SOCIAL SCIENCE REVIEW ARCHIVES
ISSN Online: 3006-4708
ISSN Print: 3006-4694
https://policyjournalofms.com

# The Correlation of Phantom Vibration Syndrome (PVS) with Sleep Quality and Psychological Distress

**Alia Mehmood[1], Ayesha Noreen Muhammad Din[2], Umme Rubab Aurangzaib[3], Maleeha Fatima[4], Yusrah Khan[5]**

[1] Lecturer, Department of Psychology, Iqra University, Karachi, Pakistan.
Email: alia.mehmood@iqra.edu.pk
[2, 3] MPhil Scholar, Institute of Professional Psychology, Bahria University Karachi, Pakistan
Email: ayeshanoreen460@gmail.com, urubab859@gmail.com
[4] Resource Teacher, Dawood Public School, Karachi, Pakistan
Email: maleehaf11@gamil.com
[5] Senior Lecturer, Institute of Professional Psychology, Bahria University Karachi, Pakistan
Email: yusrahkhan.30@gmail.com

***DOI: https://doi.org/10.70670/sra.v4i1.1668***

**Abstract**

The current study aimed to determine whether there is a significant relationship between Phantom Vibration Syndrome (PVS)**,** sleep quality**,** and psychological distress**.** The population selected for the study consisted of undergraduate students from various private and government universities in Karachi, including both male and female students from all socioeconomic backgrounds. A total of 452 participants were selected using purposive convenience sampling, and **a** quantitative correlational survey design was employed. Phantom Vibration Syndrome, sleep quality, and psychological distress were assessed using the Assessment of Prevalence on Phantom Vibration Syndrome**,** the Sleep Quality Scale (SQS)**,** and the Kessler Psychological Distress Scale-10 (K-10)**,** respectively. Data analysis was conducted using SPSS (Version 22)**.** The findings indicated a significant relationship between Phantom Vibration Syndrome and both variables: sleep quality and psychological distress. The results showed a **positive** relationship between Phantom Vibration Syndrome and psychological distress and a negative relationship with sleep quality. It was also revealed that most individuals experience Phantom Vibration Syndrome at night during sleep, while some experience it at other times as well. This study may help individuals become more aware of the symptoms of PVS, enabling them to limit their smartphone usage and take preventive measures to reduce the risk of developing Phantom Vibration Syndrome.

**Keywords:** Phantom Vibration Syndrome, Sleep Quality, Psychological Distress, Correlation, Students.

## Introduction

Mobile phones have transformed communication and have become an integral part of everyday life; however, their excessive use can have detrimental effects on well-being. According to Rothberg et al. (2010)**,** Phantom Vibration Syndrome (PVS) is a tactile hallucination rather than a real medical syndrome**,** occurring when an individual incorrectly perceives their phone as vibrating due to excessive use. Rosenberger (2015) reported that PVS is becoming increasingly common

worldwide and is strongly associated with psychological stress. Pareek (2017) further found that PVS is linked with anxiety and attention-related difficulties. More recently, Nelson et al. (2022) highlighted that PVS is also significantly associated with sleep disorders, emphasizing the importance of early management and prevention.

Sleep quality is defined as an individual's overall satisfaction with all aspects of their sleep experience. It includes four key attributes: sleep efficiency, sleep latency, sleep duration, and wake after sleep onset **(**Nelson, Davis, & Corbett, 2022**).** Alam et al. (2014) examined the prevalence of phantom sensations and mobile phone use before sleep and found both to be high among students. The study concluded that excessive mobile phone use significantly increases psychological problems and sleep-related disturbances.

Furthermore, Phantom Vibration Syndrome (PVS**)** directly affects sleep quality by increasing the risk of sleep disturbances. Psychological distress refers to a range of non-specific symptoms, including stress, anxiety, and depression. High levels of psychological distress indicate impaired mental well-being and may reflect common mental health conditions such as anxiety and depressive disorders (Cuijpers et al., 2009). A study conducted among medical students reported a high prevalence of Phantom Vibration Syndrome, and a considerable number of students also experienced symptoms of mild anxiety and mild depression associated with this phenomenon (Charilatha, Umadevi, & Prasanth, 2021).

## Literature Reviews

Phantom Vibration (PV) is strongly linked to mental distress and phone attachment, according to this cross-sectional study conducted among medical students in Ho Chi Minh City. More over half (55.5%) reported having PV while driving, indicating a significant risk of distracted driving and collisions (Tran et al., 2019). There is another cross-sectional study of 487 medical students in central Kerala, it was discovered that 61% of them had phantom ringing and 59.1% had phantom vibration, both of which were strongly linked to smartphone addiction and felt stress. The results show a clear connection between stress, Phantom Syndrome, and excessive smartphone use (Sebastian et al., 2020). Phantom Vibration Syndrome (PVS) and occupational burnout were shown to be more prevalent in women and those with at least a university degree, according to a 2014 study by Chao-pen Chen et al. Higher scores in personal exhaustion, work fatigue, and duty goal fatigue influenced the existence of PVS, with duty goal fatigue having the biggest independent effect, although anxiety and depression were not linked to it. The psychological effects of smartphone-related vibrations were highlighted by another study that indicated that 74% of medical students had PVS, with 77% experiencing mild anxiety and 45% mild depression (Charilatha et al., 2021).

Pareek (2017) reported that Phantom Vibration Syndrome is linked to psychological and neurological changes, with symptoms including anxiety, depression, and hallucination found a high 89% prevalence among undergraduate students. Previous literature also shows that PVS negatively affects sleep quality, as explained by William C. Dement's restoration theory of sleep (1927). Essmat M. Gemey et al. (2018) studied the relationship between Phantom Vibration Syndrome (PVS), Phantom Ringing Syndrome (PRS), and anxiety among nursing students and found a high prevalence of PVS (77.0%) and PRS (77.3%). The study reported a significant positive relationship between PVS and anxiety ($p < 0.001$), especially among students who experienced weekly vibrations, while no significant association was found between PRS and anxiety. Phantom Vibration Syndrome sufferers are more likely to have sleep difficulties, which can cause psychological discomfort, according to research. As a result, PVS has a direct impact on sleep quality and indirectly causes psychological suffering (Setianingrum, 2017).

## Theoretical Framework

Previous research indicates that Phantom Vibration Syndrome (PVS) lowers the quality of sleep. The restoration theory of sleep was developed by William C. Dement (1927), who is regarded as the father of sleep medicine. It states that while napping throughout the day may decrease sleep at night without having any detrimental effects, cutting short daytime sleep can hinder the body's ability to properly recover at night. This hypothesis was further developed by Oswald (1931), who emphasized that while sleep deprivation impairs cognition and may result in chronic and mental disorders, enough sleep replenishes energy, maintains a healthy weight and mind, and supports productivity. Additionally, studies show that PVS raises the likelihood of sleep disturbances, which in turn causes psychological suffering (Setianingrum, 2017). Internal ideas and perceptions have a significant impact on behavior and emotions, according to Aaron Beck's 1950s theory. When erroneous beliefs influence how one interprets outside events, psychological anguish arises, indicating that thoughts have a greater influence on behavior than the real world. According to Beck (1967), basic schemas perceptions about oneself, the world, and other people have a profound effect on feelings and actions and may even cause psychiatric discomfort Excessive mobile phone use raises the occurrence of PVS in the current technological era. The positive correlation between PVS, smartphone addiction, and stress increases the likelihood of psychological suffering among smartphone addicts (Sebastian et al., 2020).

## Significance of the study

Numerous studies have been conducted on phantom vibration syndrome in relation to the risk of sleep disorder and psychological distress. However, only a few studies have been conducted that correlate phantom vibration with these two variables. Additionally, this study will investigate the relationship between phantom vibration syndrome and sleep quality and psychological distress, and it will draw a comparison between whether phantom vibration will have a greater impact on sleep quality or cause more psychological distress. Furthermore, it would assist in identifying the extra psychological and physical components that contribute to phantom vibration syndrome. Thus, it is crucial to investigate the relationship between phantom vibration syndrome and sleep quality and psychological suffering.

## Research Objectives:

- To identify the relationship between Phantom Vibration Syndrome (PVS) with Sleep Quality.
- To identify the relationship between Phantom Vibration Syndrome with Psychological Distress.

## Research Questions:

- What is the relationship between Phantom Vibration Syndrome (PVS) with Sleep Quality?
- What is the relationship between Phantom Vibration Syndrome (PVS) with Psychological Distress?

## Research Hypothesis:

- There will be a negative relationship between Phantom Vibration Syndrome (PVS) with Sleep Quality.
- There will be a relationship between Phantom Vibration Syndrome (PVS) with Psychological Distress.

## Methodology

### Research Design

The current study has a Quantitative Correlational Survey Design with the purpose of descriptive study.

### Participants

The population selected for the study was undergraduate students from various private and government universities in Karachi, including both males and females aged 18 to 28 years (Mean = 20.72, SD = 1.797). The study included a total of 452 participants, of which 191 were males (42.3%) and 261 were females (57.7%). Students from all socioeconomic statuses were part of the research.

### Inclusion Criteria

Participants in the age range of 18–28 years, who understand English, and who have a smartphone.

### Exclusion Criteria

Participants who are not pursuing higher education or have any psychological or medical issues were not included.

### Measures

### Informed Consent Form

Participants were provided with an informed consent form to get permission to take part in the study. The form included basic details about the research and information about the researcher. Participants were assured that their information would remain confidential and would not be used for any other purpose. Participation was voluntary, and participants could withdraw at any time.

### Demographic Information

A demographic form was used to ensure that only students meeting the inclusion criteria participated. Information collected included name (optional), age, gender, family status, socioeconomic status, educational level, relationship status, smartphone ownership, and whether participants had any psychological or medical problems.

### Kessler Psychological Distress Scale-10 (K-10)

Developed by Kessler and Mroczek (1992), this self-report scale identifies levels of psychological distress. It can be completed by the participant or read by a practitioner. Responses are recorded on a 5-point Likert scale: “All of the time,” “Most of the time,” “Some of the time,” “A little of the time,” and “None of the time,” reflecting emotional states over the last four weeks. The Cronbach’s alpha was 0.88, and ordinal alpha 0.92, indicating high internal consistency (Huges Sampasa-Kanyinga, Zamorski, & Colman, 2018).

### Sleep Quality Scale (SQS)

Developed by Yi, H., Shin, K., and Shin, C. (2006), this 28-item scale evaluates sleep quality for populations aged 18–59 years. It measures six domains: daytime symptoms, restoration after sleep, problems initiating and maintaining sleep, difficulty waking, and sleep satisfaction. The SQS is a simple self-report, paper-pencil measure requiring 5–10 minutes. Responses are on a 4-point Likert scale (0 = few, 1 = sometimes, 2 = often, 3 = almost always). Initial psychometric evaluation showed internal consistency of 0.92 and test-retest reliability of 0.81.

**Assessment of Prevalence on Phantom Vibration Syndrome**

Developed by Sunitha V., R. Rajesh, and Jairakini Aruna (2020), this 15-item yes/no checklist assesses the prevalence of Phantom Vibration Syndrome. Responses are scored as Yes (1) or No (0). Initial psychometric evaluation showed Cronbach's alpha of 0.744, indicating acceptable internal consistency.

**Procedure**

The research was carried out in several steps. Firstly, permission to use the scales was obtained from the authors. Next, permission was taken from the universities through official letters, and participants were provided with informed consent forms for their approval, followed by the collection of demographic data. The questionnaire was then administered to the target population, along with guidance and explanation of the study's purpose. The maximum time required to complete the questionnaire was 20 minutes. After data collection, the responses were entered and analyzed using the Social Science Statistical System (SPSS). Additionally, the scales Assessment of Prevalence on Phantom Vibration Syndrome, Sleep Quality Scale (SQS), and Kessler Psychological Distress Scale-10 (K-10) were added to the questionnaire along with the consent form and demographic information. The study considered all ethical factors, according to the American Psychological Association (APA). Participants' consent was obtained via a consent form, and the authors' approval was obtained for the study instruments. Participants were informed of the purpose of the study, and their participation was completely voluntary. Additionally, they were guaranteed that their identity would be kept secret and that they could leave the study at any time.

**Result & Discussion**

This section consists of the statistical computation which was done with the help of Statistical Package for Social Science (SPSS 22). With the help of the statistical tool, a relationship between the variables was determined. The section includes the details of predictive variable, including statistical representation of demographic information and a regression analysis for the scales used in the study. The interpretation and description of the data is as presented below:

**Table 1: Frequency and percentages of demographic variables.( N=452)**

| Variables | Frequency (F) | Percentage (%) |
|---|---|---|
| **Age (years)** | | |
| 18 | 46 | 10.2 |
| 19 | 87 | 19.2 |
| 20 | 87 | 19.2 |
| 21 | 66 | 14.6 |
| 22 | 100 | 22.1 |
| 23 | 41 | 9.1 |
| 24 | 19 | 4.2 |
| 25 | 1 | 0.2 |
| 26 | 3 | 0.7 |
| 27 | 1 | 0.2 |
| 29 | 0 | 0.0 |
| 30 | 1 | 0.2 |
| **Gender** | | |

| Variables | Frequency (F) | Percentage (%) |
|---|---|---|
| Male | 191 | 42.3 |
| Female | 261 | 57.7 |
| **Occupation** | | |
| Employed | 36 | 8.0 |
| Unemployed | 22 | 4.9 |
| Student | 394 | 87.2 |
| **Education** | | |
| Undergraduate | 450 | 99.6 |
| Graduate | 2 | 0.4 |
| **Family Structure** | | |
| Nuclear | 315 | 69.7 |
| Joint | 137 | 30.3 |
| **Departments** | | |
| Social Sciences | 110 | 24.3 |
| Life Sciences | 55 | 12.2 |
| Management Sciences | 120 | 26.5 |
| Engineering Sciences | 114 | 25.2 |
| Arts & Humanities | 53 | 11.7 |
| **Marital Status** | | |
| Single | 372 | 82.3 |
| In Relationship | 47 | 10.4 |
| Engaged | 22 | 4.9 |
| Married | 11 | 2.4 |

The Table 1 shows the demographic characteristics of the sample. Most of participants are of 22 age that is around 22.1%. The Sample included 42.3% males and 57.7% females. It was also found that the large percentage of the sample was single, which is around 82.3% of the sample. According to analysis almost 99.6% of sample is undergraduates. Moreover, the majority of participants, which is around 69.7% of the sample, were living in a nuclear family and only 30.3% had a joint family structure.

| Variables | Frequency (F) | Percentage(%) |
|---|---|---|
| **Have Smartphone** | | |
| Yes | 448 | 91.1 |
| No | 4 | 0.9 |
| **Situations of Using Phones** | | |
| Classroom | 36 | 8.0 |
| Library | 12 | 2.7 |
| Eating | 50 | 11.1 |
| Driving | 16 | 3.5 |
| Before Sleep | 338 | 74.8 |
| **Mode of Phone** | | |
| Ringing | 120 | 26.5 |
| Vibrating | 164 | 36.3 |
| Silent | 161 | 35.6 |
| Switch Off | 7 | 1.5 |
| **Where You Keep Phone** | | |
| Shirt Pocket | 18 | 4.0 |
| Jeans Pocket | 155 | 34.3 |
| In Hands | 163 | 36.1 |
| Handbags | 116 | 25.7 |
| **Purpose of Using Phone Mostly** | | |
| Calls | 18 | 4.0 |
| Messages | 49 | 10.8 |
| Games | 30 | 6.6 |
| Other Applications | 336 | 74.3 |
| Songs & Videos | 19 | 4.2 |
| **When Feel False Vibration** | | |
| While Travelling | 78 | 17.3 |
| While Sitting & Sleeping | 157 | 34.7 |
| Engaged in Other Activities | 141 | 31.2 |
| All of the Above | 76 | 16.8 |
| **Which Day Part Used Mostly** | | |
| Morning | 22 | 4.9 |
| Afternoon | 60 | 13.3 |
| Evening | 121 | 26.8 |
| Night | 249 | 55.1 |

Above table shows that 84.7% participants have their own smart phones. Analysis indicates that 26.5%, 36.3%, 35.6% and 1.5% of subjects keep their phones on ringing, vibrating, silent and switched off respectively. It also explains that 74.8% people of sample use mobile mostly before

sleep. Moreover, 34.3%, 36.1% and 25.7% of sample keep their phones in jeans pockets, in hands and in handbags respectively. It is found that 74,3% of sample use mobile mostly for other applications like WhatsApp and YouTube and 55.1% use at night time.

**Table: 2 Descriptive Statistics and Cronbach's Alpha of Study Variables (N = 452)**

| Variable | Item | α | M | SD | SK | K |
|---|---|---|---|---|---|---|
| PD | 10 | 0.866 | 24.29 | 8.122 | 0.631 | 0.139 |
| SQ | 28 | 0.812 | 40.14 | 11.574 | 0.190 | 0.291 |
| PVS | 15 | 0.744 | 7.08 | 3.256 | 0.196 | -0.604 |

***Note**: α = Cronbach's alpha, M = Mean, SD = Standard Deviation, SK = Skewness, K = Kurtosis, PD = Psychological Distress, SQ=Sleep Quality, PVS = Phantom Vibration Syndrom.*

Table 2 shows descriptive statistics and Cronbach's alpha of all the variables. Data reveals that all the scales have good reliability of α = 0.744 to α = 0.866, which indicates acceptable to excellent range and internal consistency. Furthermore, the other factors that are included in the descriptive statistics are mean and standard deviation. Normal distribution of data is represented by values of skewness and kurtosis.

**Table: 3 Correlations between PVS, SQ and PD**

| Variable | PVS | SQ | PD |
|---|---|---|---|
| **PVS** | - | - | - |
| **SQ** | .201** | - | - |
| **PD** | .269** | - | - |

*Note: PVS= Phantom Vibration Syndrome, SQ= Sleep Quality, PD= Psychological Distress **. Correlation is significant at the 0.01 level (1-tailed).*

Table 3 shows correlation between PVS, SQ and PVS, PD. There is statistically positive weak significant correlation between PVS and SQ, r = 0.201 at 0.01 significance level. Also, there is statistically positive weak significant correlation between PVS and PD, r = 0.269 at 0.01 significance level.

**Discussion**

The present research aims to examine the correlation of Phantom Vibration Syndrome (PVS**)** with Sleep Quality and Psychological Distress**.** Moreover, it seeks to determine the negative relationship between Phantom Vibration Syndrome (PVS) and Sleep Quality. In addition, the relationship between Phantom Vibration Syndrome (PVS) and Psychological Distress was also observed. The study's first hypothesis, that there is a positive, weak, and significant link between Phantom Vibration Syndrome (PVS) and Sleep Quality (SQ), was confirmed, as indicated by the findings showing a p-value of 0.01. Previous research indicates that Phantom Vibration Syndrome lowers sleep quality. The percentage of students who use mobile phones before going to bed was found to be very high (93%), and 67% of students indicated they could not survive without them. The use of mobile phones is a significant factor in the rise of psychological stress and related issues among medical students in Karachi, Pakistan (Alam et al., 2014). Additionally, the study investigated the connection between stress conditions, sleep disorders, and phantom vibration symptoms. The findings showed a positive correlation between stress conditions, sleep disorders,

and phantom vibration symptoms, with insomnia having the greatest impact. Nonetheless, compared to insomnia and stress conditions, Phantom Vibration Syndrome has a more direct impact on sleep apnea. As a result, Phantom Vibration Syndrome also indirectly affects stress conditions through sleep disorders such as insomnia and sleep apnea. According to Setianingrum (2017), there is a substantial correlation between Phantom Vibration Syndrome and stress conditions, which may lead to sleep disorders.

The study second hypothesis is also proved that, Phantom Vibration Syndrome is associated with psychological distress. People who experience phantom vibrations tend to overthink and feel hopeless because they cannot stop thinking about their phone (Environ, 2020). Phantom Vibration Syndrome exacerbates physical discomfort, such as migraines and fatigue, which occur due to overanalyzing the perceived vibrations. Most of the time, individuals feel helpless and have trouble focusing, as their thoughts are preoccupied with their phone's false vibrations. This often leads to concentration issues and contributes to feelings of restlessness and helplessness (Theme et al., 2021). Moreover, individuals who frequently carry their smartphones in their pants pocket are more likely to experience false or misleading vibration sensations, particularly when the phone is on silent or vibration mode and they are anticipating calls or messages (Sunitha, Rajesh, & Aruna, 2020). Phantom Vibration Syndrome can be reduced by changing the usual carrying location of the mobile phone (Sunitha et al., 2020). Smartphone use is also influenced by cultural and religious factors. Devout or spiritually inclined individuals tend to spend less time using electronic devices and report fewer phantom vibration experiences, whereas individuals in countries with high levels of smartphone dependency report a greater prevalence of phantom vibrations (Shim & Jung, 2019). Excessive smartphone use has been associated with increased psychological distress, reduced face-to-face social interaction, and impaired goal-directed behavior. (Nolin & Miki, 2017)

## Implication

The findings of the study suggest that it can be applied in the fields of knowledge and policy-making by designing course outlines in a way that does not compel students to use their smartphones continuously for work purposes. The study can also be applied in clinical settings, as Phantom Vibration Syndrome (PVS) brings psychological changes in humans, such as depression, anxiety, obsessive-compulsive disorder, psychosis, and post-traumatic stress disorder, shedding new light on the psychopathological implications of PVS. Moreover, participants can benefit from the study by learning about the symptoms of PVS, which may help them limit their smartphone usage and take steps to prevent it.

## Conclusion

It is concluded that the use of information and communication technology has reached an uncontrollable level, leading to psychological and biological changes in humans. The results of the present study revealed that Phantom Vibration Syndrome (PVS) has a negative relationship with Sleep Quality and a positive relationship with Psychological Distress**.** The frequency of PVS was higher among students who kept their smartphones in their jeans' front pockets or in their hands. Excessive smartphone usage has resulted in sleep deprivation and psychological distress. By limiting smartphone use in a productive way, these health-related problems can be avoided.

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