Level and associated factors with physical activity among Indian public school teachers

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How to Cite

Abstract

Background. Physical inactivity is one of the primary factors that lead to obesity and overweight. It is common problem among the population of those who are in service or work. The reason behind obesity and the lack of physical activity are multifactorial.

Purpose. The present study aimed to investigate the physical activity profile of the school teacher and to identify the factors that have a significant influence on the lack of physical activity.

Methods. A cross-sectional study was conducted via a self-reported questionnaire among primary to post-graduate grade school teachers. The data was collected based on the standardized short form of the International Physical Activity Questionnaire and the demographic questionnaire including questions about sex, age, body composition, resting metabolic rate, and vital capacity of the participants.

Results. The study consisted of hundred school teachers including 58 male teachers and 42 female teachers. The average age of the male respondents was 45.02 years with a standard deviation ± 6.44, and for female respondents was 39.39 years with a standard deviation ± 5.85. The average vigorous physical activity of male teachers was 36.31 minutes/per week, and for female teachers was 5.95 minutes/per week. In moderate physical activity, males were averagely engaged for 20.61 minutes/per week, and females were 6.82 minutes/per week. The average minutes of walking for males was 115 minutes/per week, and for females was 130 minutes per week. A significant reduction in resting heart rate was reported between inactive, minimally active, and active participants. The physical activity levels were not associated with the height, weight, body mass index, resting metabolic rate, and vital capacity of the participants.

Conclusions. As per the World Health Organization recommendations for physical activity 81% of respondents were found inactive, 7% were found minimally active and 12% of respondents were found sufficiently active. The most common form of activity was walking.

Keywords: physical activity, IPAQ, international physical activity questionnaire, school teachers
Анотація

Парвін Джангра, Парвін Кумар, Кулдіп Нара. Рівень і пов’язані з ним фактори фізичної активності серед вчителів державних шкіл Індії

Передумови. Відсутність фізичної активності є одним із основних факторів, що призводять до ожиріння та надмірної ваги. Це поширені проблема серед тих, хто служить або працює. Причини ожиріння та недостатньої фізичної активності багатофакторні.

Мета. Дане дослідження мало на меті дослідити профіль фізичної активності шкільного вчителя та виявити фактори, які суттєво впливають на недостатню фізичну активність.

Методи. Серед вчителів початкової та післядипломної шкіл було проведено перехресне дослідження за допомогою опитувальника, заповненого власними оцінками. Дані були зібрані на основі стандартизованої короткої форми Міжнародного опитувальника фізичної активності та демографічного опитувальника, що включає запитання про стат’, вік, склад тіла, швидкість метаболізму в стані спокою та життєві можливості учасників.

Результати. У дослідженні взяли участь сто шкільних вчителів, у тому числі 58 вчителів-чоловіків і 42 вчителі-жінки. Середній вік респондентів чоловічої статі становив 45,02 року зі стандартним відхилення ± 6,44, а респондентів жіночої статі — 39,39 року зі стандартним відхиленням ± 5,85. Середня інтенсивна фізична активність вчителів-чоловіків становила 36,31 хвилину на тиждень, а вчителів-жінок — 9,55 хвилину на тиждень. При пomerній фізичній активності чоловіки займалися в середньому 20,61 хвилини на тиждень, а жінки — 6,82 хвилини на тиждень. Середня тривалість ходьби для чоловіків становила 115 хвилин на тиждень, а для жінок — 130 хвилин на тиждень. Повідомлялося про значне зниження частоти серцевих скорочень у спокої між неактивними, мінімально активними та активними учасниками. Рівні фізичної активності не були пов’язані зі зростом, вагою, індексом маси тіла, швидкістю метаболізму в спокою та життєвою емістю респондентів.

Висновки. Згідно з рекомендаціями Всесвітньої організації охорони здоров’я щодо фізичної активності, 81% респондентів були визнані неактивними, 7% були визнані мінімально активними і 12% респондентів були визнані достатньо активними. Найпоширенішим видом діяльності була ходьба.

Ключові слова: фізична активність, IPAQ, міжнародна анкета фізичної активності, вчителі школи
Introduction

According to WHO, physical activity is defined as any physical movement formed by skeletal muscles that require energy expenditure[1]. Physical activity refers to all movement including during leisure time, for transport to get to and from places, or as part of a person’s work[2]. Both moderate- and vigorous-intensity physical activity improve health. Popular ways to be active include walking, cycling, wheeling, sports, active recreation, and play, and can be done at any level of skill and for enjoyment by everybody [3–5].

Globally more than a quarter of adults are physically inactive[6]. It means they do not maintain the minimum recommended level of 75 minutes of vigorous-intensity activity or 150 minutes of moderate to vigorous-intensity physical activity per week [1,7]. It was reported that 28% of adults over the globe aged 18 and above were not active enough[8]. In high-income countries, 26% of men and 35% of women were insufficiently physically active in comparison to 24% of women and 12% of men in low-income countries [9–11]. Worldwide 81% of adolescents ages 11 to 17 years were insufficiently active. Adolescent girls reported being less physically active than adolescent boys.

Physical inactivity revealed its major link to non-communicable diseases and mortality[12,13]. The health benefits of physical activity are well established and include a lower risk of cardiovascular disease, hypertension, diabetes, and breast and colon cancer. Additionally, physical activity has positive effects on mental health, delays the onset of dementia, and can help the maintenance of a healthy weight. [14,15]. It also helps prevent hypertension, maintains healthy body weight, and can improve mental health, quality of life, and well-being [5,16].

Physical activity has a significant association with mental health. Physical activity during leisure time seems to be the most effective domain for preventing mental ill-health [17]. The research evidence suggests that regular physical activity protects mental health and supports cognitive functions [18]. Physical inactivity has a positive impact on the screen time duration of both children and adolescents [19]. During covid-19 pandemic, a significant increase was reported in screen time which was associated with higher depressive and anxiety symptoms. Maintaining and enhancing physical activity participation and limiting screen time increases during abrupt societal changes may mitigate the mental health consequences [20]. Physical activity levels often correspond with the rising gross-national product as well as sedentary behavior. The drop-in physical activity is partly due to inaction during leisure time and sedentary behavior on the job and at home. The passive mode of transportation also contributes to insufficient physical activity.

Nowadays, it is very difficult for school teachers to maintain physical fitness along with their busy schedules. As the working hours are so hectic and exhaustive that after school hours, it is almost impossible for a teacher to spare some time for physical activity. Especially, in the case of female teachers, family is also an important part of their life. A female teacher must look after their family members, children, and household chores after getting home. From this tight schedule, hardly some time is left for physical activity. Male teachers can utilize this time for exercise but it is not possible in the case of female school teachers. This is the reason that the proportion of physical activity is reducing day by day in the lifestyle of school teachers.

Although, a teacher in a school is a primary person who is responsible for the implementation of all policies related to all-over development of students. Besides, classroom teaching, an additional duty i.e., any awareness program forwarded by local authorities has to be performed by teachers. Rather than being physically active, the teaching job contains psychological or mental fatigue. Various subjects have been taught by the teachers as per the curriculum designed. Except for physical education and yoga, the teachers of other subjects spent their time in the classroom as well as in laboratories throughout the school day. There is not enough time for the teacher to be physically active. According to ‘The Unified District Information System for Education’, for the 2018 – 19 school year, a total of 9.4 million teachers were employed across 1.6 million primary and secondary schools in India. Therefore, the physical activity of school teachers is an area to be considered to keep them healthy and fit.

Although, few prior studies have paid attention to school teachers regarding physical activity and health [21]. It was a major gap in existing literature, which need to be addressed. With this point of view, the present study has been designed to investigate the physical activity profile of school teachers in reference to recommended physical activity guidelines.
Material and Methods

Participants

The sample in the present study includes 100 teachers of both genders of various Government schools from different districts of Haryana state having ages ranging between 18 and 58 years. The sample includes Primary Teachers, Trained Graduate Teachers, and Post Graduate Teachers of different subjects of various streams living in rural and urban areas of Haryana state. The subjects were drawn using a simple random method by visiting different Government schools and participants were selected randomly. We contacted the samples personally and got them acquainted with the information that is required for the study.

Inclusion & Exclusion Criteria

The inclusion criteria for the sample selection are that the object should be healthy and physically fit. Selection will be based on this quality having an age group of 18 to 58 years. A person having these features will be included in the sample for the study restricted to only the teacher’s group as we stated earlier. Exclusion criteria exclude the people who are not from the teaching profession and don't have good health and are having any kind of disease or are not physically fit/unhealthy. A person having these kinds of features are excluded from the sample. Persons who are not between the 18 to 58 age group are also excluded.

BMI Index

The body mass index was calculated based on self-reported body weight and body height. Next, the BMI was calculated using the simple formula – weight (kg) divided by the square root of the body height (m²). BMI was also categorized using international world health organization adults standards; underweight – BMI < 18.5, normal weight – BMI 18.5 to 24.9, pre-obesity – BMI = 25.0 to 29.9, and obesity class I – BMI = 30.0 to 34.9, obesity class II – BMI = 35.0 – 39.9, obesity class III – BMI above 40.0 [22].

Resting Metabolic Rate

The Mifflin-St Jeor equation [23] provides an alternative and more valid estimate of resting metabolic rate.

\[
\text{Men} = (10 \times \text{weight in kg}) + (6.25 \times \text{height in cm}) - (5 \times \text{age in years}) + 5
\]
\[
\text{Women} = (10 \times \text{weight in kg}) + (6.25 \times \text{height in cm}) - (5 \times \text{age in years}) - 161
\]

Estimation of Physical Activity

Physical Activity over the last seven days was measured using the International Physical Activity Questionnaire – Short Form. The total physical activity measured by this questionnaire was acceptably reliable (Single measure intraclass correlation coefficient: 0.781) among school teachers. Three intensity levels of physical activity, including low-intensity activity (3.3 metabolic equivalents, METs), moderate-intensity activities (4.0 METs), and vigorous-intensity activities (8.0 METs), were evaluated and calculated via this questionnaire. Participants were required to report the frequency and duration that they engaged in each level of physical activity for at least 10 minutes. The total physical activity per week for each participant was calculated by the following formula:

\[
\text{Total MET-minutes/week} = \text{Low PA (METs } \times \text{minutes } \times \text{days)} + \text{Moderate PA (METs } \times \text{minutes } \times \text{days)} + \text{Vigorous (METs } \times \text{minutes } \times \text{days)}
\]

According to the WHO guidelines, sufficient physical activity in adults is defined as performing 150 minutes of moderate physical activity per week, 75 minutes of vigorous physical activity per week, or an equivalent combination of both. Thus, the participants who met the aforementioned recommendation were categorized as having sufficient physical activity, and those who did not meet these recommendations were categorized as those with insufficient physical activity.

Statistical Application

All statistical computations were performed using SPSS statistics for window version 26.0 (IBM Corporation, Armonk, NY). High-resolution graphs were reproduced using ‘OriginPro 2022’ (OriginLab Corporation, Northampton, Massachusetts, USA). Before starting the final calculation of data analysis, the data were checked for maximum values for excluding outliers suggested in international physical activity questionnaire scoring guidelines (Forde, 2018). The rule is to exclude unreasonably high data. These data are to be considered outliers and thus are excluded from the analysis. All cases in which the total of all walking, moderate and vigorous time
Health, sport, rehabilitation
Здоров'я, спорт, реабілітація
Здоровье, спорт, реабилитация

variables is greater than 960 minutes (16 hours) were excluded from the analysis. It was assumed that on average an individual 8 hours per day is spent sleeping. The ‘days’ variables could take the range of 0 to 7 days. Therefore, values greater than 7 were not allowed and those cases were excluded from the analysis. All time variables (walking, moderate and vigorous) exceeding ‘3 hours’ or ‘180 minutes’ were truncated to be equal to ‘180 minutes’ in a new variable to normalize the distribution of level of activity.

Descriptive statistics including mean±standard deviation were tabulated for relevant starta. Chi-square, the test of independence was used to compare the different time variables of physical activity between male and female participants. The frequency distribution of different data points was illustrated in the form of a percentage. To understand the positional values of data, the percentile method was adopted for the present study. To reduce the risk of type I error, a significance level of $P < 0.05$ was used as an indicator of statistical significance.

### Table 1

General characteristics and physical activity profile of the school teachers

<table>
<thead>
<tr>
<th>Indicators</th>
<th>Male (n = 58)</th>
<th>Female (n = 42)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>(Mean±SD)</td>
<td>(Mean±SD)</td>
</tr>
<tr>
<td>Age (Years)</td>
<td>45.02±6.44</td>
<td>39.69±5.85</td>
</tr>
<tr>
<td>Height (Cm)</td>
<td>171.38±6.45</td>
<td>160.32±4.76</td>
</tr>
<tr>
<td>Weight (Kg)</td>
<td>75.26±9.84</td>
<td>66.24±10.18</td>
</tr>
<tr>
<td>Body Mass Index</td>
<td>25.60±2.95</td>
<td>25.68±3.84</td>
</tr>
<tr>
<td>Resting Metabolic Rate (ml O$_2$/minute)</td>
<td>1437.98±132.38</td>
<td>1304.94±116.32</td>
</tr>
<tr>
<td>Resting Heart Rate (count/minute)</td>
<td>78.91±11.56</td>
<td>82.54±10.09</td>
</tr>
<tr>
<td>Vital Capacity (mL/kg)</td>
<td>430±92.05</td>
<td>359.88±59.96</td>
</tr>
<tr>
<td>Physical Activity Profile</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>(Vigorous Physical Activity)</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Minutes/Week</td>
<td>36.31±69.99</td>
<td>5.95±234.28</td>
</tr>
<tr>
<td>MET*Minutes/Week</td>
<td>1263±2586.75</td>
<td>15.11±740.65</td>
</tr>
<tr>
<td>(Moderate Physical Activity)</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Minutes/Week</td>
<td>20.61±30.56</td>
<td>6.82±14.21</td>
</tr>
<tr>
<td>MET*Minutes/Week</td>
<td>414.64±727.67</td>
<td>119.04±272.94</td>
</tr>
<tr>
<td>Walking</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Minutes/Week</td>
<td>87.63±51.84</td>
<td>79.28±75.70</td>
</tr>
</tbody>
</table>

**Results**

In Table 1, the demographic features of the Sample are shown. Out of the total sample, 58% of the participants are male while 42% are female. The table shows that the mean ± standard deviation for Age (years) was 45.02 ±6.44 for male participants and 39.69±5.85 for female participants for Height (cm), it was 171.88 ± 6.45 for male participants and 160.32 ± 4.76 for female participants, for Weight (Kg), it was 75.26 ± 9.84 for the male participants and 66.24±10.18 for female participants. Mean ± standard deviation for body mass index, as shown in the table, is almost the same in the case of male participants and female participants i.e 25.60 ± 2.95 and 25.68 ± 3.84 respectively while resting metabolic rate (ml O$_2$/per minute) of male participants was 1437.98 ± 132.38, and 1304.94 ± 116.32 for female participants. The resting metabolic rate (count/per minute), and the Mean ±SD were 78.91 ± 11.56 for male respondents and 82.54 ± 10.09 for females as well. However, In the case of vital capacity (mL/kg), it was 430 ± 92.05 and 359.88 ± 59.96 for male and female participants respectively.

The physical activity profile of the participants was also shown in Table 1. As per the data cited in the above table, the mean ± standard deviation for vigorous physical activity (minutes/week) in male participants was 36.31 ± 69.99 and 5.95 ± 234.38 showing high variation within female participants. In the context of vigorous physical activity (MET*minutes/weeks), the average MET
Frequency distribution (%) of school teachers engaging in walking, moderate and vigorous physical activity, based on the number of days per week

<table>
<thead>
<tr>
<th>Number of days per week</th>
<th>Vigorous Physical Activity</th>
<th>Moderate Physical Activity</th>
<th>Walking</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Male (%)</td>
<td>Female (%)</td>
<td>All (%)</td>
</tr>
<tr>
<td>0</td>
<td>65.5</td>
<td>83.3</td>
<td>73.0</td>
</tr>
<tr>
<td>1</td>
<td>5.2</td>
<td>NSR</td>
<td>3.0</td>
</tr>
<tr>
<td>2</td>
<td>6.9</td>
<td>2.4</td>
<td>5.0</td>
</tr>
<tr>
<td>3</td>
<td>1.7</td>
<td>7.1</td>
<td>4.0</td>
</tr>
<tr>
<td>4</td>
<td>3.4</td>
<td>2.4</td>
<td>3.0</td>
</tr>
<tr>
<td>5</td>
<td>1.7</td>
<td>NSR</td>
<td>1.0</td>
</tr>
<tr>
<td>6</td>
<td>5.2</td>
<td>NSR</td>
<td>3.0</td>
</tr>
</tbody>
</table>
Table 3

Frequency distribution (%) of school teachers engaging in walking, moderate and vigorous physical activity, based on the number of minutes per week

<table>
<thead>
<tr>
<th>Number of minutes per week</th>
<th>Vigorous Physical Activity</th>
<th>Moderate Physical Activity</th>
<th>Walking</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Male (%)</td>
<td>Female (%)</td>
<td>All (%)</td>
</tr>
<tr>
<td>0</td>
<td>65.5</td>
<td>72.4</td>
<td>73</td>
</tr>
<tr>
<td>10-30</td>
<td>6.9</td>
<td>26.6</td>
<td>8</td>
</tr>
<tr>
<td>31-60</td>
<td>6.9</td>
<td>0</td>
<td>7</td>
</tr>
<tr>
<td>61-149</td>
<td>15.5</td>
<td>0</td>
<td>9</td>
</tr>
<tr>
<td>150-299</td>
<td>3.4</td>
<td>0</td>
<td>2</td>
</tr>
<tr>
<td>300 or more</td>
<td>1.7</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>Total (%)</td>
<td>100</td>
<td>100</td>
<td>100</td>
</tr>
</tbody>
</table>

Chi Square (\(\chi^2\))

Walking: \(\chi^2 = \) No measure of association was computed for the cross-tabulation of Gender* Walking Days
NSR = Not sufficient data to report

Table 4

Proportion of the different age groups and their engagement in various physical activity domains

<table>
<thead>
<tr>
<th>Age category</th>
<th>Gender</th>
<th>N</th>
<th>VPA (Minutes/week)</th>
<th>MPA (Minutes/week)</th>
<th>Walking (Minutes/week)</th>
</tr>
</thead>
<tbody>
<tr>
<td>30 – 40 Years</td>
<td>Male</td>
<td>11</td>
<td>38.18</td>
<td>21.81</td>
<td>88.63</td>
</tr>
<tr>
<td></td>
<td>Female</td>
<td>26</td>
<td>8.26</td>
<td>9.23</td>
<td>91.92</td>
</tr>
<tr>
<td>40 – 50 Years</td>
<td>Male</td>
<td>36</td>
<td>40.00</td>
<td>23.47</td>
<td>78.33</td>
</tr>
<tr>
<td></td>
<td>Female</td>
<td>15</td>
<td>2.33</td>
<td>2.85</td>
<td>61.33</td>
</tr>
<tr>
<td>50 – 60 Years</td>
<td>Male</td>
<td>11</td>
<td>21.81</td>
<td>8.18</td>
<td>111.81</td>
</tr>
<tr>
<td></td>
<td>Female</td>
<td>1</td>
<td>5.95</td>
<td>6.82</td>
<td>79.28</td>
</tr>
</tbody>
</table>

VPA = Minutes of vigorous physical per week, MPA = minutes of moderate physical activity per week, walking minutes per week
Fig. 2. Frequency distribution of Metabolic Equivalence Task (MET/Week) in the context of Moderate Physical Activity

Fig. 3. Frequency distribution of Metabolic Equivalence Task (MET/Week) in the context of Walking

Fig. 4. Frequency distribution of Metabolic Equivalence Task (MET/Week) in the context of total physical activity of male and female school teachers
Fig. 5. Percentile scores of total physical activity in terms of metabolic equivalent task (METs)

Fig. 6. Percentile scores of total physical activity in terms of minutes of walking per week (METs)
Fig. 7. Bar graph showing the comparison of body mass index between different strata [inactive, (n = 81) minimally active, (n = 7), and active (n = 12) participants] based on their physical activity status as per recommended guidelines.

Fig. 8. Bar graph showing the comparison of resting metabolic rate between different strata [inactive, (n = 81) minimally active, (n = 7), and active (n = 12) participants] based on their physical activity status as per recommended guidelines.
Fig. 9. Bar graph showing the comparison of resting heart rate between different strata [inactive, (n = 81) minimally active, (n = 7), and active (n = 12) participants] based on their physical activity status as per recommended guidelines.

Fig. 10. Bar graph showing the comparison of vital capacity between different strata [inactive, (n = 81) minimally active, (n = 7), and active (n = 12) participants] based on their physical activity status as per recommended guidelines.
Discussion

The current study found that 12% of male teachers and 2% of female teachers achieved the WHO recommendations of physical activity [25]. The present study highlighted that 65.5% of male teachers and 72.4% of female teachers did not engage in any type of vigorous physical activity. The same proportion i.e., 58.6% of males and 76.2% of females did not do any kind of moderate physical activity. It was a significant proportion of sedentary individuals who did not meet the physical activity recommendations. Similar, outcomes were observed in the study conducted on U.S. adults [26,27]. A key point that was observed in the present study was that majority of the participants preferred walking instead of vigorous or moderate physical activity. Although in Figure 11 – 12, it was revealed that out of the total METs of male participants, 54.7% came from walking only, 34.2% were fulfilled by vigorous physical activity and 11.1% came from moderate physical activity. About female participants, 83.8% of METs were calculated from walking, 10.7% from VPA, and 5.4% from MPA. It explored the pattern of physical activity adopted by the participants of both genders. Hence, the main source of METs was walking. People think that approx. 20 minutes of walking per day would be enough to maintain a healthy lifestyle. Especially, in the case of female participants who reported a higher tendency towards walking in comparison to male participants. The possible explanation for this gender difference is that men are more engaged in group/community physical activity and sports in clubs or gyms. Also, women are more engaged in low and moderate physical activities, which can be done at home. Besides, women spent more time in housework activities. Women without changes in childcare provision reported more opportunities to be physical active [28]. the same gender differences were observed in an Italian study [29].

While research is evident that physical activity is reduced as the age increase. The age of the participants of the current study ranged from 30 to 57 years. Male participants of the 40 – 50 years of age category revealed slightly high interest in vigorous to moderate physical activities, and female participants of age 30 – 40 years have the same interest. The male participants aged between 50 – 60 years have shown their tendency into walking as well. Two studies reported changes by age [30,31]. Castaneda-Babarro et al. (2020) found that the older adult population (age 55–65 years) decreased the amount of time they spent on vigorous activities the most, whereas for the youngest subjects (18–24 years), decreased moderate activities and walking time the most. Katewongsa et al. (2020) found that middle-aged (40–64) adults were more likely to meet recommended moderate to vigorous physical activity than young adults (18–39). Studies also examined the association between physical activity and other health conditions according to physical activity intensity. Moderate-intensity physical activity (i.e., walking or jogging on a treadmill, cleaning the house) is associated with better physical and mental health [32,33]. On the other hand, vigorous-intensity physical activity better-explained motor fitness domains than moderate–intensity physical activity [34].

The obtained data were categorized into different strata i.e., inactive, minimally or moderate active [figures 7 – 10] and active participants as per the physical activity guidelines [35,36]. A lack of studies developing physical activity guidelines in the context of the Indian perspective was faced by the researcher during the literature review. The number of guidelines published at each stage varies among the countries because of the differences between their historical and cultural backgrounds, basic national conditions, and social problems [37]. There was no consensus across the related literature for the optimal physical activity level for mitigating negative physical and mental symptoms. The more physical activity is frequent and vigorous, the best people feel [38]. Among Chinese students, 2500 METs-minute/week of physical activity was the optimal dose to maintain a healthy weight and alleviate negative emotions [39]. The relationship of physical activity was correlated with other health conditions or physiological variables. On the other hand, a Spanish community sample study showed that 477 METs-minute/week was associated with healthy body composition and a 33% decrease in the probabilities of the notable depressive system [40]. The studies used international physical activity questionnaire to assess physical activity, and according to IPAQ at least 600 METs-minute/week is needed [41]. The American College of Sports Medicine also recommended for healthy adults aged 18 – 65 years at least 600 METs minute/week to maintain healthy lifestyle behavior [42,43].

The resting heart rate was found significantly
lower in physically active participants [see Figure 9]. The obtained outcomes of the current research were supported by the available literature. A study conducted on 67,028 Chinese participants aged≥ 60 years reported a relationship between resting heart rate, blood pressure, and physical activity. A linear relationship was observed between resting heart rate, systolic blood pressure, diastolic blood pressure with physical activity status [44]. A meta-analysis of randomized control trials was performed to estimate the effects of exercise on heart rate variability on overweight and obese individuals and reported significant effect sizes between interventions of different studies [45]. While the rest of the physical variables were not statistically significant among the different activity groups. In the case of walking, the majority of the participants have met the assumption of physical activity guidelines. While a significant proportion of participants were not engaged in moderate to vigorous physical activity and violet the assumptions of physical activity guidelines. The male participants were reporting 281.05 minutes of sitting per day and the females reported 317.14 minutes per day. On average male participants spent 4.63 hours sitting or and females spent 5.23 hours sitting on a normal routine day.

Fig. 11. Pie graph showing sources of METs of the male participant

Fig. 12. Pie graph showing sources of METs of the female participant

Physical activity has shown health-related positive effects on various physical, physiological, and psychological domains across the globe. It was evident that Insufficient physical activity and sedentary behavior were well-known independent risk factors for stroke [46]. Considering the decrease in physical activity along with aging [47], there is a growing concern that older stroke survivors may be at a higher risk of physical inactivity [48]. Physical activity controls the glycaemic index in diabetic patients and reduces the dependency on medicine [49–51]. During covid-19, physical activity was adversely affected by the emergency lockdown in cities as well as villages all over the globe. A review article included 4898 children and adolescents that showed an association between moderate physical activity with less state anxiety. Higher levels of physical activity were also significantly associated with lower levels of total mood disturbance [52]. Regarding the dose of physical activity, days of physical activity per week were a stronger predictor of well-being than minutes of physical activity per week [53–55].

A sufficient level of physical activity is an essential part of a teacher's curriculum. The physical activity of the teacher is beneficial for their health as well as related to their students' physical activity. The study observed children’s behavior in classroom sessions taught by 25 teachers in four Hong Kong preschools; low physical activity levels among pre-schoolers were found to be related to teachers who rarely prompted or reinforced the children’s engagement in physical activity [56]. Similarly, a study conducted with 476 preschool children in the USA found that teacher encouragement and involvement in children’s physical activity was essential to increasing children’s physical activity levels [57]. The theoretical models in psychology explain how a role model influences a learner’s behavior. The social cognitive theory [58] posits that most learning is acquired from observations and is considerably reliant on the influence of role models. A role model is an individual who is “perceived as exemplary, or worthy of imitation” [59]. In an educational context, students identify teachers as role models who play an important role in their learning processes [60]. In particular, PE teachers are perceived to be role models for children when they encourage increased participation[61]. When teachers demonstrate motor skills and participate in physical activity with children during PE lessons, children can reach higher levels of motivation.
[62]. Students have been found to be more active when teachers provide a role model for fitness [63]. Furthermore, studies have demonstrated that physically active teachers incorporate a positive model of healthy behavior. Therefore, the physical activity of the teacher is significantly associated with the physical activity of their students, for whom the teacher is a role model and improves the health environment in the school.

To date, no study has objectively measured physical activity among school/college teachers. Some studies have addressed the physical activity level of physical education teachers [64–66]. There may be several factors that can affect the physical activity of a teacher. The job of a teacher in India was of 8 hours (approx. and may vary in different geographical conditions) and the stations (schools) of the teachers were very far away from their residences. Therefore, daily traveling or driving may be a factor that can reduce the time for physical activity.

**Conclusion**

The present study confirmed that the majority of the school teachers were physically inactive. 81% of teacher does not exceed 600 MET-minute/week or 75 to 150 minutes of moderate to vigorous physical activity per week. The most common form of activity among the teacher was walking. There was no correlation between the type of physical activity and, body composition, resting metabolic rate, and vital capacity. Resting heart rate was found significantly lower in the physically active group. Male teachers were engaged in vigorous physical activities while female teachers reported walking as a common form of physical activity. The participants aged 40 to 50 years were more engaged in moderate to vigorous physical activities than other age groups. No statistically significant difference was observed between male and female teachers in respect of various physical activity domains, while, the values of chi-square shown significant difference between male and female teachers in respect of moderate physical activity and walking. What appears positive, however, when it comes to this group of teachers were that the majority of the respondents demonstrated a healthy body mass index. The association between various obesity levels and physical activity would have to be investigated in future research.

**Study Limitation**

The present study had some limitations that must be mentioned. First, the study was based on self-reported physical activity (measured by international physical activity questionnaire-short form). The respondents are advised to honestly report the physical activity status of their past week. Although, physical activity assessed by the accelerometer is highly reliable than self-reported format. The present research was not supported by any grant or fund. Therefore, accelerometers or pedometers could not be merchandised. in addition, the resting metabolic rate was also measured by an equation instead of a metabolic analyzer. The second one is research methods, the study involved a hundred participants as subjects, and in this context, a high variation in statistical analysis was observed. Thus, further research needs to focus on a representative and a bigger study sample to attain lower variation among the responses as well. The obtained results cannot be generalized in terms of a population because the description is very specific and, it is a small sample.

**Conflict of Interest**

The authors hereby declare that they don’t have any financial and personal conflict of interest.

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