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Impact Of Smartphone Addiction On Mental Well-Being Among Adolescents In Selected Schools Of Madhya Pradesh: A Cross-Sectional Study

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Abstract

Background: Smartphone use has become an integral part of adolescents' daily lives for communication, education, entertainment, and social networking. Although smartphones provide numerous advantages, excessive use may negatively influence psychological health and overall well-being. Smartphone addiction among adolescents has emerged as a growing public health concern due to its association with anxiety, stress, sleep disturbances, poor academic performance, and reduced social interaction.

Aim: To assess the impact of smartphone addiction on mental well-being among adolescents in selected schools of Madhya Pradesh.

Objectives: The objectives of the study were to assess the level of smartphone addiction among adolescents, determine mental well-being status, identify the relationship between smartphone addiction and mental well-being, and examine the association between smartphone addiction and selected demographic variables.

Methods: A quantitative descriptive cross-sectional research design was adopted for the study. A total of 100 adolescents were selected through purposive sampling from selected schools of Madhya Pradesh. Data were collected using a structured demographic questionnaire, a standardized smartphone addiction assessment scale, and a mental well-being assessment scale. Data were analyzed using descriptive and inferential statistics including frequency, percentage, mean, standard deviation, chi-square test, correlation coefficient, and independent t-test.

Results: The findings revealed that 50% of adolescents had moderate smartphone addiction, while 25% demonstrated severe addiction. Mental well-being assessment showed that 47% had average mental well-being and 25% had poor mental well-being. A statistically significant negative correlation was found between smartphone addiction and mental well-being ($r = -0.68$, $p < 0.001$), indicating that increased smartphone addiction was associated with reduced mental well-being. Significant associations were observed between smartphone addiction and age ($\chi^2 = 7.42$, $p = 0.024$) and duration of smartphone use ($\chi^2 = 12.54$, $p = 0.002$).

Conclusion: The study concluded that excessive smartphone use adversely affects adolescents' mental well-being. Early identification, awareness programs, and educational interventions may help reduce smartphone addiction and promote healthy digital practices among adolescents.

Keywords: Smartphone addiction, adolescents, mental well-being, school health, digital behavior, nursing.

Introduction

Adolescence is a critical developmental stage characterized by rapid physical, emotional, social, cognitive, and psychological changes that influence future health and behavioral outcomes. It is a transitional period between childhood and adulthood during which individuals develop their identities, social relationships, and decision-making abilities. During this phase, adolescents are more likely to be influenced by environmental factors, peer pressure, and technological advancements. Rapid growth in digital technology has significantly changed communication patterns, learning methods, and lifestyle behaviors among adolescents.

Smartphones have become an essential component of daily life because of their convenience, accessibility, and multifunctional applications. Adolescents increasingly use smartphones for educational activities, social networking, communication, entertainment, gaming, and information seeking. Although smartphones provide numerous benefits and opportunities for learning and connectivity, excessive and uncontrolled use may adversely affect physical, emotional, and psychological well-being.

Smartphone addiction refers to excessive, uncontrolled, and compulsive use of smartphones that interferes with an individual's normal daily functioning and activities. Individuals experiencing smartphone addiction often show symptoms such as preoccupation with mobile phone use, inability to reduce usage time, irritability when deprived of smartphone access, and neglect of personal, social, and academic responsibilities. Excessive screen exposure has been associated with various health-related consequences, including anxiety, depression, stress, sleep disturbances, decreased concentration, reduced academic performance, social isolation, and emotional instability.

The increasing prevalence of smartphone use among adolescents has emerged as a growing public health concern worldwide. Studies suggest that prolonged smartphone use may negatively affect mental health outcomes and overall quality of life among adolescents. Excessive dependence on smartphones can alter sleep patterns, decrease physical activity, reduce face-to-face social interactions, and contribute to emotional distress. Moreover, overuse of smartphones may increase the risk of cyberbullying, internet dependency, and behavioral problems.

School health nurses and healthcare professionals play an important role in identifying behavioral health problems among adolescents and promoting healthy lifestyle practices. Health education programs and awareness initiatives regarding appropriate smartphone use can help adolescents maintain a balance between technology use and overall well-being. Educational interventions may also support the development of healthy coping mechanisms and promote mental wellness.

Therefore, understanding the impact of smartphone addiction on adolescents' mental well-being is essential for designing effective prevention and intervention strategies.

Need for the Study

Smartphone dependency among adolescents has become an emerging public health issue due to increasing accessibility and widespread use of digital technologies. Modern adolescents spend considerable time using smartphones for academic activities, social media engagement, online gaming,

communication, and entertainment purposes. Although moderate use of smartphones can support learning and social interaction, excessive use may negatively affect physical, psychological, and emotional health.

Research findings indicate that prolonged smartphone use may be associated with increased stress levels, anxiety, depressive symptoms, sleep disturbances, poor concentration, reduced academic performance, and impaired interpersonal relationships. Excessive use can also lead to behavioral changes, decreased physical activity, and social withdrawal. Such effects may negatively influence the overall mental well-being and quality of life of adolescents.

Mental well-being is a vital aspect of adolescent health because it affects emotional stability, self-esteem, social relationships, and academic success. Early identification of smartphone addiction and implementation of educational interventions may help reduce adverse outcomes and promote healthy technology-related behaviors.

School health nurses have a significant role in identifying students at risk, providing counseling, conducting awareness programs, and promoting healthy digital habits among adolescents. However, limited evidence and awareness regarding smartphone addiction and its impact on mental well-being create a need for further investigation.

Hence, the present study is undertaken to assess the impact of smartphone addiction on mental well-being among adolescents in selected schools of Madhya Pradesh. The findings of the study may help healthcare professionals, educators, and policymakers develop appropriate strategies for promoting healthy smartphone use and improving adolescent mental health outcomes.

Objectives of the Study

1. To assess the level of smartphone addiction among adolescents in selected schools of Madhya Pradesh.
2. To assess the mental well-being status among adolescents.
3. To determine the relationship between smartphone addiction and mental well-being among adolescents.
4. To determine the association between smartphone addiction levels and selected demographic variables such as age, gender, educational level, family income, duration of smartphone use, and type of smartphone activities.
5. To identify patterns of smartphone usage among adolescents.
6. To assess the effect of smartphone usage duration on academic and social behavior among adolescents.

Hypotheses of the Study

Research Hypotheses

H1: There will be a significant relationship between smartphone addiction and mental well-being among adolescents.

H2: There will be a significant association between smartphone addiction levels and selected demographic variables among adolescents.

H3: There will be a significant relationship between duration of smartphone use and mental well-being scores among adolescents.

H4: There will be a significant association between smartphone addiction and academic performance among adolescents.

Null Hypotheses

H01: There will be no significant relationship between smartphone addiction and mental well-being among adolescents.

H02: There will be no significant association between smartphone addiction levels and selected demographic variables.

H03: There will be no significant relationship between duration of smartphone use and mental well-being scores.

H04: There will be no significant association between smartphone addiction and academic performance.

Materials and Methods

Research Design

The present study will adopt a **quantitative descriptive cross-sectional research design** to assess the impact of smartphone addiction on mental well-being among adolescents. The cross-sectional design will facilitate the collection of data at a single point in time and help determine the relationship between smartphone addiction and mental well-being among the study participants.

Research Setting

The study will be conducted in selected schools of **Madhya Pradesh, India**. The selected schools will include educational institutions that provide secondary and higher secondary education and are accessible for data collection.

Population

The target population for the study will consist of **school-going adolescents** studying in selected schools of Madhya Pradesh.

Sample Size

The total sample size for the study will be **100 adolescents**.

Participants Sample Size

Adolescents 100

Total 100

Sampling Technique

A **purposive sampling technique** will be used for selecting participants who fulfill the inclusion criteria and are available during the study period.

Inclusion Criteria

The study will include:

- Adolescents aged **13–19 years**
- Students studying in selected schools of Madhya Pradesh
- Students willing to participate in the study
- Students available during the period of data collection

Exclusion Criteria

The study will exclude:

- Students unwilling to participate in the study
- Students absent during the period of data collection
- Adolescents with diagnosed severe psychological disorders that may interfere with participation

Data Collection Instruments

The following tools will be used for data collection:

Tool I: Demographic Questionnaire

A structured demographic questionnaire will be used to obtain baseline information regarding participants, including:

- Age
- Gender
- Educational class/grade
- Family type
- Family income
- Duration of smartphone use per day
- Purpose of smartphone use
- Internet accessibility

Tool II: Smartphone Addiction Assessment Scale

A standardized smartphone addiction assessment scale will be used to assess the level of smartphone dependency among adolescents. The scale will include items related to:

- Daily smartphone use
- Behavioral dependence
- Social impact
- Emotional responses
- Interference with routine activities

Tool III: Mental Well-Being Assessment Scale

A standardized mental well-being assessment scale will be used to evaluate psychological well-being among adolescents. The scale will assess:

- Emotional well-being
- Social well-being

- Psychological functioning
- Stress level
- Self-esteem and life satisfaction

Procedure for Data Collection

After obtaining administrative permission from the selected schools and informed consent from participants, the purpose of the study will be explained. Participants will be assured regarding confidentiality and anonymity of information.

The demographic questionnaire, smartphone addiction assessment scale, and mental well-being assessment scale will be administered to participants. Sufficient time will be provided for completion of the questionnaires.

Data Analysis Plan

Descriptive Statistics

Descriptive statistical methods will be used to summarize and describe the data:

- Frequency
- Percentage
- Mean
- Standard deviation

Inferential Statistics

Inferential statistical methods will be used to determine relationships and associations:

- Chi-square test
- Correlation coefficient
- Independent t-test

Hypotheses

Research Hypotheses

H1: There will be a significant relationship between smartphone addiction and mental well-being among adolescents.

H2: There will be a significant association between smartphone addiction and selected demographic variables.

Null Hypotheses

H01: There will be no significant relationship between smartphone addiction and mental well-being among adolescents.

H02: There will be no significant association between smartphone addiction and selected demographic variables.

Ethical Considerations

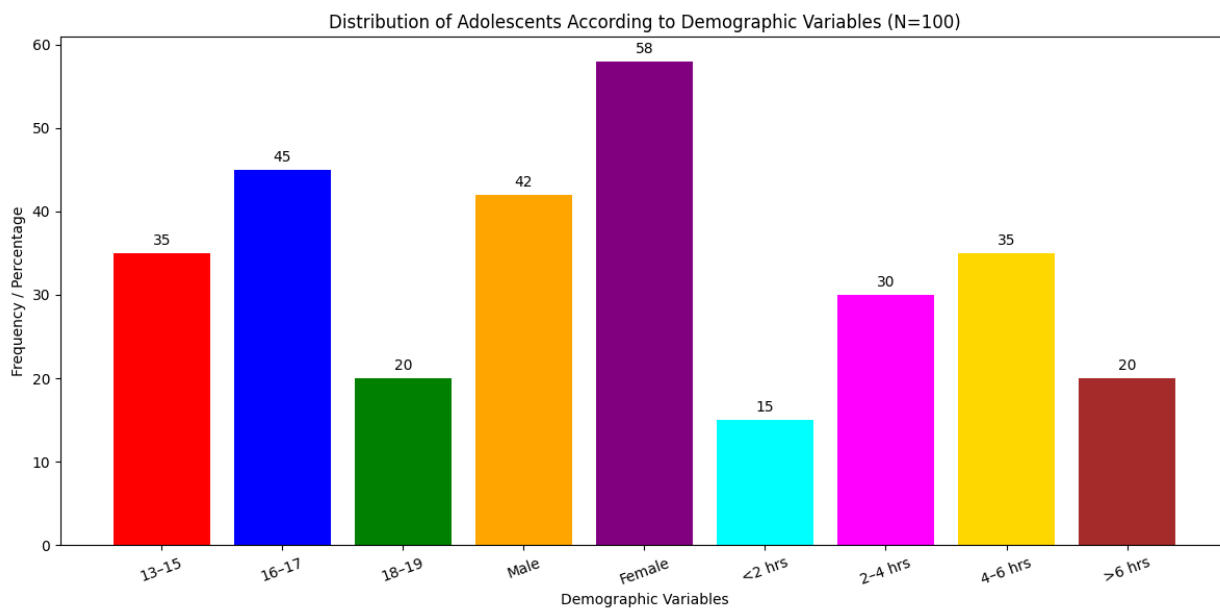
- Permission will be obtained from concerned authorities before data collection.
- Informed consent will be obtained from participants and parents/guardians where required.
- Confidentiality and anonymity of participant information will be maintained.
- Participants will have the right to withdraw from the study at any time without any consequences.
- Ethical clearance will be obtained from the Institutional Ethics Committee before conducting the study.

Results

Section I: Distribution of Participants According to Demographic Variables

Table 1: Frequency and Percentage Distribution of Adolescents According to Selected Demographic Variables (N=100)

Variables	Frequency (n)	Percentage (%)
Age (Years)		
13–15	35	35
16–17	45	45
18–19	20	20
Gender		
Male	42	42
Female	58	58
Duration of Smartphone Use/Day		
Less than 2 hours	15	15
2–4 hours	30	30
4–6 hours	35	35
More than 6 hours	20	20



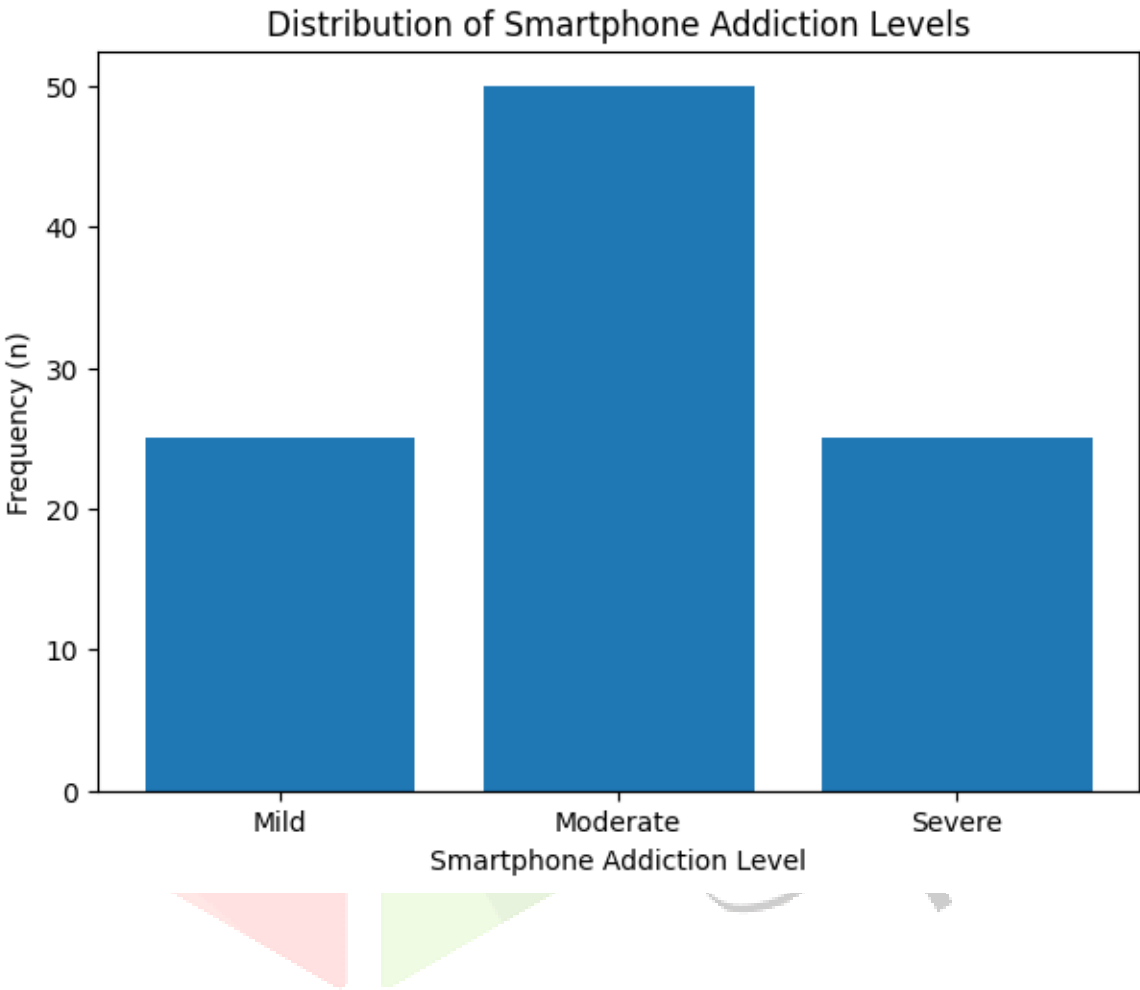
Interpretation:

The majority of participants (45%) were aged 16–17 years, 58% were females, and 35% reported smartphone usage of 4–6 hours daily.

Section II: Distribution of Smartphone Addiction Levels

Table 2: Distribution of Smartphone Addiction Levels Among Adolescents (N=100)

Smartphone Addiction Level	Frequency (n)	Percentage (%)
Mild	25	25
Moderate	50	50
Severe	25	25



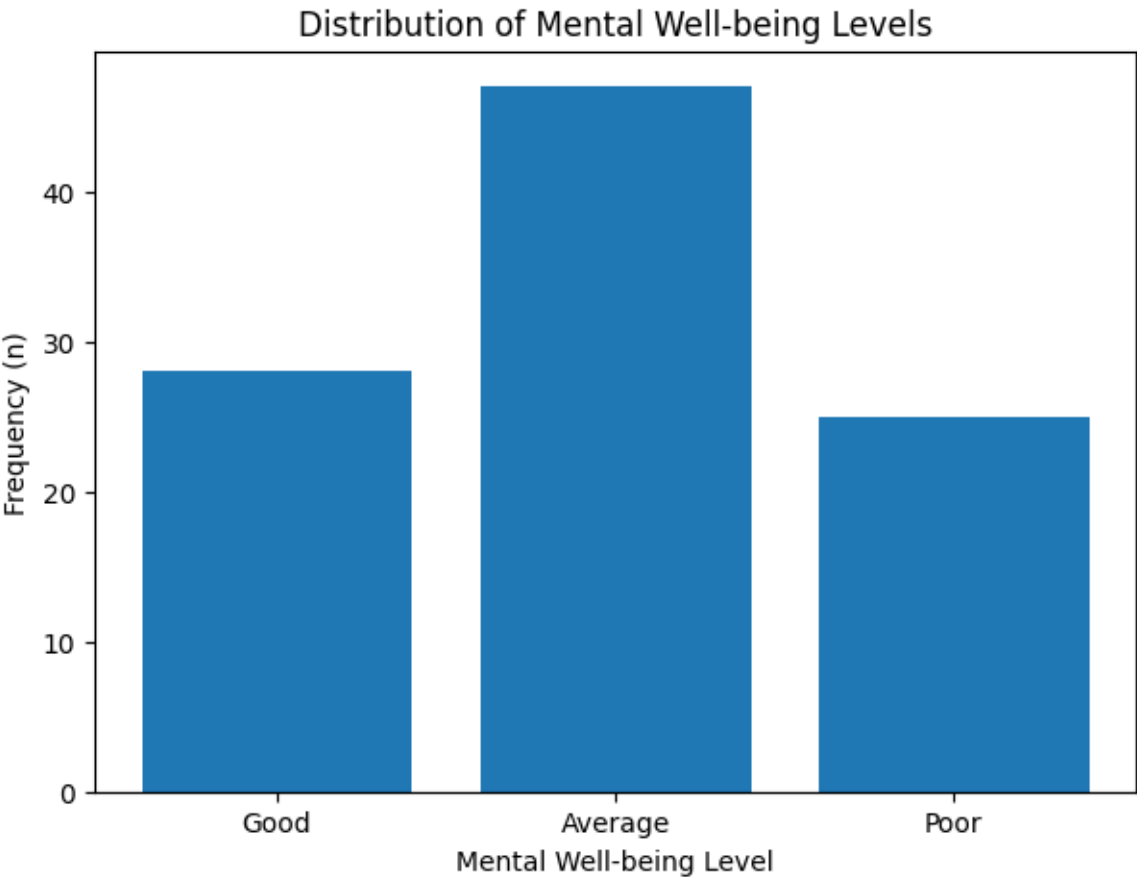
Interpretation:

Half of the participants (50%) had moderate smartphone addiction, while 25% had severe addiction levels.

Section III: Distribution of Mental Well-Being Levels

Table 3: Distribution of Mental Well-Being Levels Among Adolescents (N=100)

Mental Well-being Level	Frequency (n)	Percentage (%)
Good	28	28
Average	47	47
Poor	25	25



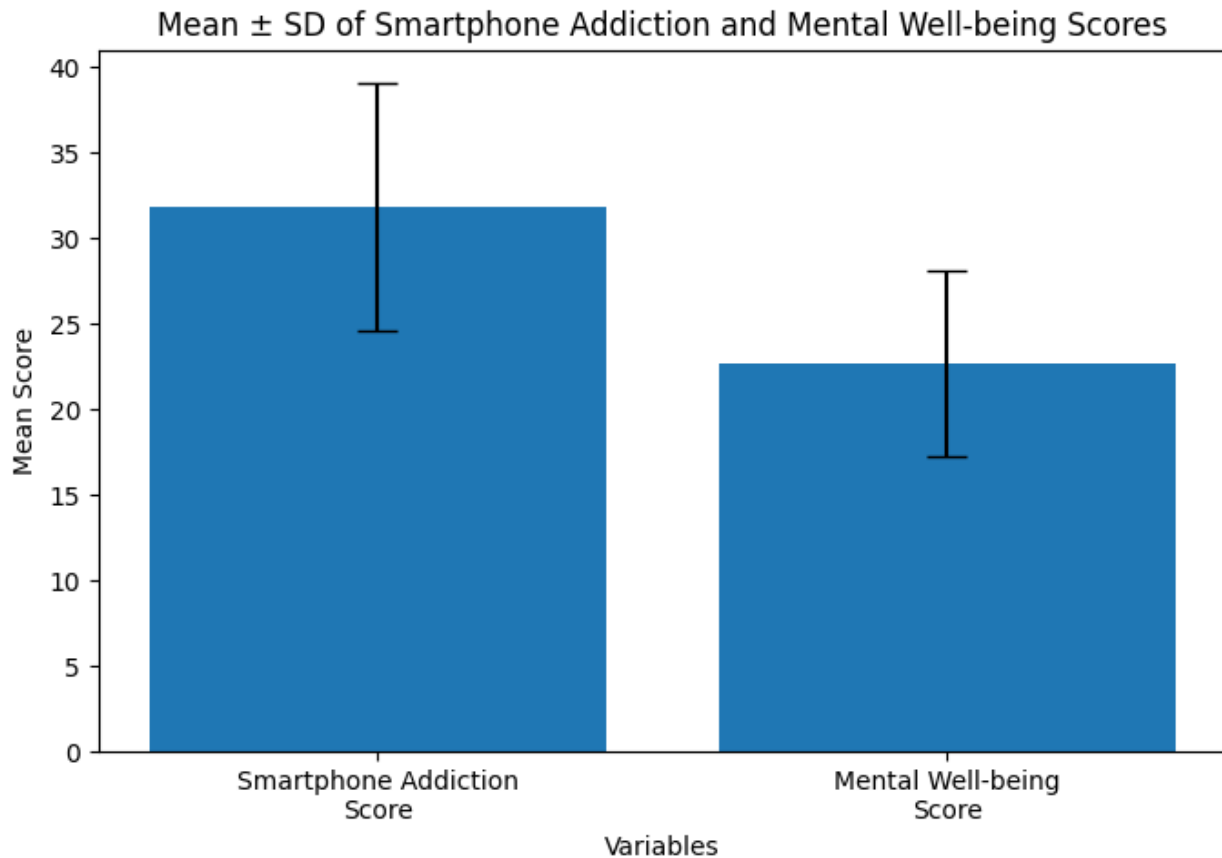
Interpretation:
Most adolescents (47%) demonstrated average mental well-being status.

Section IV: Correlation Between Smartphone Addiction and Mental Well-being

Table 4: Correlation Between Smartphone Addiction and Mental Well-Being Scores

Variables	Mean ± SD	Correlation (r)	p-value
Smartphone Addiction Score	31.82 ± 7.25	-0.68	<0.001*
Mental Well-being Score	22.64 ± 5.41		

*Significant at p <0.05



Interpretation:

There was a statistically significant negative correlation ($r = -0.68$) between smartphone addiction and mental well-being scores. Increased smartphone addiction was associated with lower mental well-being.

Section V: Association Between Smartphone Addiction and Selected Demographic Variables

Table 5: Association Between Smartphone Addiction and Selected Demographic Variables (N=100)

Variables	χ^2 Value	p-value	Significance
Age	7.42	0.024	Significant
Gender	2.81	0.186	Not Significant
Duration of Smartphone Use	12.54	0.002	Significant

Interpretation:

A significant association was observed between smartphone addiction and age and duration of smartphone use, while gender was not significantly associated.

Summary of Findings

The study findings revealed that a considerable proportion of adolescents demonstrated moderate smartphone addiction. A significant negative relationship was identified between smartphone addiction and mental well-being, indicating that higher levels of smartphone addiction were associated with lower levels of mental well-being among adolescents.

Nursing Implications

Nursing Practice

School health nurses can conduct awareness programs regarding healthy digital habits.

Nursing Education

Nursing curricula should emphasize technology-related health problems among adolescents.

Nursing Administration

Administrators can organize digital wellness programs in schools.

Nursing Research

Further studies can be conducted with larger samples and longitudinal designs.

Conclusion

Excessive smartphone use among adolescents may negatively influence mental well-being. Appropriate health education and preventive interventions can improve psychological health and encourage healthy technology use.

