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Distribution of Phantom Vibration Syndrome and Its Association on Psychological Morbidity among Medical Students, South India

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ABSTRACT

Introduction: With the advancement of cellular technology at its peak, the rise in obsession for mobile phone usage has ended up in psychological dependency towards it resulting in emergence of 'Phantom Vibration Syndrome', described by Mr. Robert D Jones in 2003 as a 'tactile hallucination of mobile phone vibration'. This study was conducted to estimate the distribution of phantom vibration syndrome among medical students using smart phone and its impact on level of stress, anxiety and depression.

Methodology: A cross sectional study was conducted among 200 final year private medical college students in Kancheepuram district. A semi - structured questionnaire, including Perceived Stress Scale (PSS), Hamilton Anxiety Rating score and Hamilton depression rating scale was used. Data was analyzed using SPSS software.

Results: Almost 74% of study population experienced phantom vibration syndrome (PVS). It was estimated that about 74% experienced moderate stress, 77.41% from mild anxiety and 45.16% from mild depression.

Conclusion: Excessive problematic usage of mobile phone has resulted in various disorders like phantom vibration syndrome, Phubbing, Ringxiety and Nomophobia that deals with psychological or socio-behavioral changes. By limiting mobile phone use in a productive way, these health-related problems can be avoided.

Keywords: Mobile, stress, anxiety, depression

INTRODUCTION

Necessity is the mother of invention, it is said. Invention's people say, is the mother of modern diseases that are being categorized as "techno-pathology disorders" resulting from overuse/ misuse of technology[1]. Mobile phone is used for conversations, exchange of ideas and thoughts, and mostly for leisure time[2]. As it offers advantages like portability, accessibility and privacy even in a public setting, its initial negative reactions are lowered[1]. WHO has stated that there are no known health consequences below the limits recommended by International Commission on Non-Ionizing Radiation Protection (ICNIRP), yet concerns are raised on the issues of mobile phone overuse and recently on its addiction[3]. Rapid cellular technological advancements and its increased obsession among adolescents have led to certain medical and psychological conditions[4]. Modern lifestyle modifications, excessive work stress, disturbed sleep pattern, unusual food habits, irregular working hours, etc., has also contributed to increased prevalence of such disorders across the globe.[5]

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The frequent use on cell phone in prolonged activation of vibration alert mode lead towards Phantom Vibration Syndrome (PVS) with estimated prevalence rate to be 78.1 % in India[2]. History of phantom syndrome was traced back to 1996, when the cartoonist Scott Adams, referred such sensation as "phantom-pager syndrome" in his comic "Dilbert". In 2003, Robert D. Jones stated 'tactile hallucination of mobile phone vibration' in his article entitled as "Phantom Vibration Syndrome"[6]. Earlier, various terms such as vibranxiety, fauxcellarm and ringxiety were used until the term "Phantom" made its way in 2012 and declared as the "Word of the Year."[7]

The pervasive use of this coping strategy is unlikely to remain beneficial in the long-run, with resultant adverse mental health impact[8]. Psychiatric illness which involves extreme, intense, and persistent stress, anxiety or depression may occur due to PVS. Although these mobile phone related disorders do not indicate psychopathology per se, it could be a sign leading to damage in terms of intellectual and cognitive skills. The present study summarizes the current knowledge about the phenomenon of PVS and its possible determinants, proposing a conceptual framework that integrates PVS in some forms of psychopathology. Based on the above background, the study was done with the objectives to estimate the distribution of phantom vibration syndrome among medical students using smart phone; and to determine impact of PVS on stress, anxiety and depression

METHODOLOGY

A descriptive cross-sectional study was conducted among students from a Private medical college, Kancheepuram district, Tamil Nādu. Medical College in which the study was carried out had 250 students in each year of study. Purposive sampling technique was followed and final year students were invited to participate in the study. Those who were already suffering from any psychiatric or psychological problems were excluded. Around 200 students came forward and participated in the study.

Study Tool: Data was collected using a pre-tested semi-structured questionnaire which included questions regarding mobile phone usage and psychological wellbeing Stress, anxiety and depression was assessed using Perceived Stress scale (PSS), Hamilton Anxiety Rating Scale and Hamilton Depression Rating Scale respectively which are discussed below:

Perceived Stress Scale (PSS): It is the most widely used validated psychological instrument for measuring the perception of stress. It is a measure of the degree to which situations in one's life are appraised as stressful. PSS scores are obtained by reversing responses obtained (e.g., 0 = 4, 1 = 3, 2 = 2, 3 = 1 & 4 = 0) to the four positively stated questions (items 4, 5, 7, & 8) and then summing across all scale items. A short PSS 4 item scale can be made from questions 2, 4, 5 and 10 of the PSS 10 item scales. Individual scores on the PSS that range from 0-13 would be considered low stress; 14-26 considered as moderate stress and score ranging from 27-40 would be considered high perceived stress.[9]

Hamilton anxiety (HAM-A) scale: It is a widely used validated rating scale to measure the severity of anxiety disorders in clinical practice as well as research setup. There are 14 items in the scale depending on the symptoms of anxiety and each item is scored on a 5-point scale, ranging from 0 (not present) to 4 (severe). The participants were explained about the symptoms associated with anxiety. The individuals were then classified based on their total score as follows: Total score 0–13 = Normal individuals; 14–17 = Mild anxiety; 18–24 = Moderate anxiety and 25 or more = Severe anxiety.[10]

Hamilton depression (HAM-D) scale: It has been designed to quantify a person's level of depression. Although it includes 21 items, the scoring is based on the first 17 answers. Eight items are scored on a 5-point scale, ranging from 0 = not present to 4 = severe. On the basis of total scores, the respondents were classified into following categories: Total score 0–7=Normal; 8–13=Mild depression; 14–18= Moderate depression; 19–22=Severe depression; and more than or equal to 23=Very severe depression.[11]

Data entry and analysis: Data entry was made in Microsoft Excel. The data entered was cleaned and validated for consistency. Analysis was done using SPSS 23.0 software. Frequency was expressed in percentage and association with factors was tested for significance using Chi square test. p – Value < 0.05 was considered statistically significant.

Ethical approval and informed consent: The study was approved by the Institutional ethical committee and consent was obtained from participants before the study.

RESULTS

Of 200 respondents, 104 (52%) were males and 96 (48%) females. Seventy six percent (*n*=152) reported having experienced Phantom Vibration Syndrome (PVS) from mobile phones. (Table 1)

On evaluating the scores on PSS, 74.34 % (*n* = 113) had moderate level of stress and 17% of them had high level of stress.

Table 1: Frequency distribution of variables

Variable	Students (%)
Gender	
Male	104 (52)
Female	96 (48)
Experienced phantom vibration syndrome	
Yes	152 (76)
No	48 (24)

Table 2: Level of mental health status among students who experienced PVS

Level of mental health status	Frequency n (%)
Stress: (PSS Scale)	
Low	13 (8.5)
Moderate	113 (74)
High	26 (17.5)
Anxiety: (HAM-A Scale)	
Mild	91 (60)
Moderate	43 (28.3)
Severe	18 (11.7)
Depression: (HAM-D Scale)	
Normal / mild	30 (20)
Moderate	101 (66.4)
Severe	21 (13.6)

According to Hamilton – A scale, one-third of study population (60%) experienced mild anxiety and 28.3% suffered from moderate anxiety. According to Hamilton D scale, 66.4% and 13.6% of the participants experienced moderate and severe depression respectively. (Table 2)

Most of the students spend more than 6 hours with their smart phone and about 80% experienced PVS. Almost 83 % participants activated vibration mode more often during their busy times. Majority of the students who experienced PVS kept their mobile phones in their pockets / directly in hand rather than keeping it in their bags (81.25%). It was found that, Phantom Vibration Syndrome had a statistically significant association (P<0.05) with hours of mobile phone usage (> 6hours), those who have mobile in vibration mode often and those who usually place their mobile phone in hand / pocket. Students who used mobile phones more at night times experienced PVS (70.17%, p = 0.026) rather than students who preferred mobile phone use in morning or evening and this finding was statistically significant. The association between students who experienced PVS and the level of perception of stress, anxiety and depression was also statistically found to be significant with p value 0.019, 0.038 and 0.025 respectively.

Table 3: Association between PVS and factors influencing it

Variable	Students	Phantom vibration syndrome		P value	Odds ratio (95%CI)
		Yes (%)	No (%)		
Duration of mobile phone usage (Per Day)					
>6 hours	145	116 (80)	29 (20)		
<6 hours	55	36 (65.5)	19 (34.5)	0.031*	2.111 (1.060 – 4.204)
Duration of mobile phone activated in vibration mode					
Busy time/often	102	85 (83.4)	17 (16.6)		
At times/rare	98	67 (68.4)	31 (31.6)	0.013*	2.313 (1.180 – 4.532)
Usual site to place mobile phone					
Pocket/hand	112	91 (81.3)	21 (18.7)		
Bag	88	61 (69.4)	27 (30.6)	0.049*	1.918 (1.015 – 3.696)
Mobile often used during					
Morning/evening	86	72 (83.7)	14 (16.3)		
Night	114	80 (70.2)	34 (29.8)	0.026*	2.185 (1.086 – 4.397)
Stress					
Yes	176	139 (79)	37 (20.3)		
No	24	13 (54.2)	11 (36.2)	0.019*	3.178 (1.317 – 7.671)
Anxiety					
Yes	72	61 (84.8)	11 (15.2)		
No	128	91 (71.1)	37 (28.9)	0.038*	2.254 (1.068 – 4.759)
Depression					
Yes	153	122 (79.7)	31 (21)		
No	47	30 (63.8)	17 (45.8)	0.025*	2.23 (1.092 – 4.553)

*p < 0.05 statistically significant at 95% confidence interval

DISCUSSION

The present study findings (76% of the students experienced PVS) was supported by a similar study conducted by Sunitha V (2020) on assessment on prevalence and its factors on phantom vibration syndrome among Undergraduate and Postgraduate students in selected colleges revealed 74% of students to have Phantom vibrations syndrome[12], while a study of undergraduates conducted by Drouin M et al suggested almost 90% experienced phantom phone vibrations and a study conducted in 2017 by Abolfazal MB et al noted that prevalence of PVS among medical students was 54.3%.[13,14]

Concerning Consequences of PVS, most students revealed worries about these experiences which in turn may be the cause of anxiety. On assessing the PSS scores independently, the result obtained in this study suggests students experienced mild level of anxiety (59.86%) and moderate level of stress (74%) which was different from the result obtained from the studies conducted by Goyal A et al 2015 that suggested high level of anxiety (72.1%) and Mangot AG Murthy et al in which majority of the subjects (59%) were found to have a high level of stress[6,8]. Almost 66.44 % experienced moderate level of depression in this study as in contrary to the study conducted by

Desai et al in which majority were normal (56.32%) and about 34.48% and only 3.44% had mild and moderate level of depression respectively.[5]

Students who spent more time (> 6 hours) in their mobile phones experienced PVS. This result goes in accordance with Subba et al study conducted in 2013, where students who had PVS observed to spend more time on their mobile phones[15]. Repeated and prolonged exposure to actual phone signals may result in long-term accessible patterns, which in turn may increase the chances of misinterpretations of sensory stimuli as phone signals or the detection of phantom phone signals in the absence of sensory stimuli. This explanation is consistent with the present findings where students who activated vibration mode often experienced PVS (83.3%). The site of placement of mobile phone by students who experienced PVS was more common in pockets or directly in hand (81.25%) that coincided with the result obtained from study conducted by Alam et al 2014 that concluded (70%) kept their mobile phones in their trousers pockets.[16]

Millions of people worldwide carry cellular phone and most of these devices are set on vibration mode for some time or another. It is concluded that the use of information and communication technology has reached uncontrolled level causing biochemical and psychological changes in human beings. The exciting features of these technologies are the major factors of heavy mobile phone usage and its addiction. The adverse effects of mobile phone electromagnetic radiations are being discovered day-by-day. Persistent PVS may in turn lead to burnout syndrome and psychological disorders such as anxiety, stress, depression and mood swings. Counseling with today's young generation is necessary to have future mentally healthy generation[16]. Spreading awareness among the students regarding the risks of mobile usage for over a long period which may result in addiction through instructional sessions and education lectures helps in reducing the incidence of such psychological problems in future[17]. The teachers and parents should be sensitized through awareness programme to deal with the children who are at risk of developing psychological problems due to excessive usage of mobile phones. Distribution of brochures and posters about phantom vibration and ringing syndrome by the Ministry of Health and Environment to increase the students and public awareness about the phenomenon should be encouraged and further supported.[17]

CONCLUSION

This study concluded that the mobile phone usage among students is mostly at night and pocket or hand being the most common site of placement. The mobile phone usage had an adverse impact on the students in terms of phantom vibration syndrome. They also reported moderate, mild and moderate level of stress, anxiety and depression respectively. These findings suggest that mobile phone dependency is becoming more common among college students. Hence there is a need to further explore the extent and the effects of the mobile phone usage in various groups and to plan intervention measures.

LIMITATIONS

Considering the fact that the study population involved only medical students, the present study findings cannot be generalized to the public or even the students in different phases of medical education. Second limitation is sampling technique. Purposive sampling techniques was used due to time constraints and as it is just a preliminary study with small sample size on students, their impact on various aspects of day-to-day activities were not measured.

RECOMMENDATIONS

More researches are required to find the exact causes and management of PVS. Many aspects of the phenomena such as its prevalence across general populations, its genesis and treatment plans have to be studied. Also, a clinical criterion for identification of the syndrome needs to be formulated.

A more comprehensive and prospective longitudinal study are needed to validate the phenomena identified in this study, to explore the underlying mechanisms further and for better prediction on who will acquire the phantom vibration syndrome and its prognosis.

The urgency of appointing specially trained professionals like special educators and counselors to work along with the teachers in schools and colleges to identify the etiology and provide effective treatment among students when required. By limiting the usage of mobile phones in a productive way, these psychological health-related problems can be avoided or at least ameliorated.

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