Original Research

Prevalence of overweight and obesity among women in two medical officer of health areas in Kalutara District

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Abstract

Introduction: Overweight and obesity are rising burdens in the world. Gender disparities in its prevalence are more evident in developing countries compared to developed countries.

Objectives: To determine the prevalence of overweight and obesity among 35-44-year-old women in Bandaragama and Horana Medical Officer of Health (MOH) areas

Methods: This was a community-based descriptive cross-sectional study conducted among 770 women aged 35-44 years residing in two MOH areas of Kalutara District for the last six months at the time of data collection. Overweight/obesity were assessed on the Asian cutoff values recommended by the WHO based on body mass index (BMI). The prevalence was estimated with 95% confidence interval (CI).

Results: The prevalence of overweight in Bandaragama and Horana MOH areas was 41.35% (95% CI: 37.9, 44.81) and 39.7% (95% CI: 36.3, 43.2), respectively, while the corresponding prevalence of obesity was 36.1% (95% CI: 32.8, 39.6) and 26.6% (95% CI: 16.4, 39.1).

Conclusions & Recommendations: The prevalence of overweight/obesity among women aged 35-44 years was relatively high. Barriers to a healthy lifestyle, women's role in the household and existing service gaps at primary healthcare level should be considered when preventive measures are introduced to reduce this burden.

Keywords: *overweight, obesity, prevalence, women*

Introduction

Obesity prevalence nearly tripled from 1975 to 2016 globally, resulting in 39% and 13% of adults over 18 years of age being overweight and obese, respectively (1). The association of obesity and cardiovascular disease (CVD) has been demonstrated in the Framingham Heart Study, where high population attributable risks are observed among people with BMI $\geq$25 kg/m^2. Further, obese individuals are around 50% more likely to have a stroke and 6-12 times for developing type II diabetes than those with a normal BMI (2), so that obesity is considered an independent risk factor for CVD and a leading cause for increased risk of dyslipidaemia, insulin resistance, hypertension and atherosclerosis in adults (3).

The prevalence of overweight and obesity among men and women differs within and between countries, where more women are obese than men. This can be due to many reasons, such as personal preferences, level of education, nutrition knowledge and influences on women's diet by family, children and friends, time for cooking, the financial status of the family and access to affordable food (4) This gender difference has mainly been observed among women in developing countries (5-6) including in Sri Lanka. According to the STEPS Survey in Sri Lanka in 2015, nearly 30% of the adults were either overweight or obese, while 35% were women and 25% were men (7). Therefore, it is important to estimate the current burden of overweight and obesity in a population to understand the gaps in the existing health care system. The findings of health surveys will help to allocate resources and further strengthen control and prevention strategies in a given population. The objective of this present study was to estimate the prevalence of overweight/obesity in women aged 35-44 years in two selected MOH areas in the district of Kalutara, as there are no recent data available to mitigate the impact of overweight/obesity on women's health.

Methods

A community-based cross-sectional study was conducted in Bandaragama and Horana MOH areas in the district of Kalutara, Western Province, from March to May 2018. The study population consisted of women aged 35-44 years who were registered in the electoral list of 2017 of the two MOH areas. This age group was selected since women in this age category are more likely to pay less attention to their health due to busy schedules at work, home and family, which ultimately increase cardiovascular disease risks (8). Women who were pregnant and lactating within six months after childbirth, diagnosed with hypothyroidism and other endocrine disorders such as Cushing's syndrome due to primary or secondary causes and those who are severely ill or diagnosed with psychiatric illness were excluded.

The total sample size was 1540, which was calculated using a standard formula based on previous prevalence of overweight (25.2%) calculated according to the Asian cut-off values proposed by the WHO (9) , two-sided α of 0.05, power of 95%, design effect of 2 and 5% non-response. Out of all GN divisions, 35 were selected from each MOH area using simple random sampling using the lottery method. From each MOH area, cluster sampling technique was used to select 35 clusters, considering a group of 22 women aged 35-44 years living in a Grama Niladhari division (GND) as a cluster, according to the feasibility of conducting the study within the available logistics and resources. Women aged 35-44 years in the electoral register of 2017 from the selected GN divisions was invited for the study.

The principal investigator and two trained research assistants did data collection. Those who had given written consent for the study were given an interviewer-administered questionnaire on personal and socio-demographic information and then underwent anthropometric measurements of

standing body height to the nearest of 0.5 cm and body weight accuracy of ± 100 g. The BMI was calculated as weight/ height^2 (kg/m^2). The standardised measurement method was done according to the operational manual published by the WHO, STEPS Surveillance Manual 2017 (10). Participants were identified as overweight (≥23.0-27.49 kg/m^2) and obese (≥27.5 kg/m^2) according to the WHO cut-off values in BMI for Asians (11).

Data analysis

The Statistical Package for Social Sciences (SPSS) version 22.0 was used to analyse the data. All responses in the questionnaire were coded and descriptive analyses were carried out to determine the prevalence of overweight and obesity among the target population.

Results

The response rate was 100%. Socio-demographic and economic characteristics of both MOH area are shown in Table 1. The majority in both MOH areas were aged 37-42 age group, married, of Sinhala ethnicity, educated up to General Certificate of Education (GCE) Ordinary Level, and housewives.

The average weight of women in Bandaragma and Horana MOH Areas was 61.29 kg and 59. 39 kg, respectively. Based on WHO cut-off values for Asia, the prevalence of overweight was 41.35 (95% CI: 37.9, 44.8) and 39.7 (95% CI: 36.3, 43.2) per 100 women in the two areas (Table 2). The corresponding obesity prevalence was 36.1 (95% CI: 32.8, 39.6) and 26.6 (95% CI: 16.4, 39.1) per 1000 women, while the prevalence of overweight/obesity (BMI ≥23 kg/m^2) was 77.4% and 66.35%.

The overweight/obesity was higher among 35-39-year age group in both MOH areas compared to other ages and married category compared to the other categories in both MOH areas (Table 3).

Overweight/obesity was observed to increase with increased education, income level and not being employed in both MOH areas.

Discussion

In the district of Kalutara, 31.3% of ever-married women were overweight (BMI 25.0-29.9), and 13.8% were obese (BMI ≥ 30.0) in 2016 (12). Comparing the prevalence data of District of Kalutara with the present study values overweight and obesity rates were slightly higher. This difference may be attributed to the use of different cut-off values (WHO-Asian) for defining overweight and obesity and the age category (35-44 years) in the present study, while DHS data mainly focused on women aged 15-49 years.

A study on adult women aged between 15-40 in nine districts of Sri Lanka found that 28.7% were overweight and 15.2% were obese based on Asian cut off values. However, the District of Kalutara was not included in this study (13). Furthermore, another study conducted by Arambepola et al showed that urban women had a higher mean BMI compared to men (14).

A cross-sectional study conducted in the district of Kalutara among adults aged 35-64 (n=1234; female=604) reported that among women aged 35-39 years, the prevalence of overweight and obesity was 31.7% (n=22) and 23.1% (n=20), respectively. In the 40-44 age group, the prevalence of overweight and obesity was 39.3% and 21.6%, respectively. The study indicated a higher prevalence of obesity in the district of Kalutara compared to previous studies in 1990 and 2006, particularly among women (15).

The 2015 STEPS survey found that 29% (95% CI: 26.1, 31.9) of women aged 30-44 were overweight, while 10.1% (95% CI: 8.0, 12.2) were obese (7). However, the present study using Asian cut-off

values showed higher rates of overweight and obesity in both MOH areas compared to the STEPS survey. The discrepancy may be due to different methodologies used. The present study, focusing on women aged 35-44 in the district of Kalutara, reported higher values for overweight, obesity and other measures compared to previous studies. The variation in these values could be attributed to socio-demographic changes, urbanization, and lifestyle shifts over time.

Similar trends in overweight and obesity were observed in South Asian countries, including the Maldives where women had a higher prevalence of overweight (65.5%) compared to men. The present study documented a higher obesity prevalence than other countries in the region. However, all countries in the region showed an increasing trend of overweight and obesity over time. Nepal and Bangladesh reported the lowest values initially, but even they experienced increasing trends. For Instance, the prevalence of obesity among women in Nepal increased from 1.6% in 1996 to 6.4% in 2001 and 10.1% in 2006 (16).

Literature consistently shows higher overweight and obesity rates in urban areas compared to rural areas. Surprisingly, the present study found a higher obesity prevalence in a rural setting. This trend aligns with findings in rural Pakistan, where the prevalence of overweight and obesity increased from 13.9% in 1995 to 19.4% in 2007. The shift towards urbanization in rural communities likely contributed to these differences in lifestyle and health outcomes (16).

A cross-sectional study in India found that the prevalence of overweight/obesity among women doubled in 2015-2016 compared to1988-1999. Among women aged 30-39 years, the prevalence increased from 7.3% to 27.7%, the highest increase among all age groups. The study also highlighted a concerning rise in overweight/obesity rates in rural areas. In 1998-99, only four states had a prevalence

above 15% , but by 2005-2006, that number had increased to 20% (17).

Different studies have focused on various target populations and age groups, making it challenging to interpret the overall prevalence of obesity when comparing them. The present study specifically examined women aged 35-44, making it difficult to compare with regional studies that targeted different demographics, such as specific genders, areas, and time periods. Additionally, caution is needed when generalizing the findings of the present study, conducted in two urbanizing areas in the District of Kalutara, to the entire population. The socioeconomic status, behaviour, and lifestyle of the studied population may differ from women in other urban areas. Furthermore, being a cross-sectional study, no causal relationships between variables and overweight/obesity outcomes can be established. However, efforts were made to minimize measurement errors by recruiting experienced data collectors and using standardized anthropometric measurement methods following the WHO operational manual of STEPS surveillance (10).

Conclusions & Recommendations

The prevalence of overweight/obesity among the target population was relatively high in both areas. Thus, it is important to understand their factors associated with overweight/obesity and underlying perceived barriers towards healthy behaviour. To promote a healthy lifestyle and combat overweight/obesity, it is important to raise women's awareness and encourage early lifestyle changes through education and health programs. Women can play a pivotal role in influencing their family members to adopt healthier habits. The high prevalence of overweight/obesity in specific areas calls for evaluating existing services and ensuring optimal support for this target group. Policymakers and health experts should address barriers to a

healthy lifestyle, consider women's household role, and address service gaps at the primary care level. Regular screening for overweight/obesity in women is also recommended to prevent future health complications associated with increasing obesity rates.

Table 1: Distribution of socio-demographic & economic characteristics of the study population

Characteristics	Bandaragama MOH (N=770)		Horana MOH (N=770)	
Age category (years)				
35-36	138	17.9	125	16.2
37-38	165	21.4	155	20.1
39-40	171	22.2	170	22.1
41-42	171	22.2	165	21.4
43-44	125	16.2	155	20.1
Current marital status				
Unmarried	74	9.6	25	3.2
Married	677	87.9	735	95.5
Divorced/separated	18	2.3	4	0.6
Widowed	1	0.1	6	0.8
Ethnicity				
Sinhala	760	98.7	766	99.5
Tamil	8	1.0	4	0.5
Muslim	2	0.3	0	0
Religion				
Buddhism	734	95.3	764	99.2
Hindu	8	1.0	4	0.5
Catholic/Christian	26	3.4	2	0.2
Islam	02	0.3	0	0
Highest educational level				
No schooling	7	0.9	4	0.5
Grade 1-5	35	4.5	42	5.5
Grade 6-10	111	14.4	94	12.2
Passed GCE O/L*	361	46.9	345	44.8
Passed GCE A/L**	223	29	238	30.9
Tertiary Education	33	4.2	47	6.1
Employment status				
Currently employed	414	53.8	363	47.1
Previously employed	210	27.3	151	19.6
Never employed	146	18.9	256	33.2
Occupation				
Professional	93	12.1	89	11.6
Clerical	94	12.2	41	5.3
Trained employment	59	7.7	77	10.0
Self-employment	168	21.8	156	20.2
Housewife	356	46.2	407	52.9

*General Certificate of Education- Ordinary Level;
**General Certificate of Education-Advanced Level

Table 2: Overall prevalence of overweight and obesity based on BMI in the study population

Anthropometric measures		No.	%	95% CI
Bandaragama MOH area				
Underweight	<18.5	23	3.0	1.9, 4.4
Normal	18.5-22.99	151	19.6	16.9, 22.5
Overweight	≥23.0-27.49	318	41.3	37.9, 44.81
Obese	≥27.5	278	36.1	32.8, 39.6
Horana MOH area				
Underweight	<18.5	56	7.3	5.6, 9.3
Normal	18.5-22.99	203	26.4	23.3, 29.6
Overweight	≥23.0-27.49	306	39.7	36.3, 43.2
Obese	≥27.5	205	26.6	16.4, 39.1

Table 3: Prevalence of overweight/obesity by study population characteristics.

Demographic characteristics	Overweight/obesity, No. %							
	Bandaragama MOH area				Horana MOH area			
	Present		Absent		Present		Absent	
Age group (years)								
35-39	314	78.1	88	21.9	241	66.4	122	33.6
40-44	282	76.6	86	23.4	270	66.3	137	33.7
Current marital status								
Others	67	72.0	26	28.0	23	65.7	12	34.3
Married	529	78.1	148	21.9	488	66.4	247	33.6
Education level								
Up to GCE (O/L)*	117	76.5	36	23.5	88	62.9	52	37.1
GCE (O/L) passed	279	77.3	82	22.7	225	65.2	120	34.8
GCE (A/L)** passed	200	78.1	56	21.9	198	69.5	87	30.5
Average monthly income (Rs.)								
≤ 15,000	32	69.6	14	30.4	26	63.4	15	36.6
15,001-49,999	443	77.7	127	22.3	411	65.2	219	34.8
>50,000	121	78.6	33	21.4	74	74.7	25	25.3
Employment status								
Currently employed	319	77.1	95	22.9	88	62.9	52	37.1
Previously employed	156	74.3	54	25.7	225	65.2	120	34.8
Never employed	121	82.9	25	17.1	198	69.5	87	30.5
Total	**596**	**77.4**	**174**	**22.6**	**511**	**66.4**	**259**	**33.6**

Marital status- Others[1] – Unmarried, divorced, separated and widowed

Author Declarations

Competing interests: The authors declare that they have no competing interests.

Ethics approval and consent to participate: Ethics approval was granted by the Ethics Review Committee of the Faculty of Medicine, University of Kelaniya (Reference: P/21/01/2018). Prior to conducting the study,

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