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Prevalence of pain while writing in students and its correlation with writing speed.

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ABSTRACT

Background

This research addresses the issues faced by students during writing which negatively affects their performance. Existing researches focuses on the consequences of using unorthodox grips[1] leaving behind the pain which is experienced while writing by orthodox as well as unorthodox grips.
Thus, this research aims to draw attention toward an overlooked subject and create awareness among students to not to ignore pain and thereby avoid further injuries which can arise from cumulative traumas.

Methods

The purpose and nature of study was explained to the participants and consent form was filled by the participants. Willing participants were given a 5-minute writing test. Participants were regular writers between 17 to 22 ages. Based upon the inclusion and exclusion criteria a total of 88 students were included in study. The test results were recorded and statistical analysis was done.

Results

The study shows that 93% of students experience pain while writing. At the same time participants showed poor knowledge of proper sitting position during writing. The pain described by the participants was either tingling or cramping, the site of pain and the intensity of pain however varied among them. The speed of writing was found to be proportionate with pain.

Conclusion

Based upon the test results, there is scarcity of knowledge about proper writing techniques among students. Awareness of which can reduce the risks of cumulative traumas of hand which can arise later on. Proper writing techniques would reduce pain and the need for constant adjustments made and improve quality of writing.

Keywords: Writing speed, students, cramping pain, tingling pain

INTRODUCTION

Writing is an activity that requires physical mechanical skills[1]. Handwriting is a task used for highest level of human communication.[2] In order to write the writer requires to activate sensory-motor and cognitive skills simultaneously, in order to plan an idea, plan the syntax and spelling of each sentence and make a motor-orthographic integration to produce a text. All these phases require proper organization.[3]

Children often get interested in writing at an early age. When a child is two years old, they are fascinated by scribbling, at three years age they begin to realize that people make marks on paper purposefully, at around age four and five most children formulate both number and letters. The student's quality of pen grip is poor initially, and improves gradually with practice. Similarly writing speed increases from 36 letters per minute to 50-72 letters per

minute till grade six.[5] Adults use a combination of finger, hand, and arm movement during sustained writing. The hand is turned considerably so that it rests on the third and fourth finger so as to move smoothly over the surface while writing. The pen is held about an inch above the point with thumb and first two fingers.[5]

The types of pengrips used differ among individuals, some commonly used grips are tripod, quadrupod, lateral tripod, thumb grip and interdigital grip.[1] Alston (1983 and 1985) reported that pen grip was the factors that was affecting the ability of students to write. schneck (1991) considered that awkward grasps may not affect handwriting when minimal amounts are required, but when large amount of written work are required, poor grip may lead to fatigue as well as to slow, poor formation of letters.[1]

The skill of producing fast and legible writing among students is important as most assessments of academic activities are based on timed examinations.[4]

Factors affecting writing speed are:

- Age, gender, handedness
- Writing style
- Pencil grasps
- Pain and fatigue
- Legibility
- Academic ability

Handwriting fluency during an exam requires the writer to maintain sufficient speed with a certain level of legibility. In order to demonstrate knowledge by witing a sufficient amount of information in a set time period is a major concern among students.[5]Incorrect pen grips and speed leads to pain. A proper posture during writing is important. The student is seated comfortably so that the knees are perpendicular to the floor and feet resting on the floor. The body slightly leans forward in a straight line, forearms resting on desk and elbows slightly flexed. Student's non dominant hand holds the paper and moves it along.[5]

Objectives

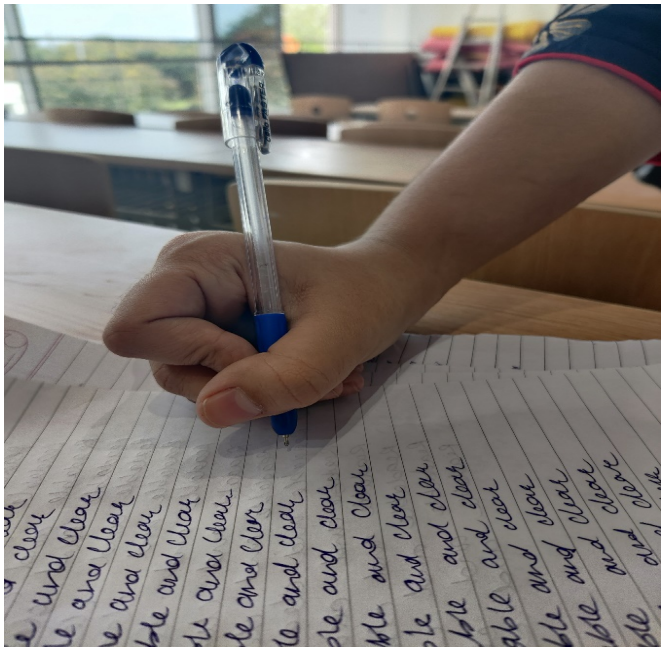
To assess pain during writing, its intensity, and quality of pain. To assess speed of writing. To corelate writing pain with writing speed.

METHODOLOGY

The study was conducted among medical students aged between 18 to 21 years. Considering the inclusion and exclusion criteria they were requested to participate in the study. The nature of the study was explained to the subjects and those willing to participate were included. 88 students were selected. For participation in this study, the student must be a regular writer. The subjects were given paper and were advised to use their routine pen. A 5-minute writing test was conducted, subjects were told to write for 5 minutes continuously as fast as they can. The phrase "readable and clear" was being told to write continuously one below the other. The subjects were instructed to tell immediately when minor pain started while writing and to stop when they had unbearable pain during writing in those 5 minutes. All the subjects were assessed for pen grip, site of pain, quality of pain and intensity of pain, time at which pain started and time at which the subjects were unable to continue due to unbearable pain during writing and their writing speed. Statistical analysis of collected data was done accordingly and hence conclusion was given.

Data collection tools

A consent form was signed by the participants before filling the data collection sheet with all the details explained in Marathi. The respondents were informed about the aim of the study as well as the fact that participation in the survey was totally voluntary. Data collection sheets were distributed to the participants. Participants were told to use their regular pen for writing the test.



RESULTS

Fig 1 Tripod grip was mostly used by the students. Around 78% of students used tripod grip. Quadrupod grip was used by 8% of students. Lateral tripod grip was used by 3% students. Interdigital and thumb grip was used by 2% of students which was the least in number.

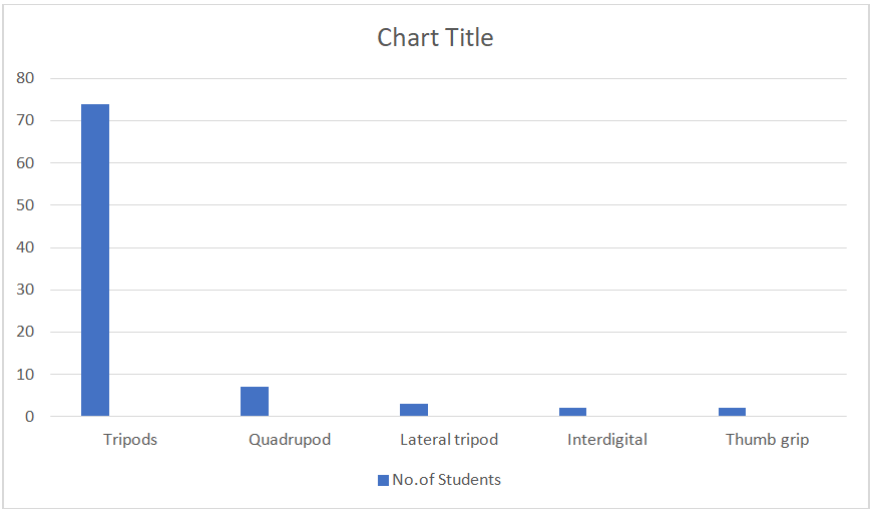


Fig 1: Types of pen grips used by the participants during the test.

Fig 2 The type of pain experienced was either tingling type of or cramping type. 8% of students experienced tingling type of pain whereas 92% of students experienced cramping pain.

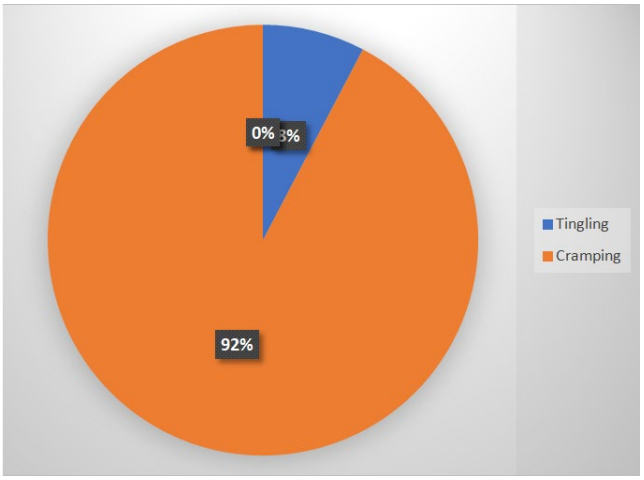


Fig 2: Type of pain experienced by participants while performing the test

Fig 3 4% of students started experiencing pain within 1 min of writing. 34% of students experienced pain within 2 mins of writing. 17% of students experienced pain within 3 mins. 13% within 4 min, 16% within 5 mins of writing. Other 16% of students did not experienced pain at all.

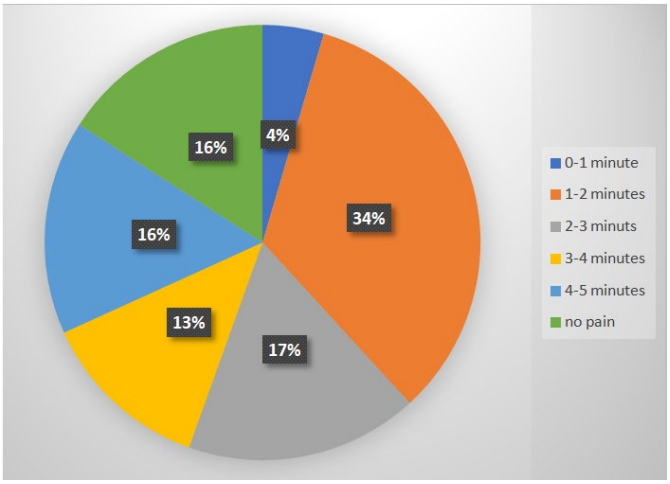


Fig 3: Time when participants started experiencing pain during the test.

Fig 4 Speed was calculated by the number of words written per minute. 24% of students wrote with speed of 22-26 words per min, 51% wrote 27-31 wpm, 22% wrote 32-36 wpm, 2% wrote 37-41 wpm, and 1% wrote 41-45 wpm.

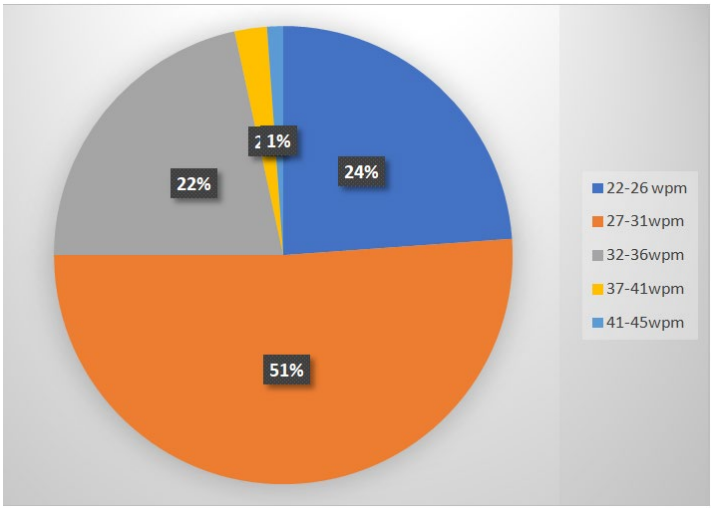
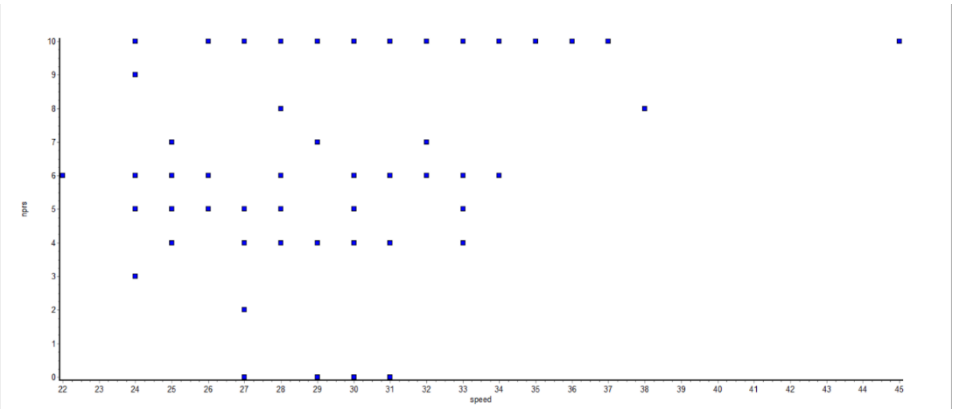


Fig 4: Speed of writing of the participants



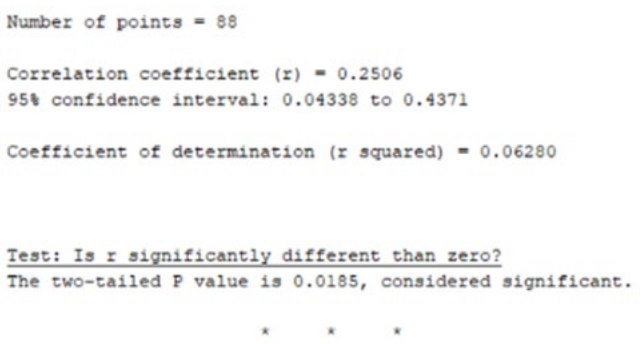


Fig 5: The Corelation between writing speed and writing pain.

DISCUSSION

In the present study we aimed to study the prevalence of writing pain in students and how it corelates with their writing speed. The study assessed students writing pen grip, pain while writing, intensity of pain and speed of writing. The study was conducted among 17-22 year-old students who were regular writers. The test conducted was a 5 min writing test. The subjects were assessed during the test. The pain they perceived while writing was assessed by numerical pain rating scale. Speed was evaluated by words per minute. Pain and speed of each student was then correlated. The study shows that there is a correlation between pain and speed. The faster you write the more pain you perceive. Thus, a proper writing speed is necessary for writing. Also, the study found that the students have poor knowledge of proper sitting posture. Thus, this study draws our attention towards educating students about proper writing techniques and how they can take various measures to avoid traumas of hand.

CONCLUSION

According to the results the study indicates that writing speed dose affect the legibility and pain experienced during writing. This necessities awareness regarding proper writing techniques among students. This will be helpful in reducing writing problems in teenagers and adults and thus improve their academic performance.

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