Original Article

Physical Activity Levels, Motivators and Barriers to Exercise among Men and Women Aged 30 to 50 Years in Rourkela, India

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ABSTRACT

Background: Literature suggests that middle age is a period with increasing sedentary behavior and health risks. **Objective:** We conducted the present study to assess physical activity levels of the adults aged 30–50 years and understand the motivators and barriers to regular physical activity. **Materials and Methods:** A cross-sectional study was conducted among 100 adults aged 30–50 years residing in Rourkela, Odisha. The physical activity levels of the adults were assessed using Bouchard's Physical Activity Record. Height, weight, and waist circumference of the participants were measured using standard procedures. A self-administered questionnaire was prepared to identify the motivators and barriers to physical activity/exercise behavior. **Results:** Nearly half of the participants were obese, 23.3% were overweight and 28% had a normal body mass index. Based on WC and waist-to-height ratio (WHtR), 84% and 79.3% of the participants had metabolic risk, respectively. Over half of the participants were physically inactive. Predominantly, low-intensity activities (yoga, slow walking) were performed as it was assumed to be sufficient. The main motivators of physical activity/exercise behavior were health scare, health benefits, weight loss, availability of resources at convenient time, and better looks. The chief barriers for exercise behavior were lack of motivation, weather, safety concerns, and lack of time. **Conclusion:** Despite over two-third of participants being overweight/obese, 90% of the physically active participants failed to meet the World Health Organization recommendations. Government, community, and individual participation are imperative to formulate interventions strategies to reduce the barriers to physical activity.

Keywords: *Barriers, low-intensity activities, motivators, obesity, physical inactivity*

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Introduction

World Health Organization (WHO) recommended "at least 150–300 min of moderate-intensity aerobic physical activity per week or 75–150 min of vigorous-intensity aerobic physical activity per week".[1] According to the WHO, insufficient physical activity is one of the leading risk factors for the development of noncommunicable diseases (NCDs) such as diabetes, hypertension, and cardiovascular diseases.[1] From 2001 to 2016, the prevalence of physical inactivity has doubled in high-income countries as compared to the low-income countries.[2] Even in India, a study conducted in Tamil Nadu, Jharkhand, Maharashtra, and Chandigarh indicated that only <10% engaged in recreational physical activity.[3]

Lately, there has been an increase in the awareness among people regarding the importance of physical activity. People have recognized the lack of sufficient activity as a potential risk factor for the development of several morbidity conditions. Studies have identified

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motivating factors such as health, body image, fitness, and social influence.[4-6] Lack of time, space, motivation, and environmental issues were common barriers.[4-7] Besides these, cultural factors, gender, and social factors may also influence the motivators and barriers. In India, very few studies have explored the barriers and facilitators of physical activity among adults.[4,8]

Middle age is the period where men and women shoulder immense responsibilities in their personal and professional lives. Their focus drifts from self to family, career, and other commitments. Several studies from India have reported that with an increase in age sedentary behavior became more prominent.[9-11] They are more likely to gain weight and are at a higher risk of developing chronic diseases than their younger counterparts. Keeping this in mind, the present study was conducted to assess the physical activity levels of the adults aged 30–50 years and identify factors influencing their exercise behavior. This study also attempts to uncover the sex-related differences in physical activity levels as well as the motivators and barriers for the same.

Materials and Methods

Ethics

The study was approved by Institutional Human Ethics Committee, Mount Carmel College, Autonomous, Bengaluru (IHEC – MCC No. 008 Msc/2020-21).

Design and setting

A cross-sectional study was carried out among the adults of Rourkela city, Odisha. The participants included in the study were Steel Authority of India Limited (SAIL) employees who had shift jobs and weekly a day off on any day of the week. Other participants included in the study were their family members who worked in various sectors such as academics, banks, corporates, and homemakers. The study was conducted from December 2020 to March 2021. During this period, the lockdown restrictions of the first wave of the pandemic had been relaxed to some extent. The employees of SAIL were working physically at the steel plant while their family members who worked elsewhere were working from home.

Selection of the sample

The sample size for the study was computed using EZR (version 1.55)[12] using 54.4% prevalence of physical inactivity, 10% margin of error, and 95% confidence level.[3] The estimated sample size was 96 participants. One hundred adults aged between 30 and 50 years who were willing to observe their activity closely and record for a day were included in the study. Participants who were suffering from any physical disabilities or conditions wherein physical activity was limited, for example, cardiac, orthopedic conditions, and individuals involved in outdoor sports at professional level were excluded from the study.

Anthropometric measurements

Anthropometric measurements of the participants such as height, weight, and waist circumference (WC) were measured. The subjects were weighed using a weighing scale (Dr. Gene RTZ – 113) with an accuracy of 0.1 kg and without heavy clothing. The height and WC of the participants was measured with a flexible tape following standard procedures.[12] We classified the participants as per their body mass index (BMI), WC and WHtR.[13-15]

Physical activity

The physical activity level of the adults was assessed using the Bouchard activity record (BAR).[16] For the present study, BAR was used to record the activity of the participants only for a single working day. Maintaining a 3-day record would have been tedious for the participants. For each activity of the day, the metabolic equivalent of task (MET) values was gathered.[17] The activities for the day were broadly classified into three categories, i.e., low-intensity (MET - <3), moderate-intensity (MET - 3–6), and vigorous-intensity (MET - >6) activities.

Factors influencing physical activity

Based on the available literature, potential factors that were likely to motivate and deter their exercise behavior were identified. The identified factors were grouped under the following heads – health-related, availability of resources, perception about exercise, environmental, social influence, and individual factors.[4,7,18] The factors were assessed through a self-developed questionnaire on a five-point Likert scale (strongly agree to strongly disagree).

The questionnaire was divided into two sections, i.e., "Motivators for physical activity" and "Barriers for physical activity" [Table 1]. Participants who reported no physical activity were asked to fill the barriers and for the motivators, they were asked as to what could have motivated them to participate in regular physical activity. The scoring for the motivators and barriers was done on a scale of 1–5, wherein 1 = strongly agree, 2 = agree, 3 = neither agree nor disagree, 4 = disagree, and 5 = strongly disagree.

Table 1: List of motivators and barriers for physical activity/exercise identified from literature

Categories	Motivators for physical activity
Health related	I exercise because it is beneficial to health
	I exercise because it reduces stress
	I exercise to lose weight
	I have been advised to exercise by a health professional
	A health scare prompted me to exercise
Availability of resources	There are a wide range of exercise classes and facilities for me to attend
	Exercise facilities are available at times that suit me
	An exercise trainer or a yoga instructor is always available at the time that suits me
Social influence	My friends and family encourage me to exercise
	I exercise because I like spending time with my friends while doing this activity
	I exercise because my friends and family want me to lose weight
	I exercise because I want to lose or maintain weight so that I look better
Individual factors	Exercising makes me happy
	Exercising keeps me active the whole day
	I like to set exercise goals for myself
Categories	**Barriers for physical activity**
Perception about exercise	I lack the motivation and willpower required for exercising
	I do not enjoy exercising
	Bad weather puts me off exercising
	I am too tired to exercise daily
	I worry that I might injure myself while exercising
	I am too old to exercise
Environmental factors	Exercise facilities are not available at times that suit me
	I don't feel safe at the gym
	I don't feel safe to walk on roads or parks alone
	I find it too expensive to join a gym for exercising daily
	I don't have enough space around to exercise
	I don't have proper access to gym facilities
Social factors	I don't feel like working out/exercising alone
	I am more likely to perform physical activity daily when I have someone to do with me
Individual factors	My friends and family believe I am too old to exercise
	No time for exercise
	I don't know which exercises to do and how
	I am often worried about the way I look during exercising
	I don't exercise because I worry that everyone will be younger than I am
	I don't have enough time to exercise daily

Socioeconomic status

The socioeconomic status (SES) of the participants was assessed using the Updated Modified Kuppuswamy scale.[19]

Data collection

Participants were explained about the purpose of the study in the local language and were enrolled after obtaining a written informed consent. Following this, the height, weight, and WC of the participants were measured. A physical activity record BAR was given to the participants wherein, the participants had to record their activities for a 24-h period on a weekday/working day. As this study was conducted post lockdown in the first wave of COVID-19, all appropriate safety precautions were followed while recording the anthropometric measurements and data collection by the researcher and the participant.

Statistical analysis

Statistical analysis was performed using IBM SPSS (version 20.0). The normality of the data was determined using the Shapiro–Wilk test. As the variables were not normally distributed nonparametric tests were carried out. Mean ± standard deviation (SD), median, and frequency distribution were done for quantitative and categorical variables, respectively. MannWhitney *U* test was done to find out the difference in the BMI, WC, WHtR, and physical activity levels between the sexes and the age groups.

Results

Of 100 participants who took part in the study, 50 were male and 50 were female. The median age of the participants was 39.5 years. Among the participants, majority of the heads of the family were graduates (55%), 27% had completed honors or professional courses, and remaining 18% had completed their intermediate or diploma. About 53% of the family heads worked as technicians and associate professionals, 30% were professionals and 11% worked as legislators, senior officials, and managers. Majority of the participants belonged to the upper-middle (71%) class whereas 29% were from the upper class. Further, none of the participants were from the lower or lower middle class.

Nutritional status of the participants

The anthropometric measurements of the participants are summarized in Table 2. In the present study the overall median and mean BMI of the participants were 24.56 kg/m^2 and 25.51 ± 4.30 kg/m,^{2} respectively. The median BMI of female participants was significantly higher compared to the male participants of 40–50 years (P = 0.047). In the 30–39 years of age group, the median WC of males was significantly greater than that of females (P = 0.003). Participants in 40–50 years (median = 103.75 cm) had greater WC than the participants in 30–39 years (median = 95.5 cm, U = 1050, P = 0.003). Similar findings were noted for WHtR as well (30–39 years = 0.58, 40–50 years = 0.61, U = 898.5, P = 0.015).

The nutritional status of the participants according to their BMI is given in Figure 1. Nearly half of the participants (48.7%) were obese and 23.3% of participants were overweight. Twenty-eight per cent of the participants had a normal BMI (18.5–22.9 kg/m^2). Overall, greater proportion of female participants was found to be overweight (Female = 24% vs. male = 22%) and obese (Female = 54% vs. Male = 38%) compared to the male participants (χ^2 = 0.132, P = 0.037). In addition, among the participants in 30–39 years, 34% had normal BMI, 26% were overweight and 40% were obese. Among the participants in 40–50 years, 28% had normal BMI, 20% were overweight and about 52% were obese. Further, about 84% of the participants were at metabolic risk according to their WC and about 79.3% according to their WHtR.

Physical activity of the men and women

The physical activity levels of the study participants were quite poor. Half of the participants (52%) were physically inactive and 18% were found to be involved in regular physical activity. Majority of the participants belonging to the upper class (41.4%) engaged in regular physical activity compared to the participants belonging to the upper-middle class (8.7%). Across the ages, it was observed that a greater proportion of male participants performed exercise daily (28%) compared

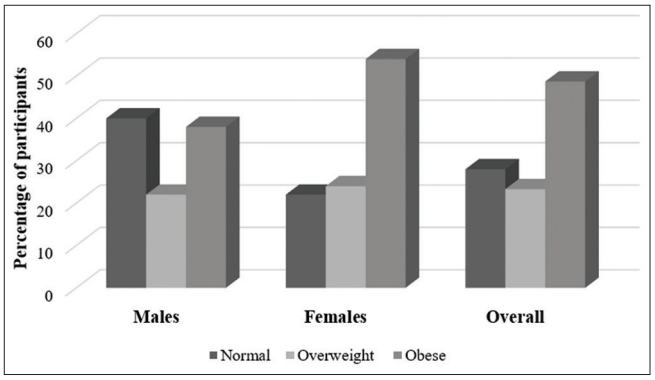

Figure 1: Distribution of participants across the body mass index categories

Table 2: Median (mean±standard deviation) of anthropometric measurements and measures of central adiposity of the male and female participants

Variables	Male	Female	Mann–Whitney U (Z)	P
30–39 (years)				
Weight (kg)	72 (71.44±6.37)	58 (61.16±8.04)	110.00	0.0001*
Height (cm)	172 (172.10±9.80)	156 (156.24±6.03)	45.50	0.0001*
BMI (kg/m^2)	23.78 (24.26±2.75)	24.45 (25.13±3.74)	281.00	0.541 (NS)
WC (cm)	100 (99.08±8.75)	91 (89.96±11.14)	160.50	0.003*
WHtR	0.57 (0.57±0.52)	0.57 (0.57±0.74)	299.00	0.793 (NS)
40–50 (years)				
Weight (kg)	72 (74.64±12.09)	65 (66.04±8.79)	196.00	0.024*
Height (cm)	172 (173.94±12.32)	155 (155.06±6.82)	43.50	0.0001*
BMI (kg/m^2)	23.79 (25.07±5.61)	28.57 (27.57±4.10)	210.00	0.047*
WC (cm)	102 (107.70±17.24)	106 (100.22±14.81)	257.50	0.286 (NS)
WHtR	0.58 (0.62±0.12)	0.69 (0.64±0.10)	270.00	0.410 (NS)

*P<0.05 (significant). NS: Nonsignificant, BMI: Body mass index, WC: Waist circumference, WHtR: Waist-to-height ratio

to the female (4%) participants. Further, the participants belonging to 40–50 years (28%) were involved in regular physical activity compared to the participants from 30 to 39 years (8%).

Intensity of the physical activity of the participants

Table 3 represents the median and mean ± SD of the duration of time (minutes) spent by the participants and MET values of different intensity activities. The participants spent the majority of their time in low-intensity (959.85 ± 56.30 min) activities compared to moderate (19.80 ± 34.89 min) or vigorous-intensity (0.30 ± 2.11 min) activities. The predominant low-intensity activities performed by male and female participants were slightly different. Majority of the female participants were homemakers due to which they were mostly involved in low-intensity household chores such as cooking, serving, and cleaning. Males were mostly involved in desk work or supervision which involved long sitting hours. Other low-intensity activities performed by the participants included yoga, sitting and talking, watching television, lying down, eating, and sleeping. The moderate-intensity activities performed by the participants were walking, household chores such as cleaning that required moderate effort, and grocery purchasing. The vigorous-intensity activities that were carried out by the participants were jogging and aerobic training in the gym. From the results of the present study, it was further noted only 6% of participants fulfilled the WHO recommendations on physical activity. Others were found to engage only in low-intensity activities such as yoga and slow walking.

Table 3 indicates the time spent and the corresponding MET values for different intensities of activity of the participants according to their age group and gender. No significant difference was observed between time spent in low (P = 0.384), moderate (P = 0.156), and vigorous (P = 1.000) intensity activities between the age groups. A significant difference was observed in the MET values for low-intensity activities for both the age groups, indicating that the majority of the participants belonging 40–50 years performed low-intensity activities of high MET values compared to the participants belonging to 30–39 years. Men reportedly spent more time in moderate-intensity activities. Further, men performed low-intensity (P = 0.0001) and moderate-intensity activities (P = 0.004) with higher MET values as compared to women.

Table 4 represents the time spent in different intensities of activities performed by the participants across their SESs. Upper SES spent higher amount of time in moderate-intensity activities than upper-middle SES (P = 0.001). Further, it was also found that upper SES participants were involved in moderate-intensity activities with higher MET values compared to the upper middle class (P = 0.001).

Factors motivating exercise behavior

The factors that motivated the male and female participants were different [Table 5]. Men were motivated to exercise owing to the perceived health

Table 3: Duration (min) and metabolic equivalent of task values for different activities across age groups and sex

Intensity of activity	30–39 (years)		40–50 (years)		Overall	Mann-Whitney U (Z)	P
	Median	Mean±SD	Median	Mean±SD	Mean±SD (median)		
Time (min)							
Low intensity	960	956.10±57.48	982.50	963.60±55.43	959.85±56.30 (960)	1125.50	0.384 (NS)
Moderate intensity	0	15.30±30.37	0	24.30±38.67	19.80±34.89 (0)	1075	0.156 (NS)
Vigorous intensity	0	0.30±2.12	0	0.30±2.12	0.30±2.11 (0)	1250	1.000 (NS)
MET							
Low intensity	1540.50	1535.48±180.25	1585.50	1609.31±182.50	1572.39±184.23 (1553.75)	964	0.049*
Moderate intensity	0	59.37±121.38	0	95.66±157.33	77.51±140.98 (0)	1076	0.159 (NS)
Vigorous intensity	0	2.35±15.90	0	2.64±18.66	2.44±17.25 (0)	1249.50	0.989 (NS)
Intensity of activity	**Male**		**Female**		**Overall**	**Mann-Whitney U**	**P**
	Median	Mean±SD	Median	Mean±SD	Mean±SD (median)		
Time							
Low intensity	960	953.70±55.39	990	966±57.09	959.85±56.30 (960)	1036.5	0.136 (NS)
Moderate intensity	0	30±42.10	0	9.60±21.80	19.80±34.89 (0)	887.5	0.003*
Vigorous intensity	0	0.30±2.12	0	0.30±2.12	0.30±2.11 (0)	1250	1.000 (NS)
MET							
Low intensity	1475.25	1480.04±126.85	1648	1664.75±187.29	1572.39±184.23 (1553.75)	537	0.0001*
Moderate intensity	0	118.94±172.92	0	36.09±82.19	77.51±140.98 (0)	892	0.004*
Vigorous intensity	0	2.64±18.66	0	2.25±15.90	2.44±17.25 (0)	1249.50	0.989 (NS)

*P<0.05 (significant). NS: Nonsignificant, MET: Metabolic equivalent of task, SD: Standard deviation

Table 4: Time spent and metabolic equivalent of task values in different activity intensities by the participants belonging to different socioeconomic status

Levels of activity intensities	Socioeconomic status	*n*	Mean rank	Median	Mann–Whitney *U* (*Z*)	*P*
Time						
Low intensity	Upper	29	46.52	960	914	0.375 (NS)
	Upper middle	71	52.13	975		
Moderate intensity	Upper	29	63.47	30	653.50	0.001*
	Upper middle	71	45.20	0		
Vigorous-intensity	Upper	29	49.50	0	1000.50	0.364 (NS)
	Upper middle	71	50.91	0		
MET						
Low intensity	Upper	29	53.72	1563	936	0.478 (NS)
	Upper middle	71	49.18	1548.50		
Moderate intensity	Upper	29	63.57	105	650.5	0.001*
	Upper middle	71	45.16	0		
Vigorous-intensity	Upper	29	49.50	0	1000.50	0.364 (NS)
	Upper middle	71	50.91	0		

*P<0.05 (significant). NS: Nonsignificant, MET: Metabolic equivalent of task

Table 5: Factors motivating male and female participants to exercise/physical activity

Motivators	Male, *n* (%)	Female, *n* (%)
Health		
Health benefits	27 (54)	26 (52)
Reduces stress	15 (30)	20 (40)
Weight loss	19 (38)	34 (68)
Advised by health professional	20 (40)	24 (48)
Health scare	23 (46)	38 (76)
Availability of resources		
Availability of facility/resources	15 (30)	28 (56)
Availability of facilities at convenient time	20 (40)	33 (66)
Availability of trainer at suitable time	6 (12)	16 (32)
Social influences		
Encouraged by family/friends	17 (34)	18 (36)
Others want you to lose weight	4 (8)	20 (40)
Individual factors		
Better looks	10 (20)	28 (56)
Makes you happy	3 (6)	7 (14)
Keeps you active whole day	8 (16)	10 (20)
Exercise goals	2 (4)	6 (12)

benefits of exercise (54%) followed by health scare (46%), advice by health professional (40%), and availability of resources at a convenient time (40%). On the other hand, female participants were drawn toward exercise due to health scare (76%), weight loss (68%), availability of resources at a convenient time (66%), availability of resources (56%), better looks (56%), and health benefits (52%).

Barriers to exercise

Among the barriers to exercise, majority of the men considered bad weather (92%) as the main deterrent followed by lack of motivation to exercise (70%) and lack of time (38%). For women, unsafe roads/parks (76%) followed by lack of motivation to exercise (70%), bad weather (68%), lack of time (66%), and unavailability of resources at suitable time (52%) were the main barriers to exercise [Table 6].

Discussion

Our study highlights a high prevalence (72%) of overweight/obesity and abdominal obesity (80%) among the participants. Despite this, a miniscule of 6% of the participants met the WHO's recommendation for physical activity. Majority of them engaged in low-intensity activities which they considered would suffice to maintain their health. We found sex-related differences in the type of activities performed as also the motivators and barriers for the same.

We observed a high prevalence of obesity (48.7%) and overweight (23.3%) among our participants. Cross-sectional studies using nationally representative data support the rise in the prevalence of obesity to 34–36% in the past decade.[20,21] Further, during the pandemic, the prevalence of obesity has been noted to have escalated.[22] Furthermore, it is important to note that several studies have used Caucasian BMI cut-off (overweight >24.9 kg/m^2; obesity >29.9 kg/m^2) for classifying Indians. On the other hand, we have used the Asian cut off (overweight >22.9 kg/m^2; obesity >27.5 kg/m^2).[23] These points can explain the high prevalence reported by our study.

We found high levels (52%) of physical inactivity despite high levels of obesity. Similar results were also reported several other studies.[3,10,24-26] Similar to the present study Aslesh *et al.*[27] in their study revealed that there was no significant difference between the level of physical

Table 6: Perceived barriers to exercise/physical activity by male and female participants

Barriers	Male, *n* (%)	Female, *n* (%)
Perception about exercise		
Lack of motivation	35 (70)	35 (70)
Lack of enjoyment	16 (32)	20 (40)
Too tired to exercise	17 (34)	18 (36)
Worried of injury	6 (12)	9 (18)
Too old to exercise	5 (10)	1 (2)
Environmental factors		
Bad weather	46 (92)	32 (68)
Unavailability of facilities at suitable time	10 (20)	26 (52)
Unsafe at gym	0	12 (24)
Unsafe on roads/parks	0	38 (76)
Too expensive to join gym	7 (14)	13 (26)
Unavailability of space to exercise	8 (16)	13 (26)
No access to gym	70 (14)	17 (34)
Social influence		
Do not feel like exercising alone	7 (14)	13 (26)
Likely to exercise with someone	10 (20)	24 (48)
Individual factors		
Lack of time	19 (38)	33 (66)
Worried everyone would be younger	1 (2)	2 (4)
Worried about looks	3 (6)	16 (32)
Lack of knowledge about exercise	4 (8)	11 (22)

activity and age groups (P = 0.900). However, our findings highlighted those participants aged 40–50 years performed low-intensity activities of higher MET than those aged 30–39 years. This difference was because many participants aged over 40 years were suffering from NCDs. As a result of this, they participated in yoga and other low-intensity exercises to manage their health.

We found gender differences in the duration and MET of the activities. Females spent more time in low-intensity activities (particularly household chores) than males. In Indian households, women are so actively involved in household chores that they barely find time to actively engage in structured physical activity. Evidence shows that the majority of adult women consider doing their household chores as a form of exercise, thereby failing to meet the physical activity recommendations by the WHO.[4,9] However, in our study, females were involved in low-intensity activities with higher MET values (household work such as cooking, cleaning, and washing) compared to the male participants who were involved in activities with lower MET values (such as deskwork). Similar findings were reported by Tripathy *et al.*[28] where females showed substantially higher levels of light physical activity than males.

We found that participants belonging to the upper class were found to be more engaged in moderate-intensity activities with higher MET values compared to the others belonging to the upper-middle class. This was due to easy access and availability of the resources to the upper-class participants. Eime *et al.*[29] reported that there was an increase in the regular physical activity participation with an increase in the SES of the participants. High SES has been associated with greater choices, availability, accessibility, and affordability of resources. Further, the built environments such as parks, gyms, well-maintained broad roads, sidewalks had a reasonable effect in motivating participants to engage in physical activity more frequently.

The present study was conducted post lockdown during the first wave of COVID-19 in India. About 23% of our participants revealed that their physical activity levels had increased and 14% reported that their activity had decreased during the pandemic. The reasons that were cited for the decrease in their physical activity levels were reduced accessibility to exercise facilities (parks and gyms) due to the lockdown. Thus, they were involved in low-intensity activities such as yoga and slow-paced walking. A similar pattern in physical activity changes was also seen in the study done by Pérez-Rodrigo *et al.*[30] where about 29.5% of the adults were less active, 31.4% were more active, and 39.1% were active as usual during the pandemic. Chopra *et al.*[31] reported that there was a decline in the moderate-intensity exercise participation ($P < 0.05$) among their participants and a significant increase in the household tasks ($P < 0.001$) during lockdown restrictions due to COVID-19. It was also observed in another study among young adults (20–21 years) that there was a decline in the physical activity levels of active individuals during the lockdown whereas an opposite pattern was observed in nonactive participants.[32]

Motivators for physical activity and exercise behavior

Health-related issues were considered to be one of the major motivating factors. Abraham[33] reported that family history of diseases and health scare in the family proved to be a positive influencing factor for physical activity among the participants. In our study, health scare was a more common motivator in the younger women (30–39 years) as a majority of the participants reported that they were aware of the risk of developing chronic disorders later in life due to their BMI, central adiposity, family history, and lifestyle. Further, majority of the women participants aged 30–39 years considered engaging in physical activity when advised by a health professional (64%) compared to other participants.

Weight loss was considered as a main motivator by women aged 30–39 years (80%) as compared to men

and older women. Participants of the present study indicated that their attempts to lose weight were motivated by dissatisfaction with their body size and determination to achieve their desired weight. Clothing was also a concern among the female participants. When compared to plus-size clothes, smaller-size clothes were more readily available in the markets with greater varieties and at a cheaper price. Similar findings were also reported by other studies wherein dissatisfaction with their physical appearance was the major driving factor for women to participate in physical activity.[8,34-36] Despite the fact that they were aware of the health benefits of exercise, body image was a powerful motivator to exercise.

The availability of resources at a convenient time was seen to as a motivator among women more than men. van Uffelen *et al*.[37] also observed in their study that women preferred to exercise at a fixed time according to their convenience compared to men. This is owing to the responsibilities at home and the professional front that women shoulder.

Majority of the female participants of the age group 30–39 years (80%) reported better looks as another motivator for being physically active compared to the older female participants (32%). van Uffelen *et al*.[37] observed that women were twice as likely as men to be motivated by reducing or maintaining weight and better looks for engaging in regular physical activity. Women are known to be more conscious about their looks. They are often judged at their workplace and home for it. Moreover, good looks boost their confidence and self-esteem.[8]

Barriers to physical activity/exercise behavior

Bad weather such as rain and winter was the most commonly reported barrier among the environmental factors by men (92%) than women (66%). Winter cold, incessant rains, cyclones, and harsh summers hinders their regular walks and going to the gyms/parks. Further, women felt unsafe at the gym (24%) and on roads/parks alone (76%). Isolated, poorly lit streets, distance to the gym/parks, presence of greater proportion of males at gyms/parks, fear of dogs, eve-teasing, and instances of sexual harassment rise security concerns for women and their family. Studies have reported that the physical environment, including the availability and accessibility of services and facilities, travel time/distance, walkability, built environment, maintenance, safety, costs, and weather influence adult physical activity levels.[5,7,8] Owing to such unconducive environmental factors, majority of participants favored walking as a preferred exercise because it was inexpensive and could be performed anywhere.

Several studies have reported a lack of motivation as a key barrier.[4,38] Self-determination theory (SDT) explains motivation as a continuum from amotivation-intrinsic motivation– extrinsic motivation. Antony and Azeem[39] found that obese university students had higher amotivation and poor intrinsic motivation. However, we did not study the motivation levels as per SDT.

Lack of time was a common barrier reported especially by females (66%) as compared to males (38%). This is because women were mostly involved in household activities and had several family responsibilities and professional commitments, leaving little time for being physically active. Participants also acknowledged that time management was an issue even when they had ample time. Several studies reported similar findings.[33,40-42]

Conclusion

Despite the high levels of overweight/obesity among the adults, the level of physical activity was dismal. This is a huge cause of concern keeping in mind the ongoing pandemic. Government, communities, and individuals need to work together to reinforce the motivating factors and reduce the barriers. Micro-communities such as residential complexes, housing societies, and offices need to take cognizance of the state of the roads, pavements, street lights, parks/gyms and strive to improve the infrastructure with the support of the local government. At the individual level, people need to enhance time-management skills to include exercise as an integral part of their routine. Schools/colleges, health professionals, and government should focus on educating the individuals/communities to involve in regular physical activity since early years and not only when there is a metabolic risk or only for disease prevention. Awareness and education about the types of physical activities to be performed are likely to play a major role in increasing the activity levels of the participants.

Availability of data and materials

Data and materials can be assessed upon request to the corresponding authors

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Conflicts of interest

There are no conflicts of interest.

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