 (82%) women were overweight while 356 (79%) were obese. In urinary incontinence, 191 (17%) overweight and 102 (23%) obese women suffering from urinary incontinence whereas, 915 (83%) overweight and 347 (77%) obese women were not suffering from involuntary leakage of urine. In comparison with overweight and obesity, gall bladder stones and urinary incontinence was found more in obese women as compared to overweight women. Among them obese women was found more suffering from gall bladder stones as compared to urinary incontinence.

Muscle pain like shoulder, backbone, knee and joints pain was divided into three categories. Among them 475 (43%), 589 (53%) and 42 (4%) overweight women often, sometimes and never suffering from muscle pain whereas, 109 (24%), 303 (68%) and 37 (8%) obese women often, sometimes and never have muscle pain. In sleep apnea, 151 (14%), 916 (83%) and 39

(3%) overweight women often, sometimes and never found suffering from sleep apnea whereas, 36 (8%), 399 (89%) and 14 (3%) obese women often, sometimes and never facing difficulty during sleep. In comparison with overweight and obesity, muscle pain and sleep apnea was found more in overweight women as compared to obese women. Among them overweight women was found more suffering from muscle pain as compared to sleep apnea.

In skin problems, 331 (21%) women often have skin problems, of which 213 (19%) women were overweight while 118 (26%) were obese, 742 (48%) women sometimes have skin problems, of which 514 (47%) women were overweight while 228 (51%) were obese and 482 (31%) women have no skin diseases, of which 379 (34%) women were overweight while 103 (23%) were obese. Obese women were found more facing skin problems as compared to overweight women.

Association of comorbidities with overweight and obesity among 25 to 60 years women.

The association of comorbidities with overweight and obesity was shown in Table-III. The results computed that odd ratio was higher in obese diabetic women (2.961 (2.785 –3.295)) as compared to overweight women (2.045 (1.844-3.177)). High blood pressure was also reported in obese women having odd ratio (2.037 (1.871 - 2.235)) among overweight women (1.966 (1.815 - 2.146)). Raised cholesterol level was found in overweight women (1.848 (1.405 -2.373)) compared with obese women (1.796 (1.359 –2.227)). High odds ratio was observed among obese women (1.738 (1.620-2.378)) having heart disease than overweight (1.690 (1.352 - 2.115)) women.

In addition, high odds ratio was also observed among obese women (1.767 (1.579 - 2.543)) having cancer than overweight (1.595 (1.358 -2.018)) women. Obese women also observed in asthma, peptic ulcer, liver disease, kidney disease and gallbladder stones having odd ratios as 2.065 (1.818 -3.379), 1.638 (1.255- 2.046), 1.899 (1.361 - 2.653), 1.826 (1.597 - 2.545), 1.487 (1.155 -1.949) respectively. Urinary incontinence, muscle pain and sleep was found more in overweight women having odd ratio 1.593 (1.378 - 1.945), 3.195 (2.851 -3.526), 1.811 (1.548 -2.071) respectively whereas, skin problems (2.221 (1.996 -2.495)) with highest odds ratio was observed in obese women.

The above Table-III shows positive relationship of comorbidities with overweight and obesity among 25-60 years old women. Among diseases such as diabetes, blood pressure, heart disease, peptic ulcer disease, liver diseases, kidney diseases, gall bladder stones, musculoskeletal pain (muscle pain) and sleep apnea shows significant associations with overweight and obesity have p-values 0.000, whereas, other diseases such as high cholesterol level, cancer, asthma, urinary incontinence and skin problems also shows positive associations in overweight and obese women have p-values 0.001.

DISCUSSION

The study data revealed that 342 (22%) overweight/obese women were suffering from diabetes of which 187 (17%) women were overweight and 155 (34%) women were obese and significant association was observed for hypertension with overweight and obesity. Colditz et al.[36] conducted a study to determine the relation of body mass index with the risk of clinical non-insulin dependent diabetes mellitus from a cohort of 113,861 women aged 30-55 years in 1976 with a 8-year follow up. The authors concluded from the results that, at even average weight, women are at increased risk of developing diabetes mellitus and that the relation between body mass index and the risk of diabetes is continuous. Data from population-based studies have argued that weight gain is the possible predictor of hypertension. The effect of obesity on hypertension was also investigated.[37] The study results have revealed the significant association of hypertension with overweight and obesity in which 39% and 42% women were overweight and obese respectively. Similar findings were also observed in another study conducted by Musiager & Miladi[38] that weight gain plays significant role in developing hypertension (blood pressure) in individuals.
Blood lipids are often elevated in association

Association of comorbidities with overweight and obesity (N= 1555)			
Comorbidities	**Odds Ratio (OR) 95% Confidence Interval**		**P- value**
	Overweight	**Obese**	
Diabetes Yes No	 2.045 (1.844-3.177) reference	 2.961 (2.785 –3.295) reference	 0.000
Blood pressure Yes No	 1.966 (1.815 - 2.146) reference	 2.037 (1.871 - 2.235) reference	 0.000
Cholesterol Yes Do not know No	 1.848 (1.405 -2.373) 1.585 (1.264 - 1.986) reference	 1.796 (1.359 –2.227) 1.335 (1.257 - 1.447) reference	 0.001
Heart disease Yes No	 1.690 (1.352 - 2.115) reference	 1.738 (1.620-2.378) reference	 0.000
Cancer Yes No	 1.595 (1.358 -2.018) reference	 1.767 (1.579-2.543) reference	 0.001
Asthma Yes No	 1.953 (1.751 - 2.209) reference	 2.065 (1.818 -3.379) reference	 0.001
Peptic ulcer disease Yes No	 1.532 (1.218 – 1.887) reference	 1.638 (1.255 – 2.046) reference	 0.000
Liver disease Yes No	 1.698 (1.350 - 2.041) reference	 1.899 (1.361 - 2.653) reference	 0.000
Kidney disease Yes No	 1.749 (1.314 – 2.013) reference	 1.826 (1.597 - 2.545) reference	 0.000
Gallbladder stones Yes No	 1.319 (1.034-1.815) reference	 1.487 (1.155 -1.949) reference	 0.000
Urinary incontinence Yes No	 1.593 (1.378 - 1.945) reference	 1.270 (1.040 - 1.751) reference	 0.001
Muscle pain Often Sometimes Never	 3.195 (2.851 -3.526) 2.904 (2.462 -3.323) reference	 2.822 (2.210- 3.304) 2.637 (2.307 -3.210) reference	 0.000
Sleep apnea Often Sometimes Never	 1.490 (1.247 - 1.955) 1.811 (1.548 -2.071) reference	 1.201 (1.128 -1.317) 1.765 (1.302 -2.162) reference	 0.000
Skin problems Often Sometimes Never	 1.601 (1.458 - 1.886) 1.997 (1.759 - 2.314) reference	 2.221 (1.996 -2.495) 2.008 (1.841 -2.891) reference	 0.001

Table-III. Association of comorbidities with overweight and obesity among 25 to 60 years women.

with obesity.[39] In this study our findings show that 17% overweight/obese women have raised cholesterol levels as compared to the women who do not have (60%) or do not know about their cholesterol level (23%). Several studies reported similar conclusions[40,41] that there were higher concentrations of cholesterol and triglycerides in those women having high body mass index. Obesity is a strong risk factor for coronary heart disease in middle-aged women. Even mild to moderate overweight is associated with a substantial elevation in coronary risk. Weight gain during adulthood further increases the risk. As much as 70% of the coronary disease observed among obese women and 40% of women, attributable to overweight and is therefore potentially preventable.[42] Our results have shown that only 29% of the women were suffering from heart disease of which 30% women were overweight and 28% women were obese.

The study findings have shown greater risk of cancer (endometrial, ovarian, and post-menopausal breast cancer) in overweight and obese women. It has also been shown that intra-abdominal fat distribution increases the risk of postmenopausal breast cancer independent of weight gain, especially in the presence of a positive family history. These findings were well supported by other studies that weight gain during adulthood has consistently been associated with increased risk of breast cancer.[43,44] The findings also demonstrate a clear relationship between overweight and obesity with asthma, suggesting that asthma risk increases further as body weight increases. Studies suggest that new asthma cases in the general adult population occur at a rate of approximately 0.5% per year and presumably this rate is influenced by contributions from the lean and overweight/obese subgroups of the population. If significant weight loss could be achieved in the population of overweight and obese individuals, incidence of asthma might fall both in children and adults.[45,46]

The study have shown positive relationship between overweight and obesity with peptic ulcer disease having p value = 0.000. These associations remained vigorous even after adjusting for several important potential factors, including age, gender and lifestyle. Previous studies indicated that higher body mass index, considered as overweight or obese revealed associations with more severe symptoms of reflux esophagitis[47,48] whereas, little data exist on the association between obesity and peptic ulcer diseases.[49] A considerable finding of the present study shows significantly greater incidence of liver disease in overweight and obese females. A similar consistency for high prevalence of obesity has been reported in many ethnic minority women, such as African American, Mexican American, Native American, Pacific Islander American, Puerto Rican, and Cuban American women. In the United Kingdom and Europe also, approximately 15% of men and 20% of women are obese.[50]

Previous studies have shown an inconclusive association between overweight/obesity and chronic kidney disease (CKD). Some cross-sectional studies have demonstrated a positive relationship between the body mass index and chronic kidney disease[51,52] whereas; other longitudinal studies yielded conflicting results. Some showed that a higher baseline body mass index can predict future renal dysfunction.[53] The present study results also revealed similar findings and significant associations involving kidney disease with overweight and obesity. Obesity is known to be associated with gallstone disease in observational epidemiology.[54,55] However, a range of environmental, socioeconomic, and/or behavioral factors that are associated with obesity may also influence risk of gallstone disease. This research shows that genetically elevated body mass index is associated with increased risk of symptomatic gallstone disease and also a compatible causal association was observed between elevated body mass indexes that increase the risk of gall bladder stones.

Studies that have also identified a relationship between higher body weight and urinary incontinence have been either cross-sectional[56,57] or short-term studies.[58,59] Given rising childhood and adolescent obesity; Mohebati, Lobstein, Millstone & Jacobs[60] observed that high body

mass index is likely to persist over the life course. Important questions remain regarding the influence of weight trajectories, in terms of the duration or timing of overweight/obese status, on urinary incontinence. The study findings also shows statistical positive significant association of urinary incontinence with overweight and obesity having p-value 0.001, in which 293 (19%) overweight/obese women have problem of urinary incontinence as compared to women who do not have problem of urinary incontinence.

This study have shown that the relationship between obesity and osteoarthritis was statistically significant (p = 0.000), and the prevalence increased with increasing body mass index. Obesity and musculoskeletal pains have been linked in several cross-sectional studies where this degenerative disease has affected many joints but more specifically the weight bearing joints such as the knee-joint. It has also been shown that the link between obesity and the disease was stronger in women than in men.[61] Several cross-sectional studies have also consistently found an association between increased body weight and the risk of obstructive sleep apnea.[62,63] The study results also show significant association of sleep apnea with overweight and obesity having p-value 0.000 in which 187 (12%) overweight/obese women often feel difficulty during sleep, 1315 (85%)/53 (3%) overweight/obese women sometimes/never face difficulty in breathing or have shortness of breath during sleep.

In the study, skin/dermatological problems were also observed in overweight and obese women. Several factors like greater surface area, friction and moisture predispose obese people to various infections. Ahsan and colleagues[64] noted frequency of infections that is comparable to our study. In the current study, there was a significant association between skin problems and grades of obesity (p=0.001). On the contrary, authors were not able to correlate the frequency of skin infections with the grades of obesity. However, the frequency of skin (bacterial, viral and fungal) infections was not influenced by the grades of obesity. Boza et al.[65] have also found a significant association between body mass index and various infections. Therefore, it can be appreciated that the findings in the current study are consistent with the past studies.[65,66]

CONCLUSION

In connection with the above mentioned results, it is explained that the frequency of 25 to 60 years old obese women occurred in related diseases is high in diabetes (34%), blood pressure (42%), raised cholesterol level (28%), asthma (21%), gall bladder stones (21%), urinary incontinence (23%) and skin problems (26%) as compared to the overweight women in the said factors and obesity was low in heart disease (28%), cancer (7%), peptic ulcer (7%), liver disease (7%), kidney disease (10%), muscle pain (24%), sleep apnea (8%) and skin problems (26%) as compared to overweight. It is also examined that some of the obese women were facing blood pressure, high cholesterol level, fatty liver disease, removal of gallbladder stones, sleep apnea, muscle pain, depression and stress at the same time. The results established from the research, concluded that women in the said group was not taking care of their health due to lack of awareness, which results in abnormal eating habits leading to certain diseases.

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