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Original Research Article

Physical activity profile of children, men and women from urban low middle income families

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ABSTRACT

Background: Globally there had been a progressive reduction in moderate physical activity. Despite intensive behavioural change interventions, physical inactivity remains a major public health problem in all countries.
Methods: A study was taken up in urban low-middle income families to obtain information on time spent and intensity of physical activity in different domains using 24-hour physical activity recall. Problems faced by persons trying to improve activity and their suggestions on how cope with existing constraints were ascertained.
Results: Children spent 7-8 hours in school; men spent 8-9 working and women spent over 6 hours in household chores. All the family members spent 12-14 hours in sedentary activities. Nearly 80% of women in 19-49 years of age, had adequate physical activity (600 or more MET min/week); over 80% of men and nearly 2/3rd of the children was sedentary. Less than 20% of women and 10% of men beyond 50 years had adequate physical activity. Sedentary persons were unable to increase moderate physical activity by brisk walk because the roads were uneven, crowded and slippery. They did not have the space at home to undertake exercises.
Conclusions: There is an urgent need to find out feasible methods to increase moderate physical activity within the existing constraints, so that sustained improvement in moderate physical activity can be achieved.

Keywords: Physical activity, Domain of physical activity, Intensity of physical activity, Men, Women, Children, Constraints faced in increasing physical activity

INTRODUCTION

The importance of adequate physical activity for maintaining optimal body weight, muscle and joint health and prevention of cardiovascular diseases is well known. Globally, over decades, there had been a trend toward mechanization of the work, household chores and transport domains leading to progressive decline in physical activity of persons.[1] Over time, sedentary lifestyle and unhealthy dietary changes led to rise in prevalence of over-nutrition, hypertension, and diabetes.[2] Five decades ago, majority of Indians were physically active because most of the work in occupational and household domains was carried out manually; workplaces or schools were reached by walking.[3] In the last three decades, there had been increasing mechanization in the work, home and transport domain and progressive decline in physical activity.[3] Concurrently, there has been reduction in poverty and improvement in household food security.[4,5] Research studies have reported that steep decline in physical activity and not so steep reduction in energy intake resulting in small but sustained positive energy balance, were the major factors responsible for the progressive increase in over-nutrition in India.[6-8] Studies in the current century, mostly from developed countries and surveys and small-scale studies on physical activity level in different regions of India, have documented that physical activity of majority of the adults was inadequate.[6-18] But there were substantial differences in the reported magnitude of inadequate physical activity.

To bring uniformity in the data collection and reporting of physical activity WHO developed Global Physical Activity Questionnaire (GPAQ) and analysis guide.[16] The GPAQ has been validated in multi-country studies and then incorporated as a part of the WHO's non-communicable diseases (NCD) surveillance programmes.[20]

The growing concern globally and in India over the lack of adequate physical activity is mainly due to the association between inadequate physical activity and increase in the risk of hypertension, diabetes, cardiovascular diseases and premature death due to NCD, especially from cardiovascular diseases.[21-23] Realizing the importance of increasing moderate physical activity to halt the rise in over-nutrition and NCD, WHO has published guidelines for promoting physical activity.[24-26] Sustainable Development Goal targets for 2030 include reducing physical inactivity by 15%, halting the increase in over-nutrition and reducing by one-third premature mortality from NCDs through prevention and treatment of NCDs.[27] Available meagre data from across countries, and pilot studies undertaken by our institution in urban low middle income population indicate that the response to interventions aimed to increase moderate physical activity both in clinical and NCD programme settings were sub-optimal and not sustained.[28-31] It is possible that the response might be better if attempts are made to obtain detailed information on the lifestyle and activity pattern of the individuals, barriers faced in increasing physical activity and then try to evolve through discussions, appropriate and personalized advice on how to increase physical activity.

A study was taken up in urban low middle income families to obtain information on physical activity of available and consenting members of families using 24-hour physical activity recall proforma to: Assess time spent and intensity (sedentary, moderate, and vigorous) of activity in different domains (household, occupational, transport, personal/grooming, entertainment and discretionary activity) and assess proportion of persons with inadequate physical activity. An attempt was made to obtain detailed information on the lifestyle and activity pattern of the individuals and to explore the barriers faced by persons with inadequate physical activity when they tried to follow the WHO recommendations to improve discretionary moderate physical activity and undertake 150-300 minutes of brisk walking per week. These data may be useful in evolving personalized and feasible advice on how to increase physical activity.

METHODS

An observational study was undertaken in urban low middle-income families residing in selected ICDS blocks in South West Delhi. Information about the study was provided and the study information sheet was given to the families. A week later the families were contacted; informed consent was obtained from families and persons who were willing to participate in the study and provide information on physical activity. Enrolment of persons for this cross-sectional study was done between 1st January 2018 and 31st December 2018. Data on socio-demographic profile of the family and composition of the family were collected. Height and weight were measured in all available and willing members of the family.

Physical activity from all available and willing members of the family was assessed using 24-hour physical activity recall questionnaire. Time spent sleeping/lying down, time spent and intensity (sedentary, moderate, and vigorous) of activity in household, occupational, transport, personal/grooming, entertainment and discretionary activity domain was ascertained.

Completeness of the ascertainment of the 24-hour recall of physical activity was checked by computing the total of time spent on various domains of activity by the person per day. In all individuals, intensity of physical activity was assessed: activity which can be carried out without major physical effort was classified as sedentary; activities that require moderate physical effort and cause small increases in breathing or heart rate were graded as moderate and activities that require hard physical effort and cause substantial increase in heart rate were graded as vigorous.

Time spent and intensity of different activities between the week days and weekend days in each domain was recorded. Physical activity was lower during weekends in men because most of them did not work during the weekend. Homemakers spent more time on household chores in weekends when children and men were at home. Children played for a longer time during the weekends.

Using the GPAQ guidelines, activity in Metabolic Equivalent Task (MET) minute/week were computed on the basis of time spent in moderate physical activity during week and weekend days. The MET minutes/week (min/week) was zero in those who did not have any moderate or vigorous physical activity during the week. Persons were classified as sedentary (0 MET min/week), inactive (1-599 MET min/week), active (600-1200 MET min/week) and highly active (>1200 MET min/week). This observational study was approved by the Institutional Ethics Committee.

Sample size

The primary objective of the present study was to assess time spent and intensity of physical activity in different domains and to assess the proportion of persons with inadequate physical activity using 24-hour physical activity recall. One of the major problems faced in calculating the sample size for the present study was the large variations in the reported physical inactivity rates in research studies and surveys globally and in India. To ensure uniformity in assessment of inadequate physical

activity, WHO developed the GPAQ, validated questionnaire in multi-country studies and used GPAQ as a part of the non-communicable diseases surveillance programme (STEP). However, even among the studies using the WHO GPAQ, there were substantial differences in the reported proportion of persons with inadequate physical activity, not only between countries (13-58%) but also in India (38 to 65%).[12-24] In view of these large variations, it was not possible to compute the needed sample size for the study. The Institutional Research Advisory Committee recommended that as the first step a cross sectional study may be undertaken in urban low middle income of families living in a well-defined area over one year period to assess level of physical inactivity in the members of these families and barriers faced in increasing moderate physical activity; the data from the study may be used to plan studies to explore the relationship between inadequate physical activity, overnutrition, adiposity and cardiovascular diseases in the urban low middle income population. A census of the low middle income families living in three ICDS block was done; families who were willing to participate in the study were enrolled for the study between 1.1.2018 and 31.12.2018.

Data cleaning and analysis

Data were entered in Microsoft Excel. Data cleaning and analysis was done using Microsoft Excel and SPSS 26. Nutritional status of adults was computed using WHO BMI cut offs (under-nutrition BMI <18.5; normal 18.5-24.9 and over-nutrition BMI ≥ 25). Nutritional status of pre-school children was assessed using the WHO Anthro and nutritional status of 5–18-year children was assessed by WHO Anthro Plus software. Means and standard deviations were calculated for continuous variables. For categorical variables percent prevalence was computed.

RESULTS

Socio-demographic profile

A majority of families were nuclear with five or less family members. Two-thirds of the families had income >Rs.10,000/pm. Over 90% lived in pucca tenements; two-thirds of the families lived in one or two room tenements. Over half of the men and 40% of the women had secondary school education and nearly one-fifth had college education; less than one-fifth of women were uneducated. Among women nearly 90% were homemakers. About two-thirds of the men worked in semi-skilled jobs and one-fourth had clerical/office jobs. Over 95% of the families had access to safe drinking water and flush toilets, used LPG and stainless-steel vessels for cooking. Nearly half of the men used public transport for commuting and over one-third used their own scooter. Over 90% of families had TV and smart phones; these were their major modes for accessing recreation.

Food security and nutritional status of the families

Majority of families stated that they were food secure and had access to schools and essential nutrition and health care services. Prevalence of stunting and underweight was high in both 0-5 year and 5–18-year children; prevalence of wasting was relatively low:10% in 5-9 year and 20% in the 10–18-year children. Prevalence of over-nutrition in 0–18-year children was < 5%. Prevalence of under-nutrition (BMI <18.5) both in men and women was less than 10%.

Prevalence of over-nutrition was higher than under-nutrition both in men and women even in the 20–29-year age. There was an increase in the prevalence of over-nutrition with increase in age both in men and women.

Time spent in sleeping, sitting, standing and walking slowly

Information on physical activity was collected using 24-hour physical activity recall in a total of 2287 persons (children, men and women). The reported average sleeping time in all the groups was more than 540 minutes/day (min/day). Mean duration of sleep (in min/day) was between 540 and 580 in children 10-18 years, men and women (19-49 years).

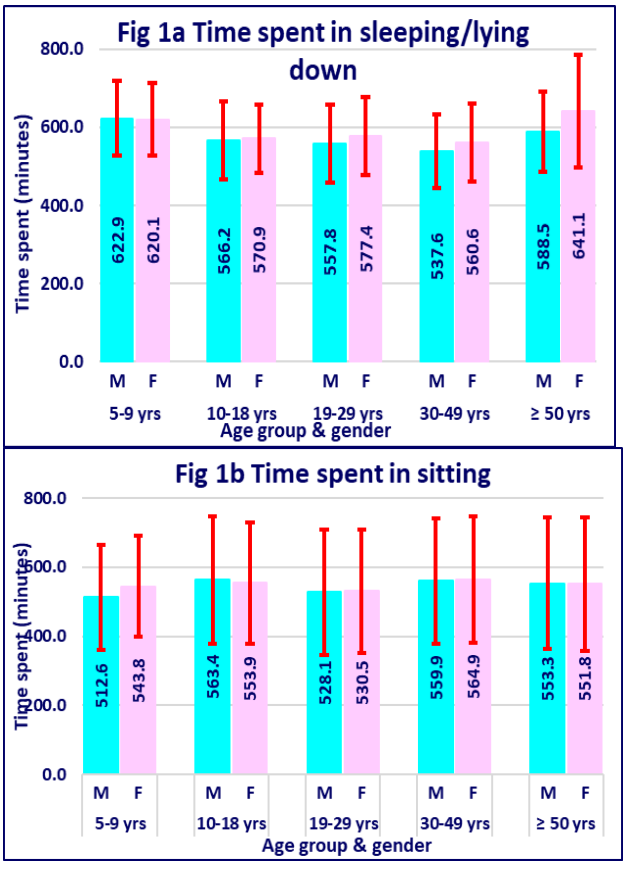

Figure 1: (a) Time spent in sleeping/lying down and (b) time spent in sitting.

Children in the 5–9-year age group (both boys and girls) and men and women ≥50 years reported that they slept for a longer time. Primary school age (5-9 years) children sleep as soon as they lie down; as soon as they wake up, they sit/stand and become physically active. Men and women ≥50 years of age tend to lie down in the afternoon for two to three hours but may sleep for only 60-90 minutes (Figure 1A). All age groups and both sexes spent between 510-565 min/day sitting. There were no major differences between ages and sexes in the time spent sitting. School going children sat and studied in school. Men undertook most of their work while sitting. Women undertook part of the cooking, most of the dishes and clothes washing while sitting down (Figure 1B).

All age groups and both sexes spent between 225 and 310 min/day standing (Figure 2A). In men time spent standing was between 220 and 310 mins/day. Standing time was lowest in 5–9-year children and women in the >50-year age group. Men and women in the 19–49-year age group were standing for a longer time/day because they undertook some of their work while standing. Men spent longer time standing as compared to women in the same age group.

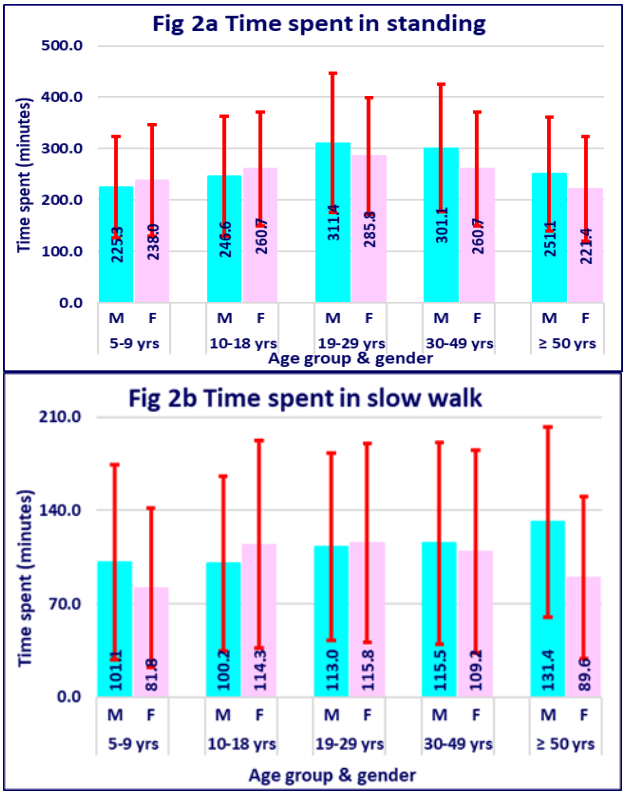

Figure 2: (a) Time spent in standing and (b) time spent in slow walk.

About half the participants reported that they walked for 80-130 min/day while carrying out their daily tasks. There was not much difference in the average time spent in slow walking between different age and sex groups. (Figure 2B). Less than 10% boys and less than 5% of girls spent between 60-90 min/day in playing; less than 10% of adults walked briskly during the day. Vigorous activity in gym, cycling, are done by very few children and men and that too for a short time only. Time spent on activities in different domains irrespective of the intensity of activity is shown in Figures 3-5.

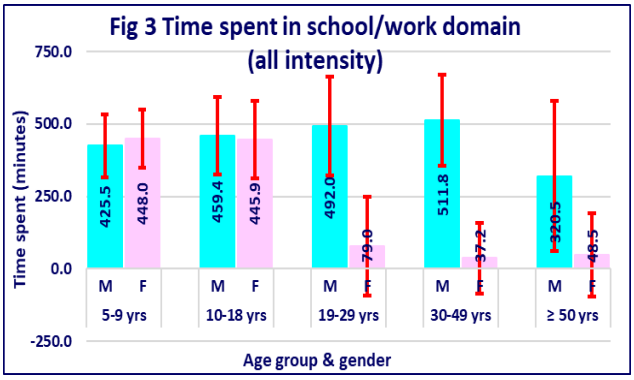

Figure 3: Time spent in school/work domain (all intensity).

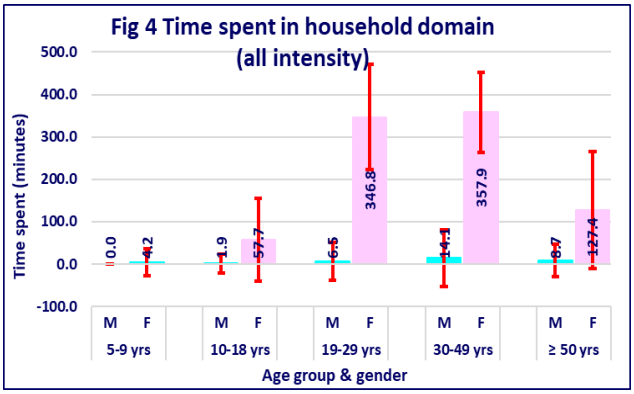

Figure 4: Time spent in household domain (all intensity).

Children (5-19 years) spent 7 to 8 hours in school, men (19-49 years) spent 8 to 9 hours in occupational work. Women in the age group 19-49 spent about 6 hours a day in household chores, purchasing provisions, taking their children to school and fetching drinking water from pump/tanker; women >50 years of age spent only two hours in household activities.

Children spent an hour in going to school and getting back mostly by walk. Men spent an hour or more commuting to work using mechanised personal or public transport. Women spent less than 15 minutes in transport domain because majority were homemakers not working outside the house.

Near universal access to affordable mechanisation in the occupational, household, and transport domains has made activities in all these domains sedentary. However, the time spent on these activities remain unaltered as compared to the pre-mechanisation era. All persons irrespective of their age and sex spent about 80-90

minutes in personal domain activities; all these activities were sedentary.

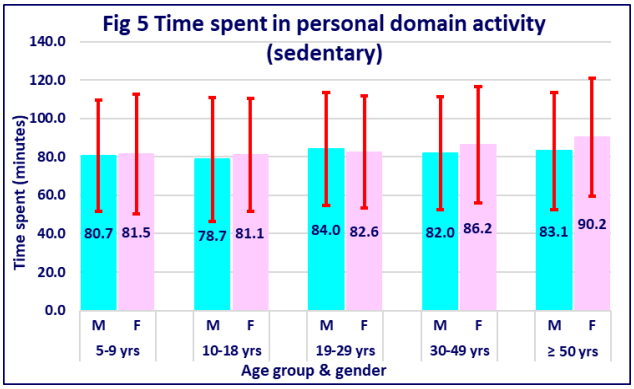

Figure 5: Time spent in personal domain activity (sedentary).

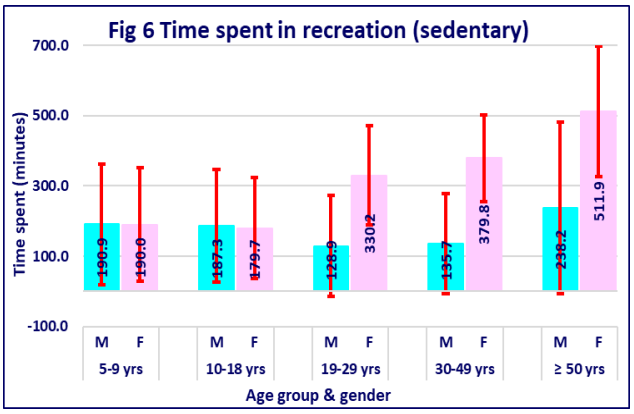

Figure 6: Time spent in recreation (sedentary).

Children and adults stated that after 8-10 hours of occupational, household work or school related activity, they need relaxation and recreation. Unlike the earlier era, children do not play outdoor games either in school or on returning home. They prefer to watch TV or play digital games in computers or mobiles. Men (19-49 years) watch TV or mobile for two hours; women (19-49 years) watch TV/mobile for five hours or longer/day. Men ≥ 50 years of age spend four hours and women ≥ 50 years spend six to seven hours on mobile and TV (Figure 6).

Intensity of activities in all domains

Time spent in sedentary activities across all domains in different age and sex groups is given in Table 1. All participants in all age and sex groups spent most of their time in sedentary activities. Mean duration of sedentary activities during the day was over 760 minutes in 5–9-year children. Adolescents, men and women between 19-49 years spent an average of 800-850 min/day on sedentary activities. Men and women ≥ 50 years spent about 30-40 minutes less in sedentary activities mainly because they spend more time lying down and/or sleeping. The proportion of persons who undertook moderate physical activity and the average time for which they undertook the activity is given in Table 2. About one-third of all children, nearly 3/4th of the women in 19-49 years age group, about 20 % of men in the 19-49 years age group and women ≥ 50 years of age spent varying duration of time in moderate activity (Table 2). Less than 1/10th of men undertook moderate physical activity, mostly on the advice of physicians. There were substantial differences in duration for which persons in different groups undertook moderate physical activity (Table 2). Children spent an average of between 100-140 minutes and men in 19-49 years spent an average of 120 to 150 minutes undertaking moderate physical activity. Women across all age groups spent an average of about an hour of moderate physical activity.

Table 1: Time spent on sedentary activities in domains.

Gender	Age group (years)	Time spent (min)
Male	5-9 (148)	765.3±114.55
	10-18 (191)	832.9±135.88
	19-29 (268)	853.5±135.89
	30-49 (433)	882.7±125.42
	≥ 50 (117)	838.2±116.61
	Total (1157)	848.2±132.64
Female	5-9 (137)	768.0±119.69
	10-18 (191)	837.9±111.87
	19-29 (350)	807.1±117.11
	30-49 (322)	824.4±114.42
	≥ 50 (130)	782.8±141.67
	Total (1130)	809.5±120.78

Figures in parenthesis indicate number studied

Table 2: Moderate physical activity in all domains.

Gender	Age group (years)	Moderate physical activity	
		% with (number)	Time spent (min)
Male	5-9	38.5 (57)	131.3±80.54
	10-18	31.4 (60)	126.0±98.27
	19-29	19.0 (51)	149.4±151.25
	30-49	15.0 (65)	127.0±162.93
	≥ 50	10.3 (12)	130.0±111.03
Female	5-9	36.5 (50)	142.2±81.27
	10-18	31.4 (60)	99.2±66.70
	19-29	72.5 (254)	76.5±44.47
	30-49	78.5 (252)	69.7±38.27
	≥ 50	19.2 (25)	79.2±45.73

Figures in parenthesis indicate number

Assessment of intensity of physical activity assessment using MET values

Two-thirds of the children, 3/4th of the men (19-49 years) and nearly 9/10th of the men and women ≥ 50 years of age did not have any moderate physical activity during the whole week (MET value of 0). Among women in the

19-49 years age group less than one fourth were totally sedentary; over half of all the women were highly active (>1200 MET min/week) and another one-sixth had moderate physical activity (600-1200 MET min/week). This was mainly because in addition to doing household chores which were sedentary, majority of women in this age group were taking their children to school, purchasing groceries, milk and vegetables from neighbourhood shops and carrying water from public tap/tanker to the home, all of which were considered a part of household activities. In women ≥ 50 years there was a steep reduction in moderate physical activity; less than 1/5th was highly active (MET values >1200/min/week). This was mainly because their children had grown up and got married; in joint families the daughters-in-law have taken over the household chores and care of children. In men (19-49 years) less than one-sixth were highly active (>1200 MET min/week). This was mainly because their transport and occupational activities were mostly mechanised. About 1/10th of men ≥ 50 years was highly active; they were predominantly those who had taken up brisk walking for half an hour or more per day on the advice of physicians, health care workers (Figure 7).

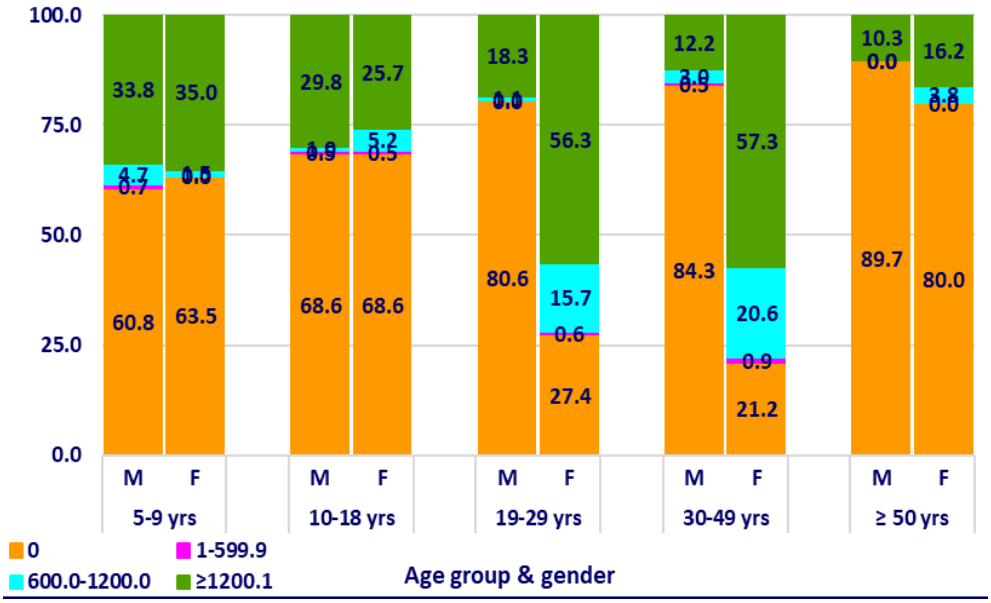

Figure 7: Frequency distribution of MET (minutes/week).

Figure 8 (A-C): Condition of roads in the locality.

Problems faced by women in increasing their moderate physical activity

Women ≥ 50 years recognised that they were inactive, overweight and were a high-risk group for NCD; they understood the need for increasing moderate physical activity and the potential beneficial health impact of sustained increase in physical activity. They were unable to take a brisk walk for about 30 minutes daily because the roads in their locality were narrow, uneven, often unpaved, over-crowded and slippery (Figure 8). The distance between home and public parks where they

could take brisk walk was one kilometre (km) or more; it was not possible for them go to the park every day for a 30-minute brisk walk in the park. They could take their grandchildren to school and purchase the milk, vegetables etc; but it was difficult for them to undertake these time bound activities every day. In the two room tenements stationary walking and exercises inside the house were not possible.

DISCUSSION

Globally there had been a progressive reduction in moderate physical activity, concurrently there had been changes in dietary intake, and increase in over-nutrition.[1,2] Concern over the high prevalence of physical inactivity and over-nutrition is mainly due to associated rise in prevalence of hypertension, diabetes and premature death due to non-communicable diseases (NCD).[21,22] Globally mortality from cardiovascular diseases (CVD) attributable to high BMI had more than doubled in three decades. In 2021 there were 18 million premature deaths (deaths under 70 years) due to non-communicable diseases; of these 38% were due to CVDs. In 2022, 32% of all global deaths were from CVDs. Over three-quarters of CVD deaths took place in low- and middle-income countries.[22]

Over the last three decades, there had been increase in mechanisations of all domains of activity and consequent reduction in moderate physical activity in India.[3] A steep decline in physical activity and not so steep reduction in energy intake, resulting in small but sustained positive energy balance is responsible for the progressive increase in over-nutrition with increase in age in India.[8] Age-standardized CVD death rate in Indians is higher than the global average.[23] Low physical activity, early onset of over-nutrition, hypertension, and diabetes, low detection in the early asymptomatic phase of hypertension, poor coverage and high discontinuation of treatment for hypertension are some of the major factors responsible for the higher CVD mortality in Indians.[23]

Data from the present study showed that in urban low-middle income families, men and women between 19-49 years of age, spent 8-12 hours/day in occupational, household work, and transport domains (Figures 3,4). Due to mechanisation of all these, activities are sedentary; physical exhaustion due to prolonged moderate and vigorous activities is no longer a problem. After spending over 8-10 hours in school, household and occupational activities, children, men and women want to relax by watching TV or mobile screens (Figure 6). Men spent only 2 hours on recreation, because TV and mobile for recreation were not accessible in the work domains. Women were at home and could take a break three to four times during the day from household activities and once at night; so, they spent longer time in recreational activities. Therefore, the cumulative time spent in recreation was higher in women. Men and women ≥ 50 years of age were spending less time at work or household domain; they spent over eight hours on watching TV and chatting using mobile.

Review of the available data on physical activity, over-nutrition and NCD risk by WHO in 20102 showed that: (i) there was a strong scientific evidence, based on well-conducted studies that physically active persons had higher levels of health-related fitness, a lower risk profile for developing a number of disabling medical conditions and lower rates of various chronic diseases as compared to persons who were inactive. (ii) any level and any intensity of physical activity is associated with lower risk of all-cause mortality and cardiovascular disease mortality, incidence of hypertension, cardiovascular disease and type-2 diabetes. However, it was difficult to quantify the impact of varied levels of physical activity for varying periods of time on health; and there was an association between higher levels of physical activity and weight loss and reduction of adiposity in overweight adults. (iii) there was an association between higher levels of physical activity and weight loss and reduction of adiposity in overweight adults.

Increasing mechanisation in household, work and transport domains made these activities sedentary but the time spent in these activities have remained unaltered. Therefore, any increase in moderate physical activity in sedentary persons has to be fitted into time available for the discretionary activity. Taking all these into account, WHO recommended that all adults between 18 and 64 years, should undertake 150-300 minutes of moderate or 75-150 minutes of vigorous intensity aerobic activity or an equivalent mix of moderate and vigorous physical activity weekly.[2,24-26] Physical activity can be undertaken as part of leisure (play, games, sports or planned exercise), transportation (wheeling, walking and cycling), work or household chores, at home or in community settings.

Studies in the current century, from developed countries and surveys and small-scale studies on physical activity level in different regions of India have documented that physical activity of majority of the adults was inadequate.[6-18] It is however difficult to compare the data on physical inactivity levels across countries from these studies because of the differences in the methods used for assessing physical activity and computing prevalence of inadequate physical activity. WHO developed GPAQ questionnaire to ascertain relatively rapidly, the time spent in moderate/vigorous physical activity per day during working days and weekend days. GPAQ use the metabolic equivalent of task (MET values) based on the energy expenditure, as the objective measure for classifying adequacy of physical activity in persons. For each individual, moderate physical activity undertaken in a week is computed in terms of MET-minutes/week. On the basis of this computation individuals were classified into: low activity (<150 min of moderate activity/week or <600 MET minutes/week) or active (150-300 mins of moderate physical activity/week or 600-1200 MET

minutes/week) and highly active (> 300minutes of moderate physical activity/week or >1200 MET min/week). Those who had low physical activity (<600 MET-minutes/week), were advised to increase physical activity mainly by brisk walking.[24,25] The GPAQ had been tested in multi country studies and validated; GPAQ has been incorporated into WHO NCD surveillance programme.

In the present study men and women from urban low-middle income group was classified into four groups on the basis of their physical activity: only sedentary activity (no moderate physical activity MET min/week 0) low physical activity (<600 MET minutes/week) active (low physical activity 600-1200 MET min/week) and highly active (>1200 MET min/week). There were substantial differences between men and women across age groups in terms of time spent in different domains of activity, proportion of persons who had moderate activity and time spent in moderate activity (Figures 3,4, Table 2 and Figure 7). Lower proportion of men in 19-49 years age group had moderate physical activity as compared to women in the similar age group.

Women took the children to school and brought them back, purchased milk, vegetables, groceries and fetched water from tanker or hand pump as and when needed as a part of their household chores. These activities were responsible for the higher moderate activity recorded in women in the 19-49 age group. However, women ≥ 50 years were not undertaking these tasks routinely and so there was a steep fall in moderate activity in women ≥ 50 years of age. Data from the present study clearly indicate that women ≥ 50 years of age are a high-risk group because of their age, high prevalence of over-nutrition and steep reduction in moderate physical activity (Figure 7). There is an urgent need to focus on nutrition and health education to these women to increase their moderate physical activity, in order to halt any further rise in over-nutrition, and reduce the risk of NCD.

Despite the well documented positive health effects associated with regular physical activity, and intensive nutrition and health education to improve physical activity as a part of national non-communicable disease control programmes, physical inactivity remains a common public health problem in high-, middle- and low-income countries.[2,12,15,23-25] A recent review concluded that although numerous intervention studies have been undertaken for increasing moderate physical activity especially in high-risk groups, there were serious methodological problems and confounding factors and consequent inconsistencies in the findings from these studies. Available data from research studies and reviews did not show any consistent and sustained improvement in physical activity.[28-30] However intensive behavioural interventions can be effective in promoting small, but clinically meaningful increases in objectively measured physical activity for up to 48 months.[31]

In view of these well-documented difficulties in improving moderate physical activity in sedentary individuals, our research team felt that it was important to discuss with the families who had participated in the study and find out what were the barriers that came in the way of improving their moderate physical activity. The main reason for the high prevalence of inadequate physical activity across all age groups was that in the morning they do not have time for discretionary physical activity; in the evening after 8-10 hours of occupational, household work or school related activity, they feel they need relaxation and recreation and are unwilling to spend 30-45 minutes in brisk walking.

Women over 50 years of age were a high-risk group who urgently need the interventions to improve moderate physical activity because: there had been a relatively recent steep decline in physical activity in these women; over 2/3rd of these women were over-nourished; and risk of NCD increased beyond 50 years of age.

Women ≥ 50 years of age were available at home and had adequate discretionary time to discuss with the research team. Over years the NFI research team had built up a good rapport with these women and could discuss with them feasible options to bring back the levels of moderate physical activity they had when they were younger. These women understood the need for increasing physical activity and articulated practical problems which come in the way of their efforts increase moderate physical activity. The WHO recommendation that they should undertake a brisk walk for about 30 minutes daily to increase moderate physical activity was not feasible because the roads in these areas were narrow, uneven, often unpaved, over-crowded and slippery (Figure 8). They were reluctant to undertake brisk walk in such roads and incur the risk of falling down and injuring themselves.

The teams' suggestion that they can go to the nearby public park and take a brisk walk in the park was not considered feasible. They stated that they had to walk 1 km or more through the narrow lanes to reach the public park, take brisk walk for a half an hour in the park and then return home through the same narrow lanes. For this they will have to spend more than one and half hours/day. Their absence lasting for 90 minutes or more, will interfere with their own activities and activities of the other family members. The suggestion that they may increase their walking time by taking the grandchildren to school and going to the shops to purchase the milk, vegetables etc was accepted as feasible but they did not feel that they can take up these time bound activities every day. Stationary walking and exercises in their home was not possible in the small two room tenements. It is possible that many urban and rural families in India may be facing similar problems. There is a need to explore other feasible methods to facilitate sustained improvement in moderate physical activity especially in the high-risk groups.

Strength of the study

Time spent and intensity in different domains of physical activity was assessed using 24-hour physical activity recall proforma and the magnitude of the inadequate physical activity in a well-defined population was documented. Problems faced when persons try to improve moderate physical activity have been ascertained.

Weakness

The study pertains to one well-defined urban group in Delhi. The magnitude of the inadequate physical activity in other population groups has not been studied. The study did not identify any feasible sustainable method to increase moderate physical activity in this population group.

CONCLUSION

The present study was undertaken in urban low middle income families residing in well-defined South west Delhi blocks to assess the physical activity profile of the family members using a 24-hour physical activity recall questionnaire. Children spent 7-8 hours in school; men spent 8-9 hours working and women spent over 6 hours in household chores. All the family members spent 12-14 hours in sedentary activities. The near universal access to affordable mechanisation in the occupational, household, and transport domains has made activities in all these domains sedentary. However, the time spent on these activities remain unaltered as compared to the pre-mechanisation era. Two-thirds of the children, 3/4th of the men (19-49 years) and nearly 9/10th of the men and women ≥ 50 years of age did not have any moderate physical activity during the whole week (MET value of 0).

Among women in the 19-49 years age group over half were highly active (>1200 MET min/week) and another one-sixth moderately active (600-1200 MET min/week). This was mainly because majority of women in this age group were taking their children to school, purchasing groceries, milk and vegetables from neighbourhood shops. Physical activity levels were very low in men and women beyond 50 years of age. The main reason for the high prevalence of inadequate physical activity across all age groups was that in the morning they do not have time for discretionary physical activity; in the evening after 8-10 hours of occupational, household work or school related activity, they feel they need relaxation and recreation. They were unable and unwilling to undertake brisk walk for 30-45 minutes every day because the roads in their locality were narrow, uneven, often unpaved, over-crowded and slippery. Stationary walking and exercises in their home was not possible in the small two room tenements. There is a need to explore feasible methods to increase moderate physical activity in these population groups.

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