The Link between Smartphone Use and Temporomandibular Disorders in Undergraduate Dental Students: A Growing Concern

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ABSTRACT

This study explores the connection between Smartphone usage and Temporomandibular disorders (TMDs) in Undergraduate Dental students. TMDs refer to issues affecting the jaw joint and surrounding muscles, often leading to pain and difficulty in jaw movement. With the rapid rise in smartphone usage, especially among younger people, there are growing concerns about how prolonged use of these devices may impact physical health. By conducting a Cross-sectional survey among 201 Undergraduate Dental students, the research investigates how smartphone behaviours—such as lengthy usage, poor posture, and teeth clenching might play a role in the onset of TMD symptoms. The results indicate that excessive smartphone use, combined with habits like bending the neck and holding the phone in awkward positions, can increase the chances of experiencing jaw pain and discomfort. This Survey highlights the importance of being aware of the potential connection between smartphone use and TMDs, advocating for better posture and device usage practices to reduce the risk of developing these disorders.

Aim: The Aim of this study is to investigate the link between Smartphone usage and the development of temporomandibular disorders (TMDs) in Undergraduate Dental students.

Objective

1) To assess the prevalence of TMD symptoms (including jaw pain, clicking sounds, and difficulty moving the jaw) in students.

2) To increase awareness of the potential risks associated with extended smartphone use and promote healthier habits to help prevent TMDs among students.

Method: A Cross-sectional Survey was conducted among 201 Dental students, comprising 64 males (31.8%) and 137 females (68.2%), including, 33 Second year BDS students, 42 Third-year BDS students, 52 Fourth-year BDS students, and 74 Interns. The Survey included 11 questions exploring awareness, perceptions, and potential barriers among Dental students on the association between smart phone use and Temporomandibular disorders. Responses were analysed based on gender and year of study using chi-square tests to identify statistically significant differences.

Keywords: Smartphone Use, Temporomandibular Disorders, Temporomandibular Joint, Young Adult.

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Introduction

Smartphones have been essential for individuals and impact individuals' lifestyles. Our phones are a much-needed tool, enabling communication, entertainment, and work. While this is beyond debate, continuous usage may lead to inevitable adverse health ramifications. One of the growing preoccupations is the link between smart devices and temporomandibular joint (TMJ) disorders

that are caused, among other things, by poor habits. Temporomandibular disorders, a broad category indicating a disorder affecting the TMJ and surrounding muscles, are characterized by pain, discomfort, and dysfunction of the jaw area. Recent studies suggest that some of the bad habits associated with smartphone use, such as altered posture, clenching, and too much screen time, can make it likely for those with pre-existing symptoms to worsen or precipitate new ones.

The average smartphone user probably spends several waking hours engaged with his or her phone. The constant use of these devices can lead to unhealthy postures and muscle strain. For instance, leaning forward to look down at the screen may strain the neck, shoulders, and jaw, sometimes leading to tension and discomfort. Another prevalent behaviour is clenching the jaw when on the phone while texting, gaming, or watching video clips, which symptoms can increase the risk of developing temporomandibular joint disorder. The knowledge of what causes these conditions can also help with the planning of prevention.

As the world becomes increasingly dependent on technology, a balance must be maintained between ease of use and health benefits. Smartphones are indeed powerful tools in every conceivable way, though they pose their own challenges to physical health. Via an increase in musculoskeletal disorders associated with technology use, including disorders of TMJ, there is an urgent need to educate the public on how daily habits in the use of such technologies may impact the human body. Small changes in how we use our smartphones should include taking breaks, altering the height of the device, and placing it height-wise with respect to the eye line-effects that can be quite significant in preventing injuries and long-term discomfort. With the emerging connections between smartphone usage and TM disorders, we may have opportunities to introduce changes to our relationship with technology so that it respects our overall well-being.

This article will examine how smartphone use does indeed influence temporomandibular joint disorders and their symptoms while also providing preventive measures that can be introduced to help reduce the risks. Understanding the link between technology and health can help in acting proactively toward the protection of our well-being while we still enjoy the leverage that comes with having our devices around.

Methodology

A) Study design and area: A cross- sectional study was carried out at tertiary care teaching hospital Khammam.

B) Study population: The health care students including those of II year, III years, IV year, and Interns who responded to the offline paper print questionnaire survey.

C) Study Instrument: A self-administered questionnaire was designed based on knowledge attitude and awareness of the advanced technology had total 11 questions. Each participant has to fill in their demographic data like Name, age, and year of study. Participants had to select one option from the answers provided against questions and the questions were based on knowledge attitude and awareness among dental students.

D) Pilot study: A pilot study was conducted on a group of students to assess the validity and reliability of the study.

E) Sampling method: The sampling method used is a convenience method

F) Inclusion criteria: The students who were interested in the study and who were willing to participate

G) Exclusion criteria: students who are not willing to participate are excluded

H) Organizing the study: The study was designed in a paper-based version of the self-administered questionnaire of 11 questions focusing on knowledge, and awareness.

Includes the sections of demographic data: Name, Age, Sex and Year of study demographic information and asked to answer all questions by selecting one option from the provided answers.

I) Statistical analysis: Data from the filled questionnaire was conducted in a tabular form in an Excel worksheet and evaluated for analysis. The analysis was performed by SSPS version 29.

Results

A total of 201 students took part in this with females (68.2%) and males of (31.8%). The age of the participants ranged from 19-25 years. In this study, females were more likely to demonstrate awareness of the association between smartphone use and temporomandibular disorders than males. Significantly Interns showed greater familiarity with temporomandibular disorders than fourth-year students followed by third-year and second-year students.

	N	Minimum	Maximum	Mean	Std. Deviation
Age	201	19	34	22.58	1.306

Gender		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Male	64	31.8	31.8	31.8
	Female	137	68.2	68.2	100.0
	Total	201	100.0	100.0	

Year of Study		Frequency	Percent	Valid Percent
Valid	II BDS	33	16.4	16.4
	ÌII BDS	42	20.8	20.8
	IV BDS	52	25.9	25.9
	INTERNS	74	36.8	36.8
	Total	201	100.0	100.0

Distribution and comparison of responses based on gender

Item	Response	Males		Females		Chi-Square value	P value
		n	%	n	%		
Q1	1	4	33.3	8	66.7	3.173	0.366
	2	2	22.2	7	77.8		
	3	10	22.2	35	77.8		
	4	48	35.6	87	64.4		
Q2	1	4	21.1	15	78.9	12.485	0.006
	2	5	41.7	7	58.3		

	3	26	23.6	84	76.4		
	4	29	48.3	31	51.7		
Q3	1	8	38.1	13	61.9	5.219	0.156
	2	10	31.2	22	68.8		
	3	19	44.2	24	55.8		
	4	27	25.7	78	74.3		
Q4	1	18	24.7	55	75.3	4.230	0.238
	2	18	42.9	24	57.1		
	3	18	34	35	66		
	4	10	30.3	23	69.7		
Q5	1	8	20.5	31	79.5	14.237	**0.003***
	2	10	35.7	18	64.3		
	3	17	60.7	11	39.3		
	4	29	27.4	77	72.6		
Q6	1	11	26.2	31	73.8	3.231	0.357
	2	14	36.8	24	63.2		
	3	10	45.5	12	54.5		
	4	29	29.3	70	70.7		
Q7	1	8	20.5	31	79.5	7.713	**0.05***
	2	14	51.9	13	48.1		
	3	10	27	27	73		
	4	32	32.7	66	67.3		
Q8	1	16	25	48	75	3.201	0.362
	2	11	44	14	56		
	3	16	32	34	68		
	4	21	33.9	41	66.1		

Q9	1	11	30.6	25	69.4	2.874	0.411
	2	12	30.8	27	69.2		
	3	12	46.2	14	53.8		
	4	29	29	71	71		
Q10	1	17	28.3	43	71.7	1.515	0.679
	2	11	31.4	24	68.6		
	3	16	29.6	38	70.4		
	4	20	38.5	32	61.5		
Q11	1	32	44.4	40	55.5	12.665	**0.005***
	2	8	33.3	16	66.7		
	3	24	22.9	81	77.1		

P≤0.05 is statistically significant

Distribution and comparison of responses based on year of study

Item	Response	II BDS		III BDS		IV BDS		INTERN		Chi-Value	P-Value
		n	%	n	%	n	%	n	%		
Q1	1	3	16.6	11	61.1	2	11.1	2	11.1	26.673	0.009
	2	2	22.2	2	22.2	1	44.4	4	44.4		
	3	4	8.9	3	6.7	14	53.3	24	53.3		
	4	24	17.8	26	19.3	35	32.6	44	32.6		
Q2	1	5	26.3	1	5.3	1	5.3	9	47.4	24.096	**0.02***
	2	3	14.2	10	47.6	4	19.0	4	19.0		
	3	17	15.5	14	12.7	30	27.3	46	41.8		
	4	8	13.3	17	28.3	17	28.3	15	25		
Q3	1	7	25	12	42.8	4	14.2	5	17.8	9.727	0.640
	2	7	21.9	4	12.5	9	28.1	11	34.4		
	3	7	16.3	7	16.3	10	23.3	17	39.5		

	4	12	11.4	19	18.1	29	27.6	41	39		
Q4	1	11	15.1	10	13.7	18	24.7	30	41.1	5.351	0.945
	2	10	20.4	16	32.6	10	20.4	13	26.5		
	3	7	13.2	8	15.1	15	28.3	21	39.6		
	4	5	15.2	8	24.2	9	27.3	74	30.3		
Q5	1	4	10.3	7	17.9	8	20.5	17	43.6	14.106	0.294
	2	7	18.9	15	40.5	10	27.0	5	13.5		
	3	5	17.9	7	25	8	28.6	7	25		
	4	17	16	13	12.3	26	24.5	45	42.5		
Q6	1	7	16.7	9	21.4	12	28.6	13	31	7.743	0.805
	2	8	21.1	7	18.4	8	21.1	13	34.2		
	3	5	16.1	13	41.9	7	22.5	6	19.3		
	4	13	13.1	13	13.1	25	25.3	42	42.4		
Q7	1	7	17.9	7	17.9	12	30.8	12	30.8	9.985	0.617
	2	3	8.8	12	35.2	7	20.5	12	35.2		
	3	8	21.6	4	10.8	9	24.3	12	32.4		
	4	15	15.3	19	19.4	24	24.5	38	38.8		
Q8	1	8	12.5	11	17.2	15	23.4	26	40.6	15.342	0.223
	2	6	17.6	11	32.3	4	11.7	13	38.2		
	3	9	18	6	12	12	24	19	38		
	4	10	16.1	14	22.6	21	33.9	16	25.8		
Q9	1	7	19.4	7	19.4	12	33.3	9	25	7.847	0.797
	2	6	15.4	7	17.9	6	15.4	18	46.2		
	3	3	9.0	13	39.3	9	27.2	8	24.2		
	4	17	17	15	34.6	25	25	39	39		
Q10	1	11	18.3	11	18.3	14	23.3.	22	36.7	7.788	0.801

	2	8	18.6	13	30.2	9	20.9	13	30.2		
	3	10	18.5	8	14.8	17	31.5	16	29.6		
	4	4	7.7	10	19.2	12	23.1	23	44.2		
Q11	1	12	15.5	21	27.2	20	25.9	24	31.1	2.828	0.997
	2	6	25	4	16.7	5	20.8	8	33.3		
	3	15	14.3	17	16.2	27	25.7	42	40		

P≤0.05 is statistically significant

Discussion

The study focused on the relationships between smartphone use, and specific Temporomandibular disorders (TMD), in young adults. We have shown that TMJ pain was associated with age, psychological distress, and smartphone use, and smartphone users had a higher risk for TMJ disorders than those who did not use smartphones. This further adds evidence that subjects with psychological problems were at a higher risk for TMD as compared with subjects without psychological problems. Standards for assessing the prevalence of TMD might differ among the genders. Females in both smartphone usage and non-smartphone usage groups suffered from TMD at significantly higher rates than their male counterparts. The higher rates of smartphone use observed among students can be attributed to loan factors. Young adults of this generation have also been on further smartphone use due to the necessity of using virtual platforms for academic and working purposes during the COVID-19 pandemic. Indeed, many psychological disorders, like anxiety and depression, are related to cell phone addiction. Therefore, further studies are needed to investigate the role of psychological issues in the relationship between smartphone addiction and TMD.

Conclusion

It is common for young adults to be smartphone users and present with TMD. It was shown that age, depression, anxiety, and Smartphone use are risk factors for TMD. Participants with smartphone use had a higher prevalence of TMD than participants without smartphone use in all subgroups. Our findings suggest that it needs to be paid attention to the smartphone use of TMD patients while diagnosing and treating TMD. Young adults should reduce the time spent in smartphone use and therefore lessen the risk of TMD. More studies, using controlled methods, should be conducted with a larger sample for a final resolution.

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