

## Association of Physical Activity and Sedentary Lifestyle with Overweight and Obesity among Adult Women in Sri Lanka

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**Abstract:** To evaluate how the leisure time physical activities (LTPA), household chores (HHC) and sedentary behaviours (SB) impact on overweight or obesity in Sri Lankan adult women. This study was conducted from July 2012 through March 2013 at the outpatient department (OPD) in the Ayurveda Teaching Hospital, Borella. The sample was collected from one hundred and twenty one overweight or obese women, age between 18 – 60 years, representing different socio-economic districts. The questionnaire developed for the study was organized in three areas: (1) socio-demographic information (2) physical activity and the sedentary behaviour tools, (3) anthropometric measures and biochemical examination. The socio demographic results obtained as follows: the mean age of participants were 39.6 years ( $\pm$ SD 10.7) and nearly 56% of the participants were below the age of 40. Higher percentage of subjects in this study was unemployed and served as housewives when compared to the employees and the students' populations. About 44% of the participants indicated that they receive a monthly income of less than LKR 25,000. In the present investigation, 41.3 % had BMI = 25 kg/m<sup>2</sup> (overweighed) and of whom 35.5 % and 18.2 % were obese I and obese II respectively and 5% showed morbid obese. Analysis of Leisure Time Physical Activity (LTPA) revealed that 91 % of participants responded that they were spend less than 90 minutes /week on walking , 100 % of the participants responded that they were not engaged in swimming and approximately 93% of the participants responded that they were not involved in any aerobic physical exercises. Results of the analysis of House Hold Chores (HHC) revealed that responsiveness of not participation on washing, cooking and gardening were 33%, 13% and 89% respectively. Considering LTPA and HHC together as a separate variable, Total Physical Activity (TPA) was analyzed. About 91% of participants showed sedentary physical activity level and only 8% of participants showed a light physical activity level. The results revealed on SB that only 5% of participants viewed TV more than 14 hours per week and a 3.3% of participants used computer more than 7 hours per week also only 5. 8% of participants conversed more time on telephone. A negative correlation was found between the variables of brisk walking, aerobic physical exercises, washing and gardening with different BMI range. Therefore, can conclude that Sedentary behaviors (SB) such as watching TV, computer usage and more time spent in telephone were not the causes for overweight/obesity but the poor LTPA and poor HHC would be influenced the overweight/ obesity in women in Sri Lanka. Level of income were not affected the level of obesity but the level of education found to be impact in women obesity in Sri Lanka.

**Key words:** Overweight % Obesity % Sedentary lifestyle % Physical activity % Females % BMI

### INTRODUCTION

Rates of non-communicable diseases have been progressively increasing in Sri Lanka during the last

several years [1]. Cardiovascular disease, cancer, chronic respiratory diseases and diabetes lead to a higher incidence of mortality among people [2]. Although, genetic and environmental factors are involved in the

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development of non-communicable diseases, evidence suggests that modifiable lifestyle factors, such as physical activity, sedentary life style play a key role [3]. It is reported that obesity as a multi-factorial disease, which is frequently related with other major non-communicable diseases such as diabetes, hypertension and other cardiovascular diseases, osteoarthritis, infertility, cirrhosis and certain types of cancers [4]. World Health Statistics in 2012 indicated that one in six adults obese, one in three hypertensive and one in 10 diabetic [5]. According to research statistics for Asians, the percentage of Sri Lankan adults in the overweight, obese and centrally obese categories were 25.2%, 9.2% and 26.2%, respectively [6].

In Sri Lanka, obesity is a significant problem, particularly in the adult female population which is characterized by unhealthy diet and sedentary behaviour (SB). Sedentary behaviour is one of the main causes for overweight and obesity in this new era. The sedentary lifestyle means a distinctive way of life of individual with almost no or poor or irregular physical activity. Sedentary behaviour means people involve in most sedentary activities include resting position either sitting or lie down on the bed, reading, watching television, playing video games and computer use for much of the day with little or no vigorous physical exercise [7].

Physical activity (PA) also takes vital role in maintaining healthy body weight and demolishing to gain unwanted weight. Physical activity has focused on measuring leisure time physical activities (LTPA) such as walking, swimming or other sport-related activities and household chores (HHC) such as washing, cooking and gardening.

In Sri Lanka, women tend to spend substantial amounts of time engaged in household chores (HHC) like washing, cooking and gardening etc. To date, an association of habitual PA levels and sedentary lifestyle activities with overweight and obese individuals among adult females in Sri Lanka has not been analyzed extensively. Therefore, the purpose of this study is focused to examine how the leisure time physical activities (LTPA), household chores (HHC) and sedentary behaviours (SB) impact on overweight and obesity in Sri Lankan adult female. Discovering a better understanding of the relationship between LTPA, HHC and SB with the body mass index (BMI) of Sri Lankan adult women would provide insight for developing interventions to prevent or reduce overweight and obesity.

## **MATERIALS AND METHODS**

**Study Design and Participants:** This study was conducted at the Ayurveda Teaching Hospital, Borella, Sri Lanka. This research was a cross-sectional study conducted from July 2012 through March 2013 and the subject studied constituted a convenience sample of 152 representing different socio-economic districts who were attending the outpatient's department (OPD) and with the exclusion criteria only 121 participants were eligible for our study. Female adults with overweight (BMI between 25-30 kg/m<sup>2</sup> and obese (BMI over 30 kg/m<sup>2</sup>) were recruited. The ages ranged between 18 to 60 years were included into this study. Participants who currently taking a weight loss medication or gastrointestinal disorders, psychiatric illness under the care of a psychiatrist, cushing's syndrome, hypothalamic etiology of obesity, uncontrolled or untreated thyroid disease, history of an eating disorder such as bulimia, surgery in the past 3 months and surgery planned in the ensuing 6 months were excluded into this study. Also pregnant women, disabled females and those who were on a special diet for medical reasons too were excluded from the study.

**Collection of Research Data:** The research was approved by the Ethics Review Committee, Institute of Indigenous Medicine, University of Colombo, Sri Lanka. All voluntary and anonymous participants were read and signed informed consent about the purpose of the study. Each survey respondent was approached with a possibility of voluntary withdrawal at any time. Each patient was attributed a personal number, from 1 to 121. The questionnaire developed for the study was organized in three areas: (1) socio-demographic information and acculturation, (2) physical activity and the sedentary lifestyle tools, (3) anthropometric measures and clinical and biochemical examination.

The questionnaire was prepared for collecting the research data and it was first developed in English, then translated into Sinhala and Tamil and finally back translated into English by an expert translator to ensure that both surveys had equivalent meanings. No discrepancy was found between Tamil and Sinhala version. The questionnaire was first pretested with 20 adult females to assess readability and required level of literacy (i.e., less than high school education). Participants were given the option to hold the interview in English or Tamil or Sinhala upon their preference.

The questionnaire was administered through a face-to-face interview and the time needed to complete it was between 45-60 minutes. The questionnaire was tested for reliability. A bilingual trained person who had more than five years of experience conducting survey and other qualitative research among communities, collected anthropometric information and conducted the 24-hour recall survey.

**Socio - Demographic Information:** Socio-demographic variables included in this study are: age, level of education, employment status, marital status, income and total number of persons living in the house. Education variable was determined by the years of school completed as follows: illiterate, 1-5 years, 6-10 years, O/L completed, A/L completed and degree/diploma or above. Employment status variable was categorized by the work they engaged during the study as follows: house wife, office employer and student. Marital status variable was categorized as follows: single, married, separated and divorced. Income variable was categorized as less than LKR 25,000, between LKR 26,000 to LKR 50,000, between LKR 50,000 to LKR 75,000 and above LKR 76,000.

**Physical Activity and the Sedentary Behaviour Measurements:** Contents of the questionnaire included were household chores (HHC) such as cooking, washing and gardening, leisure time physical activity (LTPA) such as swimming, walking and aerobic physical exercises, sedentary behaviour (SB) such as viewing television, computer usage and telephone conversation.

The questions of each section are given below;

- LTPA; (a) Do you engage in light physical activity, such as more than 30 minutes brisk walking for more than 3 times per week? and (b) Do you participate in heavy physical exercise, such as swimming or any other aerobic physical exercise for more than three times per week? The responses were categorized as “no” or “yes.”
- HHC; Do you do household chores like in washing clothes, cooking and gardening regularly?

The responses were categorized as “no” or “yes

- Total physical activity (TPA) was calculated as the sum of exercise (LTPA plus HHC). One variable predominantly used to assess the level of exercise

themselves whether they were belong to sedentary, moderate active or high active. For analysis purpose, they were arranged as 4 levels of physical activities: (0) No physical activity, (1) sedentary level (2) moderate and (3) high activity level [8, 9].

- SB; (a) How many “drama serials” and/or “films” and/or “news programme” do you view on television for a week? (b) How long do you use the computer for work or study purpose, or converse in skype or video play for a week? and (c) How long do you converse on phones for a day? The time duration was recalculated with adjustment for hours in order to estimate how long they were in sedentary position for a week.

**Anthropometry Measurements:** The complete set of anthropometric measurements was performed twice, but not consecutively. Body Mass Index (BMI), blood pressure, pulse, waist and hip measurements, were taken. For the assessment of Body Mass Index (BMI), weight and height of each subject were obtained by standardized procedures [10]. Participants were categorized by weight status according to the cut-off values for BMI proposed by World Health Organization (WHO) [10]. When BMI ( $\text{kg}/\text{m}^2$ ) was used as a categorical variable, subjects were classified as follows: normal weight: 18.5-24.9  $\text{kg}/\text{m}^2$ ; overweight: 25.0-29.9  $\text{kg}/\text{m}^2$ ; or obese  $\geq 30.0 \text{ kg}/\text{m}^2$ . Blood pressure and the pulse were measured using a digital automatic blood pressure monitor made in Switzerland. The hip measurement was taken just above the belly button and the waist measurement was taken at the widest part of the buttocks by using a plastic tape to the nearest 0.5 cm [11].

**Statistical Analysis:** All statistical analyses were performed using the Statistical Package for the Social Sciences for IBM SPSS version 14. Analysis for frequency was run for socio-demographic variables. Multiple response cross tabulation was run (dichotomy group tabulated at value 1) to analyze the frequencies of obesity related diseases that how far these diseases influenced in obesity in Sri Lankan population. Cross tabulations were done for LTPA variables and HHC variables separately. Relationship with variables of LTPA and HHC was analyzed by cross tabulation. As some participants were employed therefore SB was calculated with adjustment for hours in a week that how long these participants spent their time on viewing TV and/or using computer and/or conversing telephone.

## RESULTS

**Socio-Demographic Variables:** Data presented in Table 1 illustrated the trends in overweight, obesity and extreme obesity among female aged 18-60 years. Socio-demographic variables included in this study were: age, level of education, employment status, marital status, total number of persons living in the house and income. The mean age of participants was 39.6 years ( $\pm$ SD 10.7) that ranges from 18 to 60. Nearly 56% of the participants were below the age of 40. Results of education variable was determined by the years of school completed and the results revealed that majority of the subjects were received the educational levels from grade 6 to advanced level or above whereas only 6.6 % subjects were followed up to grade 1-5 years and only 3.3 % were university graduates. Higher percentage of subjects in this study was unemployed and served as housewives when compared to the employees and the students populations. In the total sample, more than 83 % of the population was married and only 14.9 % were single. The majority (74%) of the participants were belongs to the families with 1-4 members. About 44% of the participants indicated that they receive a monthly income of less than LKR 25,000, after all sources of income were taken into account. Only 14% of the participants received a monthly income more than LKR 75,000.

Table 2 shows the Means and standard deviations of systolic and diastolic blood pressures, anthropometric measurements and body mass index at age 18-60. The mean BMI of this study was  $32.01 \pm 4.94$  kg/m<sup>2</sup>. BMI was categorized according to the classification of the World Health Organization (WHO) based on risk factors and morbidities [10]. The cutoff points given in WHO report for overweight and obesity were  $\geq 25$  kg/m<sup>2</sup> and  $\geq 30$  kg/m<sup>2</sup> respectively for adults. In the present investigation, 41.3 % had BMI  $\geq 25$  kg/m<sup>2</sup> (overweighed) and of whom 35.5 % and 18.2 % were obese I and obese II respectively and 5% showed morbid obese. In this study the mean weight was  $77.28 \pm 12.40$  kg, the mean height was  $155.33 \pm 6.72$  cm and the mean over weight i-e above the ideal weight for their height was  $17.16 \pm 11.6$  kg. The mean waist circumference was  $104.73 \pm 10.52$  cm and the mean hip circumference was  $109.15 \pm 10.13$  cm. The mean of waist to hip ratio was  $0.95 \pm 0.06$ . The results of the mean waist circumference [11] and the mean of waist to hip ratio [12] were extremely higher than the normal range that was mentioned in several studies [13] and it was risk for type 2 diabetes, hypertension and heart diseases.

The mean systolic blood pressure, the mean diastolic blood pressure and the mean pulse were  $121 \pm 11$  mmHg,  $78 \pm 9$  mmHg and  $70 \pm 6$  beats per minutes respectively (Table 2) and they were not significantly different from the normal range [14].

**Variables of Diseases That Related to Obesity:** This is a multiple response question contained ten variables that had shown close relationships with obesity were tabulated for analysis. In this study it was observed that more than 63% of participants were hereditary origin. 45% of participants underwent surgery reported that they did not engaged more PA due to surgery and 33% of participants of overweight or obesity were found with arthritis. The diseases like diabetes, bronchial asthma and thyroid diseases join together with overweight or obesity were 13.1%, 7.1%, 6% respectively. Renal diseases were found in least amount (2.4%) in this study (Table 3).

### **Variables of Leisure Time Physical Activity (LTPA) and House Hold Chores (HHC)**

**Variables of Leisure Time Physical Activity (LTPA):** Results of the cross tabulation of participants' on LTPA such as brisk walking, swimming and aerobic physical exercises were as follows: the time spend on brisk walking variable was recalculated to whether walking was done for more than 90 minutes per week and around 91 % of participants responded "No", 100 % of the participants responded that they were not engage in swimming exercise and approximately 93% of the participants responded that they were not involved in any aerobic physical exercises.

**Variables of House Hold Chores (HHC):** Results of the cross tabulation of participants' on HHC such as washing, cooking and gardening were as follows: only 33% of participants responded that they were not doing washing, 13% of participants responded that they were not doing cooking and irreversibly 89% of participants responded that they were not doing gardening.

Results of relationship analysis of LTPA and HHC variables with different BMI range was as follows: variables did not show significance. Even though brisk walking and aerobic physical exercises showed negative correlation with different BMI range, there were no swimming participants in this study, swimming variable was not computed. Variables like washing and gardening too showed negative correlation with different BMI range (Table 4).

Table 1: Socio-demographic variables with the different levels of BMI

	Overweight	Obese 1	Obese 2	Morbid obese	Total
Age in years					
18 - 30 years	6.6%	4.9%	4.9%	0.8%	17.4%
31 - 40 years	18.2%	11.6%	5.8%	3.3%	38.8%
41 - 60 years	18.9%	19%	7.4%	0.8%	43.8%
Level of education					
Grade 1 to Grade 5	0.8%	3.3%	1.7%	0.8%	6.6%
Grade 6 - Grade 10	5.8%	9.1%	4.1%	0.8%	19.8%
Complete O/L	15.7%	12.4%	8.3%	0%	36.4%
Complete A/L	15.7%	7.4%	2.5%	3.3%	28.9%
Degree or above	3.3%	3.3%	1.7%	0%	8.3%
Employment status					
House wife	30.6%	23.9%	15.7%	3.3%	73.6%
Office employee	8.3%	9.1%	2.5%	1.7%	21.5%
Student	2.5%	2.5%	0%	0%	5%
Marital status					
Single	6.6%	4.9%	1.7%	1.7%	14.9%
Married	34.7%	28.9%	16.5%	3.3%	83.5%
Separated	0	0.8%	0%	0%	0.8%
Divorced	0	0.8%	0%	0%	0.8%
Total number of person living in the house					
1 - 4 members	28.9%	27.2%	13.2%	4.9%	74.4%
5 - 6 members	12.4%	8.3%	3.3%	0%	23.9%
7 or more members	0%	0%	1.7%	0%	1.7%
Family income					
Less than 25000	14.9%	19.8%	7.4%	1.7%	43.8%
26000 to 50000	13.2%	11.6%	5.8%	2.5%	33.1%
51000 to 75000	4.9%	3.3%	0.8%	0%	9.1%
Above 76000	8.3%	0.8%	4.1%	0.8%	14.1%

Table 2: Descriptive Statistics of Anthropometric characteristics, Blood pressure and pulse recordings

	Mean
Height (cm)	155.33 ± (6.72)
Weight (Kg)	77.28 ± (12.40)
BMI (Kg/m <sup>2</sup> )	32.01 ± (4.94)
Over weighted (Kg)	17.16 ± (11.60)
Waist Circumference (cm)	104.73 ± (10.52)
Hip Circumferences (cm)	109.15± (10.13)
Waist to Hip ratio	0.95 ± (0.06)
Systolic Blood Pressure (mm Hg)	120.95 ± (11.71)
Diastolic Blood Pressure (mm Hg)	77.89 ± (8.86)
Pulse rate per minutes	70.22 ± (5.51)

Table 3: Prevalence of Diseases that related to Obesity

Diseases	Percentage of cases
Arthritis	33.3%
Diabetic	13.1%
Asthma	7.1%
Renal disorders	2.4%
Psychiatric illness	3.6%
Genetic etiology	63.1%
Thyroid Diseases	6.0%
Surgery planned in the ensuring 6 months	4.8%
Chronic illness that could affect weight	3.6%
Surgery done	45.2%

**Variables of Total Physical Activity (TPA):** Considering LTPA and HHC as a separate variable, Total Physical Activity (TPA) was analyzed. About 91% of participants showed sedentary physical activity level and only 8% of participants showed a light physical activity level. PA of sedentary level found in more percentage in the age group 41-60 years. The higher the age the higher the poor PA noted. A very minimal amount of participants (0.8%) showed a moderate level of physical activity (Table 5).

**Variables of Sedentary Behaviour (SB):** The results of three variables of Sedentary Behaviour (SB) were as follows: only 5% of participants viewed TV more than 14 hours per week and a 3.3% of participants used computer more than 7 hours per week also only 5. 8% of participants conversed more time on telephone (Table 6).

The SB variable “Do you spend more than 14 hours /week on viewing TV?” and the variable “Do you spend more than 7 hours /week on computer usage?” did not statistically significant but had shown a strong positive relationship ( $v=.884$ ,  $v=.910$ ) with BMI. The variable “Do you spend more time on telephone conversation?” had shown a moderate association ( $v=.666$ ) with BMI. (Table 7).

Table 4: Relationship of variables of LTPA and HHC with BMI (Pearson's R)

Variables (LTPA)		Value	Sig.
Brisk walking		- 0.048	0.604
Swimming	No statistics are computed because Swimming is a constant. Aerobic physical exercises	- 0.073	0.424
Variables (HHC)			
Washing		- 0.066	0.475
Cooking		0.024	0.790
Gardening		- 0.221	0.015

Table 5: Total Physical activity (PA) differences between Age groups

	18-30	31-40	41-60	Total
Sedentary	15.7%	33.9%	41.3%	90.9%
Light PA	1.6%	4.1%	2.5%	8.3%
Moderate PA	0	0.8%	0	0.8%

Tables 6: Cross tabulation of variables of Sedentary Behaviour (SB) for frequencies with BMI

Variables	No	Yes	
Do you spend >14 hours/week on	(n=115) 95%	(n=5) 5%	Viewing TV?
Do you spend >7 hours/week on	(n=117) 96.7%	(n=4) 3.3 %	Computer usage?
Do you spend more time on	(n=114) 94.2%	(n=7) 5.8 %	Telephone conversation?

Table 7: Relationship of SB with BMI runs by cross tabulation Phi Cramer's V

Variables	Values	Approx.Sig
Do you spend more than 14 hours /week on viewing TV?	0.884	0.204
Do you spend more than 7 hours /week on computer usage?	0.910	0.110
Do you spend more time on telephone conversation?	0.666	0.996

## DISCUSSION

According to the report in WHO (1998) obesity is increasing worldwide at an alarming rate in both developed and developing countries [12] and it is mentioned that the 'nutrition transition' in developing countries, or the shift from traditional diets and lifestyles to 'Western' diets (ie high in saturated fats, sugar and refined foods) and the combination of reduced levels of physical activity and increased stress, particularly in the rapidly growing urban populations are the main causes for this critical condition [15]. The present study was carried out to find out impact of poor physical activity and sedentary behavior t on obesity in Sri Lankan women.

The study shows most of the participants were married (84%), housewives (74%), below the age of 40 (56%). Even though age of most of the participants was less than 40 years, only a poor percentage (37%) of participants completed up to the secondary education or more. 74% of families were ≤ 4 members in a family and 44% of family received a monthly income < LKR 25,000. Only 23% of participants received a monthly income > LKR 50,000. In this study, there was no relationship between overweight/obesity and family income as overweight and obesity percentage found more in the poor income families. Overweight and obesity was found

only among 28.9% of the subjects who completed their secondary education or more and 18,9 % and 10 % of them showed overweight and obesity respectively. Hence, prevalence of obesity associated with the education. Also, while completing the questionnaire it was revealed that almost all the participants (99%) had no awareness that obesity increases the risks for many serious and morbid conditions, such as diabetes mellitus, hypertension, dyslipidemia, coronary artery disease and some cancers. Women with higher levels of education showed the lowest levels of obesity. Therefore, a proper awareness and education about obesity and its risk would minimize the percentages of obesity among Sri Lankan women.

The prevalence of obesity in Sri Lankan population is limited to a few studies. It was reported that a mean BMI of 20.9 kg/m<sup>2</sup> for healthy adult women age 30-65 years has been reported in 1997 [16]. Our study showed the higher mean of 32.01± 4.94 for BMI among overweight/obese women. This may reflect a trend of increasing obesity in Sri Lanka as seen in many countries. According to the data presented 35% of world adult population was overweight and 11% of world population was obese [17], the present study showed an inverse relationship that a significantly higher prevalence of obesity (59%) than overweight (41%). According to a revelation of the

research, South Asian men and women display a greater amount of visceral adipose tissue for a given waist circumference than Europeans [18] similarly, the present study revealed a higher percentage of body fat across a range of waist circumference values. The mean waist circumference, hip circumference and waist to hip ratio were  $104.73 \pm 10.52$  cm,  $109.15 \pm 10.13$  cm,  $0.95 \pm 0.06$  cm respectively. These values are significantly higher than the cut off points reported by WHO in 2008 [11]. A previous study reported that the range of the waist to hip ratio in Sri Lankan women (semi urban localities) was 0.83- 0.88 [14], but the present results showed that the higher range of waist to hip ratio of 0.89 - 1.01 in women indicating a significant increase of this condition.

Our results revealed that the mean systolic and diastolic blood pressure and pulse were within the normal range [14] and the values were in the range between 110-132 mmHg, 70 - 87 mmHg and 64-76 beats per minutes respectively. The age standardized prevalence rate for blood pressure was not carried out in this study.

Obesity itself increases risks for many serious and morbid conditions, such as diabetes mellitus, arthritis and certain other disease conditions [4]. The present study revealed a positive correlation between the above diseases and obesity. The analyze revealed that 63% of overweight or obese women in Sri Lanka related with genetic etiology. Also, 45% of the participants have undergone a surgery and 33% subjects were suffer from joint disorders. Obesity women who suffered from diabetes mellitus and thyroid disorders were 13% and 6 % respectively.

Considering LTPA the present study showed that 90% of women were not walking at least 90 minutes per week and it was revealed that the mode of transportation done by bus, three wheeler or private vehicle and it was found that they walk less than 15 minutes per day. None of the subjects performed swimming as an exercise. It is understood that the participants do not consider swimming as a hard exercise. Majority of women (93 %) did not engage in any kind of aerobic exercise. The relationship between LTPA variables such as brisk walking and aerobic physical exercise with BMI showed a negative correlation (- 0.048) and (- 0.073) respectively and this similarity was shown in recent studies [19]. A positive correlation found between brisk walking and aerobic physical exercise.

In the HHC variables only 33% and 13 % of women reported that they did not engage in washing and cooking respectively but irreversibly 89% of women informed that they were not engaged in gardening. Even though there were no significant relationships between the HHC

variables with BMI. It was found a negative correlation with variable washing (- 0.066) and variable Gardening (- 0.221) with BMI. Researches reveal in many countries that poor physical exercise leads overweight and obesity [18, 19]. Similarly in Sri Lanka influenced of westernization, the transport and to using machineries for house hold chores, women seem to do less activity. Therefore considering TPA more than 90% of overweight/obese women found to be in sedentary level on physical activity. A small amount that was 8% of women fall under the category of light physical activity.

It was reported that the higher BMI was caused due to spent more time on watching TV [20, 21] and computer usage [22]. However when the variables of Sedentary Behaviour (SB) was considered, only 5% of participants watch TV more than 14 hours per week and 3.3% of participants used computer more than 7 hours per week and 5. 8% of participants conversed more time on telephone. Therefore it was an evident that women in Sri Lanka were not spent their time on watching TV or using computer or converse more on telephones. There were strong positive correlations observed between the SB variables with BMI. The correlation for watching TV more than 14 hours per week, used computer more than 7 hours per week and conversed more time on telephone were  $r = .884$ ,  $r = .910$  and  $r = .666$  respectively.

## CONCLUSION

Sedentary behaviors such as watching TV, computer usage and more time spent in telephone were found that they were not the causes for overweight or obesity but the poor LTPA and poor HHC would be influenced the obesity in women in Sri Lanka. Level of income were not affected the level of obesity but the level of education found to be impact in women obesity.

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