

# High Levels of Physical Inactivity Amongst Dental Professionals: A Questionnaire Based Cross Sectional Study

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## ABSTRACT

**Introduction:** A Dentist plays an important role in providing health education (General and Oral) to the community. Questions arise regarding their own health, which in turn affects their patients' counselling for leading a healthy and a physically active life.

**Aim:** To measure and compare the amount of physical activity present amongst dental professionals with the general population of Greater Noida.

**Materials and Methods:** The International Physical Activity Questionnaire (IPAQ) was used to measure physical activity and statistical significance was calculated using SPSS version 21.0. Statistical significance was kept as  $p < .05$ .

**Results:** Compared to the general population, Dentists were more obese and reported increased levels of low physical activity. Dentists had an increased and significant transportation and leisure time activity ( $p = .03$  and  $.01$ ) whereas, the general population had a higher level of vigorous activity ( $p < .01$ ). The MET hour/week for dentists and general population was 33.72 and 36.24 respectively, which was quite low as compared to European population.

**Conclusion:** The results indicate that dentists report a lower level of physical activity as compared to the general population of Greater Noida. However, on a global scale, the physical inactiveness of dentists and general population alike could pose a serious health hazard and if kept unchecked, shall increase the global burden of chronic disease.

**Keywords:** Dentists, IPAQ, Obesity, Physical activity

## INTRODUCTION

Obesity has been described by The World Health Organization as one of today's most neglected public health problem, affecting every region around the globe and it is well known that physical activity, apart from making a person healthy and active, can reduce the cases of obesity [1]. One of the best tool to fight this disease is through regular physical activity, which is defined as "any force exerted by muscles that results in energy expenditure above resting level", which also leads to general well being of a person [2]. Indian statistics show that according to the National Family Health Survey (NFHS) conducted in 2007, there is a whopping 30% of obese adults' males and 37.5% of obese adult females in a particular state of India [3].

Obesity and other non-communicable diseases are now not only found in the general population, but in healthcare professionals too. The Dental Team plays an important role in providing health education (both general and oral) to the community/patients. Attributed to long working hours, stress and paucity of time, questions arise regarding their own health and health practices. A number of studies indicate that doctors who exercise regularly were also more effective in helping patients to practise regular physical exercises [4,5]. Barring a few exceptions [6], most studies state that physicians are physically more active [5,7-9] than the general population, with physical activity being associated with gender [7]. However, a grim picture is seen amongst the dental professionals of India, where almost 40.8% of the dental professionals lead a sedentary lifestyle and are at a greater risk for developing chronic diseases [10]. Scarce information in the literature is found regarding the physical status amongst dental professionals in India. Hence, the aim of this study was to compare the physical activity of the dentists with the general population in Greater Noida.

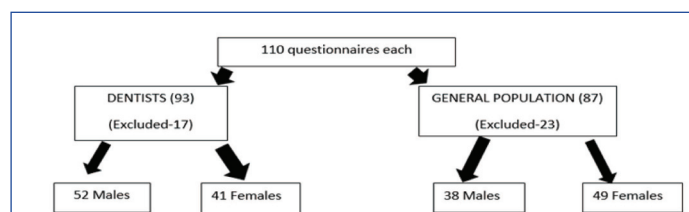
## MATERIALS AND METHODS

### Study group

The study was conducted from 1<sup>st</sup> April to 31<sup>st</sup> October, 2013 among Dentists {MDS,BDS and PG (Post Graduate) students} of Greater Noida, India and patients visiting the Department of Public Health Dentistry, ITS Dental College, Hospital and Research Centre, Greater Noida, through means of a self-administered, pre-tested and pre-validated questionnaire which was distributed by the investigator himself. The dentists were given a week's time to complete the questionnaire after which they were collected by the primary investigator. The patients on the other hand filled the questionnaire on spot as and when they reported to the department. Ethical approval was taken from the institution's ethical committee and an informed, written consent was obtained from the subjects who were also assured regarding the confidentiality of the data. Participation in the study was voluntary. People suffering from any injury or disability that restricted physical activity along with pregnant women were excluded from the study.

### Instruments/measurement

The first part of the questionnaire contained information regarding age/ sex, designation (in case of dentists) and their height and



[Table/Fig-1]: Breakout of the study population

Characteristic	Number (n)	%
1. Total		
i. Dentists	93	100
a) Mean age	28.62±6.01	
ii. General population	87	100
b) Mean age	30±8.00	
2. BMI		
i. Dentists		
a) Underweight ( $\leq 18.4$ )	04	4.54
b) Normal (18.5-22.9)	29	32.95
c) Overweight (23-24.9)	24	27.27
d) Obese ( $\geq 25$ )	31	35.24
ii. General population	(n=88)	
a) Underweight ( $\leq 18.4$ )	01	1.20
b) Normal (18.5-22.9)	23	27.71
c) Overweight (23-24.9)	38	45.79
d) Obese ( $\geq 25$ )	21	25.30
	(n=83)	
3. Physical activity		
i. Dentists		
a) Low	34	36.55
b) Moderate	35	37.65
c) High	24	25.80
ii. General population		
a) Low	24	27.58
b) Moderate	39	44.84
c) High	24	27.58

**[Table/Fig-2]:** General Characteristics of the study population that 5 dentists and 4 people from the general population did not give their BMI

weight so that the BMI of the respondents could be calculated accordingly.

The second part of the questionnaire consisted of The International Physical Activity Questionnaire (IPAQ) long form which was chosen to assess physical activity as it was highly reliable and valid [11]. These questions measured physical activity divided into three intensities (vigorous, moderate, and walking). Self-estimation was done by the respondents to estimate the number of days (frequency) he/she was physically active and the average time (duration) that he/she spent being physically active on the days specified by the respondents. Subsequent calculation of total physical activity, MET or metabolic equivalent (MET min/week) was done [12]. The IPAQ Reliability Study was used to derive the selected MET values [1]. An average MET score was derived for each type of activity using the compendium provided by Ainsworth et al in their comparison study [13].

## STATISTICAL ANALYSIS

Data analysis was conducted using Windows release 21.0.0 of The Statistical Package for the Social Sciences (SPSS) [14]. Any statistical significance between the physicians having categories of physical activities as low, moderate, and high were analysed with the Chi-square test. Statistical significance was taken as  $p < 0.05$ .

## RESULTS

The questionnaire was distributed to a total of 110 dentists and an equal number to the general population. The response rate achieved was 84.54% and 79.09% respectively [Table/Fig-1]. The mean age of dental professionals who responded to the questionnaire was 28.62±6.01 whereas for the general population it was 30±8.00. It was observed that 35% of the Dentists self-reported to be obese in comparison to the general population, in whom, only 25.30% of the population was found to be obese. The mean BMI values were 22±3 and 20.75±3.8 respectively. Only 37.65% of the dentists were moderately active (median MET-480) when compared to the 44.84% of the general population (median MET- 1030) [Table/Fig-2].

[Table/Fig-3] represents the domain specific data of both the populations. A significant difference is seen in the transportation and leisure time of dentists as compared to the general population. Upon specific gender based analysis, a significant difference was seen in the domestic / garden domain amongst males. No

significant difference was seen in the domain specific categories in the females of both the populations.

Upon analysing the category specific data of both the populations [Table/Fig-4], a significant difference was observed in vigorous activity of both populations. Amongst males, a significant difference was reported in both the moderate and vigorous activity categories. Whilst in females, a high level of moderate activity was seen in female dentists which was found to be statistically significant.

## DISCUSSION

In our study, it was found out that dentists report a lesser amount of physical activity as compared to the general population. We also found that barring transportation and vigorous activity, female dentists are more active as compared to their male counterparts. Contrastingly, sex-wise comparison in the General Population revealed that men were physically more active than women.

The results obtained in this study are in agreement to a study conducted by Singh A & Purohit B which stated that dentists were obese and reported lesser physical activity [11]. The main reasons for this decreased physical activity may be due to the working hours of the clinics, which mostly operate in the evenings as it is convenient for the working population to visit them. A few dentists also work in dental colleges during the day and then continue with their private practice in the evening. This can also justify the high median MET score achieved by dentists in the transportation domain.

We also converted the MET-min/wk to MET- h/week for comparison with population of other countries. The MET-hour of dentists was 33.72 MET-h/wk while the general population reported a mean MET-hour of 36.24 MET-h/wk. whereas, in a study done in the population of Croatia, it was found that they had a MET-hour of 58.2, which is very less as compared to our populations [15]. As we continued comparing our results with similar studies conducted across the globe, it was important to note that some authors used the short version of IPAQ, and the results of those studies were comparable [11,16,17]. However, using the long version of the IPAQ for measuring the amount of physical activity was found to be more accurate, when compared with the short version which could lead to systematic underestimation of physical activity [18]. There were eight European countries which were a part of the EUPASS Project and their Median physical activity score put together was 49.5 MET-h/wk [16].

The results of the present study indicate that not only dentists, but the entire Indian population was at risk as it reported a lesser level of MET-h/wk in comparison to population of other countries. This inactivity, if kept unchecked, could add to the national and global burden of chronic diseases. India is constantly undergoing an epidemiological transformation, where non-communicable diseases are becoming the leading cause of deaths in the community and hence, physical activity could be a critical factor, especially in the fight against obesity [19].

The health benefits of physical activity are immense. Fretts et al., examined the association between total physical activity (leisure-time plus occupational) and incidence of diabetes among 1651 American Indians participating in the Strong Heart Study for a time duration of 10 y. Their findings concluded that a lower risk of diabetes was seen in the population who reported any physical activity as compared to those who reported no physical activity [20]. Physical activity was also found to reduce the risk of periodontal disease in a study done on male health professional and the authors suggest that engaging in the recommended level of exercise is associated with lower periodontitis prevalence, especially among former smokers and those who never smoked [21].

	Work			Transportation			Domestic/ Garden			Leisure Type Domain		
	Dentists	General Population	p-value	Dentists	General Population	p-value	Dentists	General Population	p-value	Dentists	General Population	p-value
<b>Total</b>												
Median	1188	2313	.45	330	693	.03*	145	180	0.24	360	685	.01*
Mean	2861.65	3711.66		1225.645	1829.28		687.41	1091.5		1245.02	1971.4	
Range	0-27756	0-27756		0-13710	0-13710		0-13160	0-13160		0-13866	0-13866	
<b>Males</b>												
Median	1635	2194	.06	585.75	765	.92	0	480	0.24	231	807	.83
Mean	3258.27	2828.76		1339.442	1738.14		659.903	1056.84		1545.55	1543.43	
Range	0-27756	0-17386		0-13710	0-8604		0-13160	0-6975		0-13866	0-7572	
<b>Females</b>												
Median	1862	2365.5	.63	462	594	.84	450	275	.73	480	378	.14
Mean	2358.89	4356.86		984.109	1895.884615		921.280	1116.83		862.53	2284.30	
Range	0-8316	0-27756		0-4644	0-13710		0-4040	0-13160		0-3660	0-138866	

[Table/Fig-3]: Domain specific data of both the study populations. Value <.05. \* denotes a statistically significant difference

	Walking			Moderate Activity			Vigorous Activity		
	Dentists	General Population	p value	Dentists	General Population	p value	Dentists	General Population	p value
<b>Total</b>									
Median	1386	1782	0.26	480	1030	.53	0	480	<.01*
Mean	2973.726	3489.29		1637.727	2908.51		1228.817	1819.76	
Range	0-15444	0-22968		0-16400	0-16400		0-15360	0-15360	
<b>Males</b>									
Median	1386	1881	0.66	335	2640	.04*	160	720	.03*
Mean	3292.702	3201		1813.365	3557.80		1697.692	1781.46	
Range	0-14784	0-22968		0-16400	0-16380		0-15360	0-12160	
<b>Females</b>									
Median	1881	1683	1.2	900	394	.02*	120	400	.03*
Mean	2832.366	3735.53		1430.366	2353.91		638.05	1852.5	
Range	0-12672	0-14784		0-7350	0-16400		0-3840	0-15630	

[Table/Fig-4]: Category specific data of both the study populations p value <.05. \* denotes a statistically significant difference

## LIMITATIONS

### Our study has the following limitations

1. The fact that physical activity and BMI were investigated with the use of a self-reported questionnaire, may lead to over-reporting/under-reporting of physical activity by participants. The nature of self-reported total physical activity scores by themselves shall not yield a complete pattern of physical activity of the respondents [16].
2. Another limitation of our study is the validity of IPAQ in the elderly (aged 65 y and older), which has not yet been determined [16].
3. Since the IPAQ records activity done in the last seven days only, data entered by otherwise highly active people suffering any injury would have led to inaccuracy of data recording.
4. Inadvertently, the presence of social desirability bias cannot be ruled out.

## CONCLUSION

The alarming results of our study draw attention to the low amount of physical activity present in the Indian population. It is important that such studies be undertaken on a national level so as the true nature of physical activity of the entire Indian population can be assessed. We suggest changes in the Dental curriculum for dentists and school/college curriculum for the general population to include at least 30 min of physical exercise for their students. Also it is important that the dentists and general population be made aware

of the possible health effects of obesity and be counselled to take up physical activity for their own benefit. Apart from being physically active, dentists should also take up the moral responsibility to counsel their patients regarding the health benefits of physical activity to their patients and decrease the global Indian burden of chronic disease.

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