Awareness of Correct Sitting Posture in Young Population-Age Group 14 to 17 Years

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Abstract

Background: Students in 14-17 years age group spend most of their time attending college/school/tuitions/classes, studying, assignment completion, working on computers; hence mostly sitting for long hours in sustained posture or position. Students should be aware of the trap of incorrect sitting posture as they might encounter many health problems, if they continue to acquire an incorrect/poor sitting posture.

Objectives: To identify awareness of correct sitting posture in age group 14-17 years, the source of information, if received, and problems experienced due to improper sitting posture. Materials and Methods: A cross-sectional questionnaire-based study comprising of 400 students of 14-17 years age group was conducted in Pune city.

Results: About 75% of the participants were aware about correct sitting posture, 81.5% had received information about correct sitting posture from parents, and 82% were aware of ill consequences of improper sitting posture.

Conclusion: Knowledge about correct sitting posture among adolescents is present but it is still inadequate. Negative attitude towards the correct sitting posture and not willing to adapt the same in activities of daily living is a serious matter of concern. A bad habitual posture can have detrimental effects on health of students in near future. Therefore, educational campaigns on ergonomics and postures are the call of the hour.

Keywords: Sitting posture, Posture, Young population, Awareness.

Introduction

In the modern world, we tend to spend most of our days sitting, working on computers, watching TV on couches, or travelling in vehicles, leading to a sitting disease. As these above-mentioned activities are leisure in nature, we fall prey to improper sitting posture. Nowadays, humans spend about 8-25 years in education environment, studying, attending lectures, reading, and writing. As most of these activities are performed in a sitting position, correct sitting posture awareness among studying population becomes a major concern. Cardon et al.¹ in their study found out that school pupils spend about 92% of their working time in static sitting, only 3% in dynamic sitting, 3% in walking, and 2% in standing. How do we sit is determined by the posture of our body. According to two studies, ²³ 57% of the students spend their time seated in kyphotic sitting or in leaning forward position while 43% of them in slouching position.⁴

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This shows that students are still unaware about a good sitting posture and the harmful effects of bad sitting posture on their health in future. "Proper/Good sitting posture," what does that actually mean? According to Dale,5 good sitting posture is to have the feet supported on ground, lower back should be slightly arched to keep the chest lifted, hip and knee in the same level with 90-90 angle, back supported with backrest, shoulders relaxed. Study on Level of awareness of posture in young people6 described correct sitting posture with back straight and shoulders back, buttocks should touch the back of the chair, and all the three normal spine curves should be present while sitting; a rolled up towel or lumbar roll can be used to maintain the normal curves of the back.

Students in 14-17 years age group spend most of their time in attending schools or colleges, studying, completing assignments, working on computer, and attending tuition or classes, hence mostly sitting for long hours in a sustained posture or position. According to McKinley Health Centre,7 muscles and other tissues will be stretched or shortened due to extended time spent in sitting while doing these activities. It may become severe and lead to other musculoskeletal problems, if the students continue to sit in a bad sitting posture. Studies have observed that Children's posture slowly deteriorate as they grow older, the roots of which lies during their early habits of slouching at their computer, while watching TV, or while studying.5,8,9

Students need to be aware of the trap of a bad sitting posture. It might seem insignificant, but if they continue to sit in a poor sitting posture, they might encounter many health problems. As stated by Dale,5 good posture requires practice and effort but it is very advantageous to students' health and comfort. Sitting in a poor posture does not affect only the physical body of the students but also their psychology. Brinol et al.10 stated in their study that students who slouched, and those with less confident posture, were not convinced by their own ideas. They also added that if a student was sitting in a confident posture that was sitting up straight, they were more likely to trust their thoughts and ideas in forming their self-attitudes.

Perhaps if we are more aware of our body's natural posture, which evolved to perform our functions better, we can prevent musculoskeletal and psychological problems at an early age. A study about awareness of good sitting posture among students done by Asiyah11 concluded that the students are aware of the correct sitting posture; however, they do not implement it.

Knowledge about correct sitting posture among adolescents is still inadequate. Negative attitude towards the correct sitting posture and not willing to adapt the same in activities of daily living is a serious cause of concern. Therefore, this community-based cross-sectional study was undertaken to identify awareness and sources of information about correct sitting posture and awareness about bad consequences of incorrect sitting posture among young population (14-17 years) in Pune city.

Materials and Methodology

Study design: observational cross-sectional study

Population: Students studying in secondary schools and colleges of Pune city

Sample: Students of age group 14 to 17 years

Sampling method: Cluster sampling

Sample size: 400 (100 each of 14, 15, 16, 17 years)

Criteria of Inclusion and Exclusion

Inclusion: students studying in secondary, higher secondary schools and junior colleges

Exclusion: students who have attended formal training on body postures and ergonomic workshops

Methodology

Face validity of the questionnaire was done by three experts and three participants. Ethical committee approval was obtained. Colleges and schools from different divisions (north, central, south, west) of Pune city were recruited by cluster sampling. Ten colleges and schools from every division of Pune city were listed; a random number was generated; and schools and colleges listed on that number were recruited for the study. From the north division, Modern School and Junior College; from the central division, BT Shahani School and Junior College; from the south division, Dastur School and Junior College, and from the west division Apte School and Junior College were selected for the study. Written informed permission was taken from the schools and colleges authorities. A cross-sectional questionnaire-based study was carried out from September to January 2016 on students of 14 to 17 years age group after applying the exclusion criteria from schools and colleges of Pune city. Sample size of 400 students, 100
students of each age group, 25 students from each division’s schools and colleges participated in the study. Written informed consent from parents/guardians, after explaining the need and scope of the study to parents/guardians and the adolescents in detail, was obtained. The self-administered questionnaire had 15 open, multi-choice, and closed-ended questions on awareness, source of information, prerequisites and knowledge regarding consequences of the poor sitting posture. After the completion of the questionnaire, an informative leaflet about the correct sitting and ergonomic posture, while performing activities of daily living, was handed over to the participants.

### Data completion and Analysis

The collected data were entered in a coded form in MS Excel. Keeping in view the aims and objectives of the study, the data were then descriptively analyzed and interpreted in percentages.

### Results and Tables

- 75% of participants had heard about the term correct sitting posture-bar 1. However, 82% believed that they practiced the correct sitting posture-bar 2. 92% of the participants had information about correct sitting posture-bar 3. 77% were aware that correct sitting posture prevented shoulder muscle weakness-bar 4 and 75% were aware that proper sitting posture had an effect on effective brain functioning-bar 5. Only 12% of the participants were aware of break pause concept-bar 6. 74% were aware of ill consequences of improper sitting posture-bar 7, and 78.5% of respondents were aware that long hours of working had an effect on sitting posture-bar 8.

![Graph 1. Practice of Correct Sitting Posture](image1)

![Graph 2. Practice of Correct Sitting Posture](image2)
About 67.7% of respondents practiced the correct sitting posture while studying, 57.5% practiced while attending lectures, and 23.5% believed that they assumed correct sitting posture while working on computer. Only 8.5% of participants practiced the correct sitting posture while watching TV or playing video games. 18.5% of respondents assumed correct sitting posture while eating meals.

About 81.5% of participants had been informed by parents, whereas 34.7% received information from their teachers. Only 1% obtained information from the peer group, 1.7% from internet and 0.5% from newspapers, radio and commercials.

41% of participants were aware that a backrest is needed for assuming correct sitting posture, whereas 17% believed that leg support and 14% believed that an adjustable chair was required. Only 9% were aware that forearm is a prerequisite for assuming a correct sitting posture. 42.5% were aware that all the above-mentioned options were prerequisites of maintaining a proper sitting posture.
About 48.7% of participants were aware that an improper sitting posture results in neck pain, around 70% believed that incorrect sitting posture leads to back pain. Only 22% were aware that an improper sitting posture leads to headache. 15.5% believed that an improper sitting posture affected handwriting and 31% were aware that it affected concentration level/attention span/arousal. Only 2.5% were aware that all the above-mentioned options were the ill consequences of an improper sitting posture.
The study showed only 40% of responses were in favor of option (2), which was the ideal sitting posture on chair, whereas 55.5% selected the incorrect option (4) as the back was not supported and there was increase in the lumbar arch. 3.75% opted for slouched posture (1) and 0.7% chose option (3), which had kyphotic and slouched posture. This indicated the poor understanding of correct sitting posture among adolescents.

Out of 400 respondents, 391 (97.7%) adolescents opted for option (1), the correct sitting posture while working on a computer, as the screen is at the eye level and forearms and feet were supported. There was normal lordotic curve maintained with the hip and knee in the same plane with a 90-degree angle between them. Only nine participants (2.25%) opted for the incorrect sitting posture.
364 (91%) of the students opted for option (1) which is the correct sitting posture while attending lectures. 7.5% students (30) opted for leaning forward posture and only 8 students (2%) opted for the slouched posture.

**Graph 8. Represents the Option Selected**

**Figure 4. Different Sitting Postures on a Stool**

**Graph 9. Represents the Option Selected**
The study showed that 70.5% (282) students opted for option (2) which is the ideal sitting posture on a stool with head and neck in neutral, shoulders relaxed, normal lumbar curve and hip and knee at 90-degree angle between them. 4% opted for the slouched sitting posture and 25.5% chose over corrected posture (excessive lordosis of lumbar spine).

Graph 10. Represent How the Population Accesses the Desktop Computers or Has an Access to Laptops

75.5% of the study population accessed the desktop computers sitting on chair, 5% accessed the laptops on floor while 25.5% on the bed.

Discussion

The present study, which was a cross-sectional questionnaire-based study, has revealed that 75% of respondents had awareness about correct sitting posture as contrast to a study done on medical students of Isra University that found that 80% were aware this could be because they belonged to medical fraternity so they had knowledge about body mechanics and body physiology. This was found to be consistent with some other similar studies. However, there is poor understanding of proper sitting postures on the chair. Only 40% in Graph 6 and on stool 70.5% in Graph 9 based on the option selected in the pictorial depiction of different sitting postures. This result was similar to a previous study done by Asiyah in Malaysia that only 67% (12 out of 18) of the respondent were able to describe the good sitting posture.

In this study, it is found that students were aware of correct sitting posture; however, they did not implement it with the activities of daily living like working on computers (only 23.5% practiced the ideal sitting posture), while watching TV or playing video games (8.5% of students assumed correct sitting posture), while eating meals (18.5% of total participants acquired a good sitting posture). This observation stands corrected as previous study done in IIUM Kauntan campus by Asiyah concluded that students had knowledge about the sitting postures but they did not implement it due to various reasons.

The source of information about the correct sitting posture was conveyed by parents (81.5%) and teachers (34.7%) to the participants; however internet (1.7%) and peer group (1%) were not significant sources of information. A previous study done by Yasmeen et al. found that 70% of teachers used a proper back support while sitting and 75% of teachers sat with equal distribution of weight on both sides in contrast to students whereas 47.3% sat with exerting body weight more on one side this indicates that teachers had good information about correct sitting habits than the students.

In our study, we found that students were unaware of prerequisites for assuming the correct sitting posture (42.5%) in Graph 4. This could be due to poor knowledge of ergonomics, body use, and ignorance about health.

Our study found that there was poor awareness (2.5%) about all the mentioned harmful effects of an improper sitting posture in Graph 5. Previous studies stated that students faced musculoskeletal aches and pains and had poor or less effective brain functioning due to incorrect sitting posture. There was higher awareness about back pain (70%) as a result of incorrect or awkward sitting position/posture.
which is similar to the study done in higher school students in Karachi where 94% of respondents were aware of back disciplines while seating in a high backrest chair. A study done by Jayaratne and Farnando found that the prevalence of low-back pain in school children was 24.4%, which affected their academic performance and school attendance.

In our study, 48.7% of respondents believed that neck pain was caused due to an incorrect sitting posture, which was similar to the study done in Karachi that revealed association between pain and sitting posture with the onset of musculoskeletal discomfort in cervical region. Only 62 (15.5%) students had knowledge about bad or poor handwriting was a result of incorrect sitting.

This study showed that 25.5% respondents operated laptops on bed and 5% on the floor, indicating that they acquired awkward or incorrect posture while they worked on the computers. The results of a study done by Asiyah showed that 44% used laptops on the bed. Students chose bed due to the reason that the mattress was more comfortable for them to sit on. However this would have a detrimental effect on their posture leading to hunchback, neck and back pain in near future as they lean forward for operating the computers. Also the students would probably not be sitting and instead lying prone causing compression on the front ribs, thus affecting their lung capacity.

Conclusion

The students aged 14 to 17 years are aware of correct sitting posture; however, there is poor understanding and knowledge of ergonomic and correct sitting postures.

Parents and teachers play a significant role in creating awareness and spreading information about proper sitting postures; hence ergonomic lectures and workshops should be held for parents and teachers along with students for their better understanding and improving knowledge about postures and implementing them in activities of daily living.

Students are less aware of harmful consequences of incorrect sitting posture, hence back-discipline programs and advantages of ergonomic postures and positions, and disadvantages of improper sitting positions should be explained and discussed in details, and ergonomic lectures should be included in the curriculum.

Limitation of the Study

Limitation in this study restricts our data to be self-reported information.

The study was conducted in schools and colleges, within the city limit, which has infrastructure of desks chairs and benches.

Study population does not reflect a more general population due to narrow age range and study population consists of students rather than normal population.

Clinical Implication

Ergonomic sessions, lectures, and workshops can be held in schools and colleges for better understanding and improving knowledge about ideal and correct postures/positions in order to implement them in daily living activities for improving the health status of students and prevent muscular pains and aches due to improper sitting in future.

Further scope of the Study

An objective tool to observe the postures while the students are attending lectures, while working on computers and performing daily activities in order to correct the faulty postures as a precautionary measure to prevent muscular pains and improve effective functioning of brain and to build a positive self-image and self-attitude.

An objective assessment tool to measure the prevalence and severity of musculoskeletal pain.

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Conflict of Interest: Nil

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