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## Physical Activity Status and its Determinants Among Public Health Care Doctors in Tertiary Care Public Sector Hospitals in Chandigarh, India

## KEYWORDS

Physical Activity, Lifestyle diseases, Doctors.

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**ABSTRACT** Background: "Healthy mind resides in the healthy body" is a popular dictum, which is more relevant in today's modern sedentary lifestyle of human beings. The International comparisons shows that level of low physical activity is one of the major independent factors of chronic diseases. The doctor's occupation is one of the time demanding, left them with a little spare time for physical activities. Consequently, monitoring physical activity levels in the society viz e viz the doctors could provide an insight in estimating the vulnerability towards lifestyle diseases. Objective: To assess the physical activity status among public sector doctors in Chandigarh and to identify various patterns, motivators and limiting factors of doctor's engagement into physical activities. Method: A self-administered International Physical Activity Questionnaire (PAQ) was administered in a random sample of 115 public sector doctors in the city of Chandigarh. Results: In the study group 56% of the doctors did moderate levels, 26.2% low levels and 17.8% high levels of physical activity ( $p=0.004$ ). More male doctors (27.6%) reported vigorous activity as compared to female doctors. The doctors in elderly age groups (70%) reported moderate activity whereas vigorous activity was higher among younger doctors (23.9%). During the leisure time, higher number of doctors reported low (64.5%) activity. Doctors spent most of their leisure time in studying medical literature (57.9%). Major motivator to do physical activity was fitness (72%) and the main limitation felt was lack of time (73.8%). Conclusions: This study indicates common reason that motivated doctors to engage into physical activity were fitness, weight reduction and maintaining good health.

### Introduction

"Healthy mind resides in the healthy body" is a popular dictum, which is more relevant in today's modern, sedentary lifestyle of human being. The technological booms have made us adopt sedentary and inactive life style which has resulted into the emergence of epidemic of non communicable diseases (NCDs). The International comparisons show that level of physical activity is one of the major independent factors of chronic diseases. Out of 1.5 billion Disability Adjusted Life Year's (DALY'S) of total disease, 47% are due NCDs. Of these, 79% of deaths, occur in developing countries.<sup>1</sup> According to the Global Burden of Disease physical inactivity is one among ten leading risk factors for NCDs.<sup>2</sup> The doctor's occupation is one of the most time demanding, leave them with a little spare time for physical activities. The gravity of problem of NCDs and its risk factors is growing in the general population and physicians are no exception to it. The morbidity data of physicians shows that most doctors suffer from physical rather than mental illness.<sup>4</sup> Consequently, monitoring physical activity levels in the society viz e viz the doctors are apt in estimating the vulnerability towards lifestyle diseases. The present study was done to Assess the physical activity status among doctors in Chandigarh and to identify various patterns, motivators and limiting factors of doctor's engagement into physical activity.

### Methodology

A cross sectional study was carried out in different healthcare institutions in the city of Chandigarh, India. Owing to its best living amenities including best healthcare facilities in the country, popularly known as city beautiful.

The study included all the allopathic doctors of age ranging between 25 years to 65 years, working in public sector. The sample size was estimated using the formula:  $[N = z^2 pq / d^2]$ , where  $z=1.96$  at 95% confidence interval,  $p$  is prevalence,  $q$  is  $(100-p)$ ,  $d$  is precision.<sup>6</sup> The reported prevalence of physical activity in general population was 38.7%.<sup>7</sup> As there were evidences that doctors were more aware of the importance of physical activity and its effects on chronic diseases we took the prevalence to be 50% ( $p$ ) and precision 10%, Calculated sample size was 96, however to prevent error due to non-respondents (20%) we took sample size as 115.<sup>8</sup>

A list of allopathic doctors working in the government set up in Chandigarh, along with their designation and place of posting, was obtained from the records available from Post Graduate Institute of Medical Education and Research, Government multispecialty Hospital- sector 16 and Government Medical College- sector 32. The participants for the study were chosen by simple random sampling from the available sampling frame. The random sampling was done on Statistical Package of Social Sciences (SPSS) software. Subjects were contacted at their work place. After taking a institutional ethical clearance and written informed consent from the participants, a self administered questionnaire was given to the participants chosen for the study. The physicians who could not be contacted after making three visits or those who did not return back the questionnaire were considered as non-respondents.

Data collection was done through a questionnaire consisting of two parts. Part A was a standard International Physical Activity Questionnaire -Long form that was used to

assess status of physical activity. Part B was a self developed pretested and validated questionnaire that dealt with information regarding factors determining engagement or non-engagement into physical activity by doctors. The operational definitions used for the physical activity are given in (table 1)

**Table 1: Operational definition of physical activity.**

Category	Type of physical activity	Days (per week)	Duration (mints / day)	Least physical activity score (METmin/week)
Low	Does not fit any other category			
Moderate	Vigorous intensity	3 or more	20	600
	Moderate intensity	5 or more	30	
High	Combination of activities	5 or more		
	Vigorous intensity	3 or more		1500
	Combination of activities	7 or more		3000

The statistical analysis was carried out using Statistical

Package for Social Sciences (SPSS Inc., Chicago, IL, version 13.0 for Windows). All quantitative variables were estimated using measures of central location (mean, median) and measures of dispersion (standard deviation and standard error). For normally distributed data means were compared using student's t-test for two groups. Qualitative or categorical variables were described as frequencies and proportions. Proportions were compared using Chi square or Fisher's exact test whichever was applicable. All statistical tests were two-sided and performed at a significance level of  $\alpha=.05$

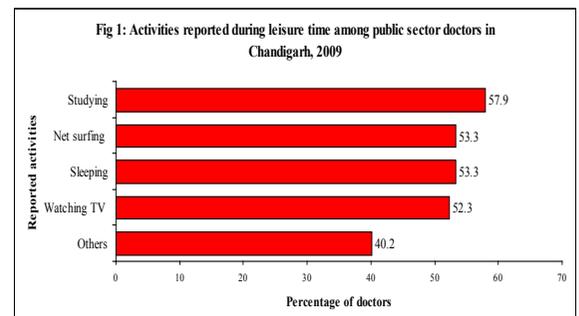
**Results:**

A total of 107 doctors working in the public sector in UT Chandigarh participated in the study. These were male (54.2%) and female doctors (45.8%) of more than 25 years of age. The mean age of the doctors was 35.5 +\_ 9.2 with a range of 25 to 62 years. Doctors were categorized into younger (age  $\leq$  35 years) and older groups (age  $>$ 35 years). Fifty five percent doctors belonged to clinical and 45% doctors belonged to non clinical branches. Most (87%) of the doctors were from the teaching institute. All the doctors were residing in urban area.

**Table 1: Physical Activities status of Doctors in different Activities**

	Male	Female	Age		Nature of Work		Type of Institute where employed	
			$\leq$ 35 (n=67)	$>$ 35 (n=40)	Clinical	Non Clinical	Teaching	Non-Teaching
Level of physical activity among participants during whole day	Mild	12(20.7)	19(28.4)	9(22.5)	16(27.1)	12(25)	23(24.7)	5(35.7)
	Moderate	30(51.7)	32(47.8)	9(22.5)	34(57.6)	26(54.2)	52(55.9)	8(57.1)
	High	16(27.6)	3(6.1)	16(23.9)	3(7.5)	9(15.3)	10(20.8)	18(19.4)
Level of physical activity among participants during working hours	Mild	37 (63.8)	35(52.2)	34(85)	40 (67.8)	29(60.4)	55(59.1)	14(100)
	Moderate	18(31)	28(41.8)	6(15)	17(28.8)	17(35.4)	34(36.6)	0
	High	3(5.2)	4(6)	0	2(3.4)	2(4.2)	4(4.3)	0
Mean Time ( hours /week) spent in various intensities of Physical activities	Vigorous	0.93	0.81	0.48	0.63	0.76	0.76	0.18
	Moderate	2	2.4	1.8	1.7	2.8	2.3	1.5
	Mild	4.6	4	4.1	4.7	4	4.5	4
Mean Time( hours / week) spent in Type of Physical activities in different domains of routine activities.	Work domain	2.9	3.7	1.4	2.5	3.1	0.9	3.1
	Transport domain	1.3	1.3	0.8	1.2	1.1	0.8	1.2
	Household domain	0.9	1	1.1	1.3	0.8	0.8	1.0
	Leisure domain	2.4	1.8	3.1	2.6	2.0	3.0	2.2
	Sitting idle	48	52.7	42.2	56	42.9	50.9	34.8

In the study group (Table 2), 56% of the doctors did moderate levels, 26.2% low levels and 17.8% high levels of physical activity ( $p=0.004$ ). More male doctors (27.6%) reported vigorous activity as compared to females. The doctors in elderly age groups (70%) reported moderate activity whereas vigorous activity was higher among younger doctors (23.9%). In the various domains. The 64.5% doctors reported low physical activity in work domain. During the leisure time, higher number of doctors reported low (64.5%) activity. Doctors spent most of their leisure time (Figure 1) in studying (57.9%). Major motivators to do physical activity was fitness (72%) and the main limitation felt was lack of time (73.8%)



**Discussion**

The results of this have shown that majority of physicians

are moderately active as compared to the general population in Chandigarh.<sup>5</sup> Also in the study done in the industrial population in the city of Chennai the prevalence of physical activity was only 21%.<sup>12</sup> Also high percentage (72%) of doctors were aware about their status of physical activity. This supports the evidence that doctors are more aware about NCD and thus more conscious about their health.<sup>8</sup>

Looking at the variation in overall status of physical activity among gender it was seen that higher percentage (27.6%) of males were vigorously active as compared to females. This is similar to the trend observed in other studies.<sup>13</sup> It was also observed that larger percentage (23.9%) of younger doctors were vigorously active whereas larger percentage (70%) of older doctors were moderately active. The positive association between low levels of physical activity and increasing age is consistent with the literature.<sup>14</sup>

This study suggests that most doctors were involved in physical activity. Yet the problem of rising trends of chronic diseases remains among them.<sup>4</sup> This could be explained by the fact that total physical activity done in most cases remains insufficient to ensure energy balance to prevent chronic diseases. Another reason could be that ratio of energy expenditure to dietary intake is unbalanced to maintain weight stability. These imbalances can cause the rising trends of chronic diseases even among doctors. Studies have supported that such imbalances do not lead to any health benefit.<sup>15</sup> Another important observation in the study was that doctors were mostly active during working hours (2.8±3.3 hrs). Work of physicians involves factors such as long working hours, demanding workload, perceived low control over their work which increase the level of stress among them. Stress itself is one of the major risk factor of NCDs especially cardiovascular diseases.<sup>16</sup>

The reported activities during leisure time were studying (58%), sleeping (53.3%), net surfing (53.3%) and watching television (52.3%). The top most reasons reported by these doctors that motivate them to be active were fitness (72%), weight reduction (64.5%) and maintaining health (64.5%). Similar reasons for engaging in physical activity were observed in the study done among doctors in Bahrain. The primary cause for not engaging into physical activity was also lack of time among doctors in Bahrain as is observed in our study.<sup>17</sup>

The males reported to be more vigorously active and spent more time in vigorous activity, through out the day as compared to females. Studies have shown that men usually report greater levels of total and vigorous physical activities, whereas women tend to report participating in low to moderate activities.<sup>13</sup> In individual domains like work or transport no such significant difference was found. This can be explained by the similar nature of job and social status of both male and female doctors. There was no significant difference between males and females doctors in the levels of physical activity in domestic domain. This could be explained by the fact that the doctors stayed in urban area having higher income status income could afford domestic help and home gadgets to do household chores. Hence more than 85% of both male and female doctors were less active in domestic hours. Reasons for engagement or disengagement into physical activity did not differ among male and female doctors.

Looking at the variation of physical activity according to the age it was seen that younger doctors were found to

be more physically active while working as compared to older doctors. This could be attributed to the fact that 92.5% of the doctors in the younger age group were resident doctors and rest were consultants and doctors of non teaching institute. It is known that residents are involved in more physical work like attending emergency duties and calls, collect reports, take samples, take patients for radiological investigations, arranging blood etc.<sup>18</sup> On the contrary the consultants and other doctors have significantly less working hours (1.4hr/wk) and their nature of work is more sedentary as compared to the resident doctors. Therefore overall status of physical activity during working hours of older doctors is significantly less as compared to younger doctors. This leaves the older doctors with more time after work to spend leisurely. Also there are evidences that as the age progress the prevalence of NCD and its risk factors also increases.<sup>19</sup> This could be a motivator for older doctors for health conscious behavior and thus motivates them to engage into physical activity during leisure time. Thus they spend more time (3.1hr/wk) in physical activity during their leisure time as compared to the doctors of younger age group. More than 85% of doctors reported low activity during their transport time. This could be attributed to the high status of the doctors who resided in urban area and therefore enjoyed the transportation by personal vehicles and adoption of convenient life styles. Reasons motivating the younger doctors to be physically active were fitness, weight reduction, maintain health and improve shape and strength (significantly high). The older doctors reported to engage into physical activity for fitness, maintaining health and recreation. Lack of time was perceived as the major barrier among the doctors of both the age groups.

On comparing the doctors of clinical and non-clinical branch it was seen that the mean time spent in domestic domain was significantly high among doctors of non-clinical branch. The doctors of clinical branch reported significantly less sitting time as compared to doctors of non-clinical branch. Studies have shown that doctors of clinical branch have longer working hours.<sup>20</sup> There was no variation among the doctors of clinical and non-clinical group in the other domains.

It was also seen that all doctors working in non-teaching institutes reported to have low levels of physical activity during their working hours whereas significantly high proportion of doctors of teaching institute reported moderate to high levels of physical activity. This can be explained by the fact that teaching institutes are known to have high workload (academic work and patient overload) and job stress as compared to non-teaching institutes.<sup>21</sup> The commonest reasons reported for engaging into physical activity was fitness among the doctors of teaching institute whereas as doctors of non-teaching institute reported weight reduction as the commonest reason.

Limitations of the study: include the potential social-desirability and information biases inherent in self-reported data. There are limitations associated with IPAQ i.e. respondents face difficulties in distinguishing moderate and vigorous activities. It is also well recognized that self-reported measures can over-estimate physical activity.<sup>22</sup>

Other limitations includes the lower sample size, only public(Government sector) doctors, Private hospitals doctors were not included, only urban participants hence, it could not be generalized for all doctors and for all the institutions. Still, By using baseline data of prevalence of

physical activity status among public sector doctors in Chandigarh, it could provide insight for public health planning, health policy planning for this particular population

#### Author's contributions

Dr. Anjali Chauhan has made substantial contribution in designing, acquisition of Data, analysis and interpretation of the data and drafting initial manuscript. Dr. Madhu Gupta has contributed by conceiving the idea and the interpretation and analysis of data. Also, she supervised this study during the preliminary stages during data collection. Dr. J. S. Thakur made a significant contribution with his valuable suggestions and research acumen during various stages of research. Dr. Binod Patro has contributed helps by guiding during protocol drafting, data analysis. And Dr. Omesh Kumar Bharti submitted the paper after thorough check.

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#### Conflict of Interest

The authors declared that they have no conflict and any competing interests.

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