

Original Research Article

Prevalence and barriers of physical activity among urban women in Kerala,
South India - A Cross sectional study

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Abstract

Background: Data on physical activity among women in limited in India. The study explores the prevalence ,patterns and barriers of PA (Physical Activity) among women. **Methods:** A cross-sectional survey was conducted among 150 women aged 30 to 60 years in the residential area around Trivandrum medical college. Two stage sampling method was done. Streets were selected by simple random sampling in the first stage. Systematic random sampling was applied in the second stage to select the women. A Semi structured questionnaire incorporating the Global Physical activity questionnaire (GPAQ) was used to capture the patterns and barriers of PA. The physical activities captured in minutes were converted to metabolic equivalent scores (MET scores) to categorize the levels of physical activity. **Results:** The prevalence of self reported adequate physical activity was 28%. Majority of Women were aged between 30 to 45 (64%). Most of the participants were home makers(80.6%), degree holders(78.6%) and belonged to upper and middle socio economic status(74.6%). Women who were in the low PA level (<600 METS/week), moderate PA (600-3000METS/week) and high PA(>3000 METS/week) were 52.6%, 40.6% and 6.6% respectively. More than half of the women (56.6%) were involved in sedentary activities(excluding sleeping) for more than 12 hours./day.The mean (SD) duration of television watching was 5.67hrs (1.2). Women who use “walking” as a mode of transport to nearby places were 62 (41.3%) in number. Only 4 women had the habit of regular physical exercise. Parenting demands, lack of interest, improper time management and lack of encouragement were the major barriers reported. **Conclusions:** The study provides evidence to design effective strategies to promote physical activity to slow down the pace of the escalating burden of non-communicable disease among women of Kerala.

Keywords: Physical activity, Prevalence, Women, GPAQ

INTRODUCTION

Globalization and rapid economic growth over the years has dramatically changed the life style of the population, including eating pattern, physical activity, market, social structures and environmental factors. With the expansion of cities and rural-urban migration, there is a trend in adopting a more urbanized lifestyle, which has a high saturated fatty diet and low levels of physical activity [1].Such changes have paved the way for non communicable or lifestyle diseases as called so. This emerging burden of non-communicable diseases may most likely erode the “demographic-dividend” of India and could hinder the progress of national growth and development. In societies which are undergoing epidemiological transition, there is a loss of biological

delay in the onset of cardiovascular risk factors and diseases in women. This phenomenon suits Kerala more as it is ahead of all the other Indian States in terms of health transitions. Studies focusing on hospital admissions for acute coronary syndrome indicate a steady decline in the male to female ratio from 23:1 to 4:1 from 1967 to 2007 in Kerala [2,3].

Physical inactivity is not only a risk factor for premature death, but also has a role in some chronic diseases and obesity [4]. Women compared to men generally engage in lower levels of physical activity [1]. A significant proportion of women with gradual decline in their metabolic rate after the age of 35 years become a victim to this sedentary lifestyle [5].The world health organization has recommended 150 minutes of moderate-

intensity aerobic physical activity throughout the week or at least 75 minutes of vigorous-intensity aerobic physical activity throughout the week or an equivalent combination of moderate- and vigorous-intensity activity for adults aged 18- 64 years. [6]. The study was designed to find out the prevalence, patterns and barriers of physical activity among urban women of Kerala. It is essential to have a deep understanding of the patterns and barriers of physical activity patterns which would help to devise effective interventions to promote physical activity.

METHODS

Design and Subjects: A cross-sectional survey was conducted in the residential area around the Medical college area in Trivandrum city. It is located in an area with good access to health care and all other facilities like markets, schools, college, electricity, and water. Taking 40 % as the prevalence of physical activity among urban women, a sample size of 150 was calculated, fixing alpha error as 0.05 with a power of 80% [1]. Women between 30 and 60 years who were permanent residents of these areas were included in the study. Pregnant women and those with mental and physical disabilities were excluded. Two stage sampling method was done. In the first stage simple random sampling was used to select the streets by using lot method. Systematic random sampling was applied in the second stage to select the women.

Data collection tool: The Global Physical Activity Questionnaire (GPAQ) was used to capture the levels of physical activity. The instrument captures physical activity across four domains, namely workplace, travel, leisure time and sedentary activities [7]. Physical activity was defined as activities which were continued for at least 10minutes leading to either sweating or an increase in heart rate. For easy understanding the participants were provided with culture appropriate “Activity list” and “show cards” to show different types of vigorous and moderate intensity physical activities. Anthropometric measurements like weight and height were captured in kilograms and centimetres respectively using standardized scales. Body mass index (kg/m²) was classified as normal, overweight, and obese, according to WHO Asian criteria [8]. Details regarding their socio-demographic characteristics, perceived barriers and self reported comorbidities were also collected.

Ethics Statement: The study was approved by the Institutional ethical committee of Government Medical College, Trivandrum. Informed verbal consent was obtained from the participants.

Statistical analysis: The physical activities captured in minutes were converted to metabolic equivalent scores (MET scores)[7]. Women with MET score < 600/week were classified as low levels of physical activity, those with MET score 600-3,000/week as moderate levels of physical activity and those with MET score > 3000 / week as high levels of physical activity.

SPSS version 16 was used for statistical analysis. Descriptive statistics were used for measures of physical activity. Bi variable association was studied using chi-square tests and odds ratios.

RESULTS

The socio demographic and anthropometric details of the participants are given in Table 1. One fourth of the subjects (24.6%) were obese and 64.6% of the women were overweight. Out of the 150 women interviewed only 42 (28%) were adequately physically active satisfying the WHO criteria. The mean (SD) age, weight, height and BMI of the participants were 38.64years (6.8), 65.9kg (8.2), 155.2cm (6.97) and 27.45(3.56) respectively. Levels of physical activity are presented in Table 2. About 52.6% of the women had very low levels of physical activity of <600 METS/ week.

Table 1. Socio demographic and anthropometric characteristics of the participants

Variable	Category	N (150)	%
Age	30 – 45 years	81	54
	45- 60 yrs	69	46
Education	Low (upto 10 th std)	32	21.3
	High	118	78.6
Occupation	Housewife	121	80.6
	Working	29	19.3
Socio-economic status	Upper and middle	112	74.6
	lower	38	25.3
Housing	Katcha	21	14
	Pucca	129	86
Type of family	Nuclear	136	90.6
	Joined	14	9.3
BMI	Normal (18.5 – 22.9)	16	10.6
	Overweight (23 – 24.9)	97	64.6
	Obese (>25)	37	24.6

Table 2. Levels of Physical activity of the participants

Levels	Frequency (n=150)	%
Low (<600 METS/week)	79	52.6
Moderate (600-3000METS/week)	61	40.6
High (>3000 METS)	10	6.6

Table 3. Association between BMI and other socio demographic variables with physical activity

Variable	Inadequate n= 108	Adequate n=42	chi square	p value	OR (95% CI)
BMI					
Overweight& obese	102	32	10.57	<0.001	5.31 (1.61,18.07)
Normal	6	10			
Age					
30 – 45 yrs	63	18	2.92	0.087	1.87 (0.8, 4.09)
45 – 60 yrs	45	24			
Education					
Higher education	86	32	0.21	0.644	1.22 (0.48, 3.08)
Lower education	22	10			
Occupation					
Housewife	98	23	25.1	<0.001	8.1 (3.06, 21.8)
Working women	10	19			
SES*					
Upper & middle	88	24	9.47	0.002	3.3 (1.41,
Lower SES	20	18			

* Socio economic status

Table 4. Association between self reported co morbidities and physical activity

Variable	Inadequate n= 108	Adequate n=42	chi square	p value	OR (95% CI)
Diabetes					
Yes	15	17	6.038	0.014	2.7 (1.20, 6.09)
No	29	89			
Hypertension					
Yes	14	21	1.271	0.26	1.427 (0.284, 1.586)
No	30	85			
CAD*					
Yes	1	3	0.418	0.518	2.442 (0.149, 39.93)
No	43	103			
Hyperlipidemia					
Yes	10	7	8.044	0.005	4.16 (1.468,11.786)
No	34	99			
Osteoarthritis					
Yes	9	16	0.643	0.423	1.446 (0.586, 3.576)
No	35	90			

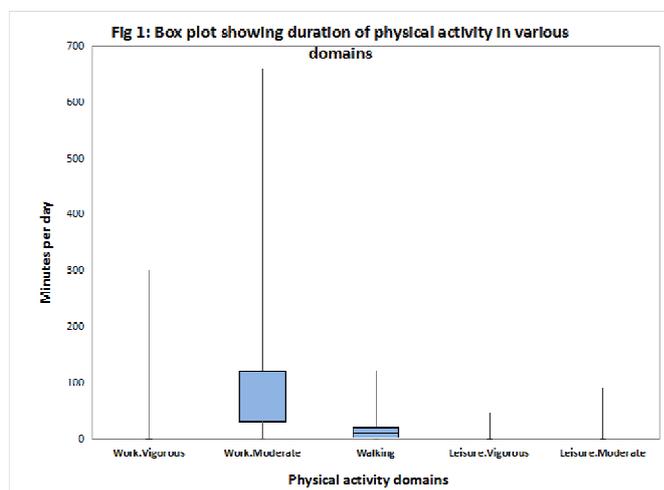
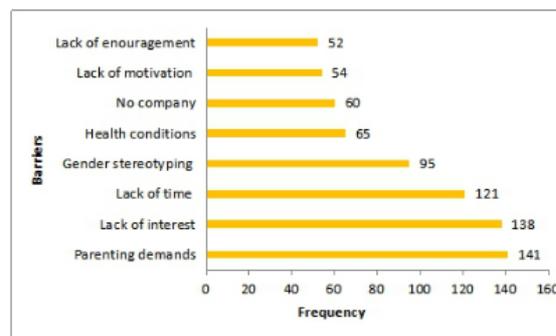


Figure 2. Perceived barriers for physical activity



Out of the total participants 85 women (56.6%) were involved in sedentary activities like television watching, sitting, chatting (excluding sleeping) for more than 10 hours/day. The mean (SD) duration of television watching was 5.67hrs (1.2). Women who use walking as a mode of transport to nearby places were 62 (41.3%) in number. Only 4 women had the habit of regular physical exercise. The mean (SD) duration of physical activity was 72.02 (38.53). The duration of physical activities in each domain is shown in Figure 1. The association between BMI and other socio demographic variables and self reported co-morbidities with physical activity is showed below in Table 3 and Table 4 respectively. The prevalence of diabetes and hypertension were 21.3% and 23.3% respectively. Women who were overweight or obese, housewives and belonging to upper and middle socio economic status were associated with inadequate physical activity. Diabetes and hyperlipidemia were associated with inadequate physical activity. Household chores, lack of interest and lack of encouragement were the major perceived barriers for physical activity for the participants. (Figure 2)

DISCUSSION

The prevalence of adequate physical activity was only 28% which needs to be addressed immediately. ICMR-INDIAB study has reported the prevalence of physical activity among urban women to be even much lower in states like Chandigarh, Maharashtra and Tamil Nadu [9]. Though in our study, it was better compared to the above said parts of country, it needs to be addressed with emergency taking into consideration about the burden of non communicable diseases in Kerala. About 72% of the women in the study had inadequate physical activity which can be attributed to changes in economy and increased mechanization. This adds to the existing evidence of increasing physical inactivity in India, especially in urban areas which is comparable with the West[10]. Violet Jayamani et al has reported the prevalence of high level of physical activity (>3000 METS) to be 32.3% in a study done at Vellore, much higher than our study. The proportion of women who

were overweight and obese in the study was alarmingly high. This indicates the obesogenic environment in which women of urban Kerala live in [11]. Findings from various other studies too point out the high prevalence of obesity and overweight among women of Kerala [12,13] The study further adds to the evidence that inadequate physical activity is associated with overweight and obesity. Human body's energy expenditure is largely determined by one's physical activity which in turn has a major role in the body's energy balance and weight control. An imbalance between energy expenditure and energy intake leads to obesity, which is the most obvious sign of physical inactivity [14].

The study shows that housewives were associated with inadequate physical activity. This may be due to the fact that their involvement in household chores leaves them with little time for physical activity. It is noteworthy mentioning that majority of women in the study had reported household chores as major barrier for physical activity. There was a significant association between upper socio economic status and inadequate physical activity. This can be explained by the fact of increased mechanization for household works and increased dependence of motor vehicles for transport as the socio economic status increase in developing countries. This finding was supported by evidence by Sullivan et al in India [15]. This finding was contradictory to findings from western countries where physical inactivity increases as the level of socio economic status (SES) decreases due to lack of knowledge and lesser accessibility to physical activity among the lower SES group[16,17]. The proportion of women with sedentary activity was also high in the study. This was supported from evidence from Singh RB et al who has reported the high prevalence of sedentary behavior among physical activity can be attributed to various reasons. Rapid urbanization, labour saving devices both at home and work place, the dominance of auto mobiles for travel and increased dependence on computers and telecommunication technology plays a major role in promoting sedentary lifestyle [18]. One of the explanations can be that cultural values held by the people do not encourage people to be physical active. It is a hard core fact that many people in Asia believe that a larger body is associated with better health than being thin[19].It was further substantiated from the finding that majority of the women in the study reported that they were not interested in physical activity. Majority of the women reported parenting demands and lack of time as major barriers. This was supported from evidence from various parts of the world where the cultural belief is that women are meant to perform domestic duties over all other activities [20,21] .Parenting and care taking responsibility leaves women with very less time for

physical activity. This was also supported from evidence presented by Azaar Farooq et al and Aliya Darr et al[22,23].

Kerala is the “Diabetic capital of India”. Different states in India's are at different stages of demographic and epidemiological transition. Hence, a higher prevalence of diabetes could be expected in Kerala since Kerala has the highest proportion of elderly in the country [24].The prevalence of diabetes in the study population was very high (21.3%) compared to other parts of the country. This is substantiated by evidences generated by Regi et al and Vijayakumar G et al from different studies in Kerala [24,25] . Even with the limitation that the co morbidities were self reported, the study further adds to the evidence of association between inadequate physical activity and CVD risk markers like diabetes and hyperlipidemia [15] .Similar findings were reported by K.R. Thankappan et al in the same geographic location [26]. There is always an element of recall bias and impreciseness in subjective measurement of physical activity. In spite of such limitations, subjective methods still remains as the most dominant tool in countries like India as it is relatively easier for the participants and well as its low cost. The study brings to the limelight the low prevalence of physical activity and its barriers among urban women which would provide evidence to design effective strategies at individual and community level to promote physical activity. Such interventions could slow down the pace of the escalating burden of non communicable in the state of Kerala. In the long run, such practices would culminate healthy behaviour and change the gender stereotyping among women of Kerala.

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