Journal of Pioneering Medical Sciences
Received: February 28, 2026 | Accepted: October 05, 2026 | Published: November 05, 2026
Volume 15, Issue 10, Pages 243-247

DOI https://doi.org/10.47310/jpms2026151036



Prevalence of Smartphone Overuse and Its Association with BMI among University Students in Arar, Saudi Arabia

Awwad Alenezy[1*], Basem Salama[2], Yusef Muhana Alenezi[3], Naglaa A Bayomy[4], Anshoo Agarwal[5], Habeeb Ali Baig[6], Yahia Elboraei[7], Yasser Awadallah Yasein[8] and Alenezy, Ragad Awwad[9]

[1-3]Department of Family and Community Medicine, Faculty of Medicine, Northern Border University, Arar, Saudi Arabia
[2]Department of Family and Community Medicine, Faculty of Medicine, Northern Border University, Arar, Saudi Arabia and Faculty of Medicine, Al-Azhar University, Egypt
[4]Department of Anatomy- College of Medicine, Northern Border university, Arar, Saudia Arabia and Department of 5Histology and cell biology, Faculty of Medicine, Tanta University, Egypt
[5]Department of Pathology, Faculty Of Medicine, Northern Border University, Arar, Kingdom of Saudi Arabia
[6]Department of Microbiology, College of Medicine, Northern Border university, Arar, Saudia Arabia
[7]Department of Otorhinolaryngology, Faculty of Medicine, Northern Border University, KSA
[8]Professor of Public Health and Community Medicine, Faculty of Medicine, Al-Azhar University, Cairo, Egypt
[9-14]Faculty of Medicine, Northern Border University, Arar, Saudi Arabia

*Corresponding author: Basem Salama (e-mail: drbasemsalama@yahoo.com).

©2026 the Author(s). This is an open access article distributed under the terms of the Creative Commons Attribution License (http://creativecommons.org/licenses/by/4.0

Abstract **Objectives:** Smartphone overuse and obesity are two of the most significant public health concerns that are getting worse every day where youth spend their leisure time playing about on their devices. Excessive smartphone use may be an indication of smartphone addiction and affects users' social and physical health. The study aims to assess the prevalence smartphone excessive use and its association with obesity in youth. **Subject and Study Design:** A university-based cross-sectional study was conducted among university students aged 18–25 years in Arar city. A total of 403 participants completed a self-administered questionnaire that included socio-demographic characteristics and behavioral factors. Levels of smartphone use were assessed using the Smartphone Addiction Scale-Short Version (SAS-SV). **Results:** The prevalence of smartphone overuse among participants was 71.7%. Smartphone overuse was more common among males (76.9%) compared with females (67.0%), although the difference was not statistically significant (p = 0.07). A significant association was observed between smartphone overuse and age (p=0.001), with participants aged ≥21 years showing higher overuse rates. Students from non-medical faculties had higher smartphone overuse compared with those from medical faculties (p = 0.031). Participants who used smartphones for more than five hours daily showed significantly (p = 0.007) higher overuse (78.5%) than those using them for less than five hours (57.4%). No statistically significant association (p = 0.122) was found between smartphone overuse and BMI. **Conclusion:** Smartphone overuse is highly prevalent among youth in Arar city. Several demographic and behavioral factors were associated with excessive smartphone use, particularly age, faculty type, and daily duration of smartphone use. However, no significant association was observed between smartphone overuse and obesity.

Key Words: Smartphone Overuse, Smartphone Addiction, Obesity, Body Mass Index (BMI), Youth, University Students, Physical Activity, Arar City

INTRODUCTION

One of the many devices produced by technology's rapid advancement is the smartphone [1]. Smartphones have made our lives easier and are now necessary for daily living, yet unrestrained and excessive use dependence of them can result in "smartphone addiction" [SA]. SA is a growing public health concern, especially among young people worldwide. According to reports, the majority of people worldwide own smartphones. People are more likely to spend their time on social networking, business emails, academic searches, locating information, and playing games. [2-3].

Research indicates that excessive smartphone use is troublesome as a result of the population's increased smartphone usage rate The terms "problematic mobile or smartphone use" “smartphone addiction" "smartphone

dependence", and "smartphone overuse" have all been used mutually in the literature to describe essentially the same phenomenon, which is a person's incapacity to control their smartphone use, which has detrimental effects on daily life [3-4].

Addiction to mobile devices, when someone uses their phone excessively is unable to cut back, uses it to pass the time when they are bored, becomes anxious or depressed when their phone is out of reach and loses relationships [5-6].

Dependence on technology, negative attitudes, and excessive smartphone use can all contribute to anxiety, stressful behavior, and depression. An online poll survey regarding Elon University students' behavior concluded that students appeared to be addicted to their mobile phones excessive smartphone use had a detrimental psychological impact [5-6].

Individual who becomes addicted to their smartphones may experience a variety of problems. For instance, excessive smartphone use endangers physical health by reduced exercise time, obesity, disrupting sleep, impairing vision, creating shoulder, wrist, and cervical spine pain, and leading to additional issues from inactivity [7-8]. Depression, anxiety, increased hostility, and poor attention are some of the detrimental consequences on mental health that it has social issues like poorer academic performance, accidents, relationship troubles, and increased exposure to pornography as a result of excessive smartphone use is also becoming more prevalent. Due to reductions in physical activity and a significantly sedentary lifestyle, increased use of technology is linked to higher incidence of obesity [9-15].

Numerous studies have found that smartphone addiction is highly prevalent. For instance, the frequency was high among Egypt (58.0 %) and Malaysian students (50 %) [15-16]. On the other hand, a number of studies have discovered a low prevalence of smartphone addiction: Chinese college students had a prevalence of 29.8% Teenagers are particularly susceptible to smartphone addiction [16]. Social media sites online gaming, and chatting apps comprise the most common causes of smartphone overuse issues [17].

Many findings revealed that more than a quarter of youth suffered from smartphone addiction, which calls for additional investigation into its root causes and how it affects students' well-being. The study aims to assess the prevalence of smartphone excessive use and its association with obesity in youth.

Subject and Study Design

A population-based cross-sectional study will be conducted including participants aged 18-25 in Arar city. Using the single proportion size formula, the sample size was calculated. The greatest sample size required was 403 participants. After accounting for the drop-out rate of 5%.

Inclusion Criteria

The study will include all persons aged 18-25 years who agree to participate in the study. Those who will refuse to participate will not include in the study.

Using a self-administered questionnaire, data will be gathered. The questionnaire has two sections:

The first section of includes the following information:

- sociodemographic data, including age, gender, place of residence, marital status, type of college, parents' educational attainment level, weight, height and socioeconomic status
- behavioral factors, or lifestyle factors, including smoking, participation in physical activity lasting at least 30 minutes each day, average typical sleep duration, average daily internet usage, and the devices used (smartphone, desktop computer, or laptop computer)

Levels of smartphone use will be evaluated using the Smartphone Addiction Scale-Short Version (SAS-SV). This scale has ten items, each of which has six alternative responses: strongly disagree, disagree, disagree, weakly disagree, disagree, and strongly agree. The total SASSV scores range from 0 to 60, with 0 being a "low" level of smartphone addiction and 60 a "high" level. A score between 33 and 60 in females and 31 to 60 in males will deemed to indicate a high level of addiction, according to Kwon et al's definition [18]

The BMI scores of the individuals will determined by using the formula to assess obesity: Based on self-reported information, BMI is calculated as Weight (kg)/Height (m^2).

Statistical Analysis

Data analyzed by the use of SPSS software, version 16.0 (SPSS Inc. Chicago, USA). A suitable test (chi square, correlation or t test) was be used to compare continuous and categorical variables. All p-values lower than 0.05 considered statistically significant with a 95% confidence interval.

RESULTS

Table (1) presents demographic and behavioral data across several variables, including sex, age, smartphone overuse, university faculty, academic year, smoking status, daily smartphone usage duration, and BMI categories. Males (57.1%) slightly outnumber females (42.9%), and a majority (58.3%) are aged 21 or older. Students from non-medical faculties (57.6%) outnumber those from medical faculties (42.4%). Most students are in their 3rd and 4th academic years (52.4%), followed by 1st and 2nd years (36.2%). Smoking prevalence is relatively high at 72%, and most students (68%) use their smartphones for five or more hours daily. Regarding BMI, nearly half (46.2%) fall within the normal range (18.5–24.9), while 28.5% are underweight, and 25.3% are overweight or obese.

Table 1: Socio-Demographic and Behavioral Characteristics

Variables	Parameters	Number	Percentage
Sex	Male	230	57.1
	Female	173	42.9
Age	<20 years	168	41.7
	≥21	235	58.3
Smart phone overuse	Yes	289	71.7
	No	114	28.3
University faculty	Medical faculties	171	42.4
	Non-Medical faculties	232	57.6
Academic year	1st & 2nd	146	36.2
	3rd & 4th	211	52.4
	5th & above	46	11.4
Smoking	Yes	290	72.0
	No	113	28.0
Daily duration use	<5 hours	129	32.0
	≥5 hours	274	68.0
BMI	Less than 18.5	115	28.5
	18.5 to 24.9	186	46.2
	25 to 29.9	81	20.1
	>30.0	21	5.2

Table 2: Comparison Between Smart Phone Overuse and Non-Overuse Regarding Socio-Demographic and Health Characteristics of the Study Participants

Variables		Smart phone overuse				p-value
		YES	Percentage	No	Percentage	
Sex	Male	173	76.9	57	23.1	0.07
	Female	116	67.0	57	33.0	
Age	<20 years	106	63.1	62	36.9	0.001
	≥21	183	77.9	52	22.1	
University faculty	Medical faculties	113	66.1	58	33.9	0.031
	Non-Medical faculties	176	75.9	56	24.1	
Academic year	1st & 2nd	113	77.4	33	22.6	0.14
	3rd & 4th	143	67.8	68	32.2	
	5th & above	33	71.7	13	28.3	
Smoking	Yes	197	67.9	93	32.1	0.001
	No	92	81.4	21	18.6	
Daily duration use	<5 hours	74	57.4	55	42.6	0.007
	≥5 hours	215	78.5	59	21.5	
BMI	Less than 18.5	74	64.3	41	35.7	0.122
	18.5 to 24.9	136	73.1	50	26.9	
	25 to 29.9	61	75.3	20	24.7	
	>30.0	18	85.7	3	14.3	

Table 3 Reason Behind Their Regular Smartphone Use

Smartphone use	Rarely	Percentage	Sometime	Percentage	Always	Percentage	p-value
Social communication	26	6.5	70	17.4	307	76.2	0.001
Entertainment	43	10.7	116	28.8	244	60.5	0.001
Internet browsing	54	13.4	112	27.8	237	58.8	0.001
Academic education	78	19.4	112	27.8	213	52.9	0.02
Telephone call	57	14.1	145	36.0	201	49.9	0.001
Games	144	35.7	124	30.8	135	33.5	0.001

Table 2 shows a comparison of smartphone overuse and non-overuse among participants based on socio-demographic and health characteristics. The p-value (0.07) indicates no significant difference in smartphone overuse between males and females, though males slightly dominate the overuse group (76.9%). A significant difference exists (p = 0.001) between age groups, with older participants (≥21 years) showing a higher rate (77.9%) of smartphone overuse compared to younger participants (<20 years, 63.1%). There is a statistically significant difference (p = 0.031), with non-medical faculty students reporting higher overuse (75.9%) compared to medical faculty students (66.1%).

Strongly significant (p = 0.007), with participants using smartphones ≥5 hours a day reporting higher overuse (78.5%) than those using them <5 hours (57.4%). A significant association (p = 0.001) is noted, with smokers showing higher smartphone overuse (67.9%) compared to non-smokers (81.4%).

No significant difference (p= 0.14) in smartphone overuse was observed among students in different academic years. Also, no significant difference (p = 0.122), though overuse seems to increase with BMI, particularly among participants with a BMI >30 (85.7%).

The most frequent purpose of mobile phone use was social communication, with 76.2% of participants

reporting always using their phones for this purpose. This was followed by entertainment (60.5%), internet browsing (58.8%), and academic education (52.9%). Telephone calls were reported by 49.9% of participants as an always-used function. Gaming represented the least common activity, with 35.7% of participants reporting rare use. All usage patterns were statistically significant ($p<0.05$), Table 3.

DISCUSSION

These results are consistent with a study [19] to investigate smartphone use and related perceived health impacts among the teenagers enrolled in Medical College and stated that every teenager used a smartphone to access social media. Another study [20] conducted in 2021 found that, the typical daily smartphone usage length among teenagers and young adults was four hours.

According to the average overall scores and levels of smartphone addiction for each sex, it was discovered that over three-quarters of teenagers were addicted to smartphones and used them problematically, with over half of them being male. This result is consistent with that of Manna *et al.* [21], who found that over three-quarters of teenagers were addicted to smartphones and used them problematically, with over half of them being male This result contrasts with the research done by Patki [22]. According to his research on mobile phone use and its alleged negative health impacts, 50% of teenagers were smartphone addicts and used their phones problematically: An Indian cross-sectional study conducted in Chennai.

Regarding the relationship between the adolescents' BMI and the Smartphone Addiction Scale Short Version, was statistically non-significant ($p<0.05$). Our finding not consistent with many studies [23] findings, that a statistically significant difference was observed between the group of adolescents who were addicted to smartphones and the group of adolescents who were not.

CONCLUSIONS

Smartphone overuse is highly prevalent among youth in Arar city. Several demographic and behavioral factors were associated with excessive smartphone use, particularly age, faculty type, and daily duration of smartphone use. However, no significant association was observed between smartphone overuse and obesity.

REFERENCES

[1] Achangwa, C. *et al.* "Adverse Effects of Smartphone Addiction among University Students in South Korea: A Systematic Review." Healthcare, vol. 11, no. 1, 2022, article 14. https://doi.org/10.3390/healthcare10071262.

[2] 2. Olson, J.A. *et al.* "Smartphone Addiction Is Increasing across the World: A Meta-analysis of 24 Countries." Computers in Human Behavior, vol. 129, 2022, article 107138. https://doi.org/10.31234/osf.io/fsn6v.

[3] 3. Statista. "Number of Smartphone Users Worldwide from 2014 to 2029." 2025, https://www.statista.com/forecasts/1143723/smartphone-users-in-the-world. Accessed 13 Sept. 2025.

[4] 4. Salama, B. "Prevalence and Associated Factors of Internet Addiction among Undergraduate Students at Al-Beheira Governorate, Egypt." International Journal of Public Health, vol. 65, no. 6, 2020, pp. 905–910. https://doi.org/10.1007/s00038-020-01429-9.

[5] 5. Kwon, S.J. *et al.* "Influence of Smartphone Addiction and Poor Sleep Quality on Attention-Deficit Hyperactivity Disorder Symptoms in University Students: A Cross-sectional Study." Journal of American College Health, vol. 70, 2022, pp. 209–215. https://doi.org/10.1080/07448481.2020.1740228.

[6] 6. Hassan, M.M. *et al.* "The Association of Social Media Use and Other Social Factors with Symptoms of Attention-Deficit/Hyperactivity Disorder in Egyptian University Students." BMC Psychiatry, vol. 25, 2025, article 19. https://doi.org/10.1186/s12888-024-05988-6.

[7] 7. Abouzed, M. *et al.* "Impact of Smart Technology Use on Sleep Quality in Individuals with Autism Spectrum Disorder: A Mixed-methods Investigation." Frontiers in Psychiatry, vol. 15, 2024, article 1411993. https://doi.org/10.3389/fpsyt.2024.1411993.

[8] 8. Jeong, Y.W. *et al.* "The Frequency of Impairments in Everyday Activities Due to the Overuse of the Internet, Gaming, or Smartphone, and Its Relationship to Health-related Quality of Life in Korea." BMC Public Health, vol. 20, 2020, pp. 1–16. https://doi.org/10.1186/s12889-020-08922-z.

[9] Ismail, W.S.W. *et al.* "The Relations of Internet and Smartphone Addictions to Depression, Anxiety, Stress, and Suicidality among Public University Students in Klang Valley, Malaysia." Perspectives in Psychiatric Care, vol. 56, 2020, pp. 949–955. https://doi.org/10.1111/ppc.12517.

[10] Kim, S.-G. *et al.* "The Relationship between Smartphone Addiction and Symptoms of Depression, Anxiety, and Attention-Deficit/Hyperactivity in South Korean Adolescents." Annals of General Psychiatry, vol. 18, 2019, article 1. https://doi.org/10.1186/s12991-019-0224-8.

[11] Xiong, S. *et al.* "Patterns of Smartphone Addiction in Adolescents and Their Association with Multiple Ecological Factors: A Latent Profile Analysis." Children and Youth Services Review, vol. 155, 2023, article 107223. https://doi.org/10.1016/j.childyouth.2023.107223.

[12] Ng, K.C. *et al.* "The Relationships between Mobile Phone Use and Depressive Symptoms, Bodily Pain, and Daytime Sleepiness in Hong Kong Secondary School Students." Addictive Behaviors, vol. 101, 2020, article 105975. https://doi.org/10.1016/j.addbeh.2019.04.033.

[13] Um, Y.-J. *et al.* "Relationships between Smartphone Dependency and Aggression among Middle School Students: Mediating and Moderating Effects of Ego-resilience, Parenting Behaviour, and Peer Attachment." International Journal of Environmental Research and Public Health, vol. 16, 2019, article 3534. https://doi.org/10.3390/ijerph16193534.

[14] Chen, B. *et al.* "Gender Differences in Factors Associated with Smartphone Addiction: A Cross-sectional Study among Medical College Students." BMC Psychiatry, vol. 17, no. 1, 2017, article 341. https://doi.org/10.1186/s12888-017-1503-z.

[15] El-Zoghby, S.M. *et al.* "Cyberchondria and Smartphone Addiction: A Correlation Survey among Undergraduate Medical Students in Egypt." Journal of the Egyptian Public Health Association, vol. 99, no. 1, 2024, article 7. https://doi.org/10.1186/s42506-024-00154-y.

[16] Ching, S.M. *et al.* "Validation of a Malay Version of the Smartphone Addiction Scale among Medical Students in Malaysia." PLOS ONE, vol. 10, no. 10, 2015, article e0139337. https://doi.org/10.1371/journal.pone.0139337.

[17] Lee, S.J. *et al.* "Smartphone Addiction and Application Usage in Korean Adolescents: Effects of Mediation Strategies." Social Behavior and Personality: An International Journal, vol. 44, no. 9, 2016, pp. 1525–1534. https://doi.org/10.2224/sbp.2016.44.9.1525.

[18] Kwon, M. *et al.* "The Smartphone Addiction Scale: Development and Validation of a Short Version for Adolescents." PLOS ONE, vol. 8, no. 12, 2013, article e83558. https://doi.org/10.1371/journal.pone.0083558.

[19] Manna, N. *et al.* "A Study on Smartphone Use and Its Perceived Health Effects among the Adolescents Attending Medical College and Hospital, Kolkata." National Journal of Physiology, Pharmacy and Pharmacology, vol. 13, no. 6, 2023, pp. 1313–1317. https://doi.org/10.5455/njppp.2023.13.0420220230405 2023.

[20] Pandya, C. *et al.* "A Cross-sectional Study on Smartphone Addiction among Late Adolescents and Young Adults (Aged 15 to 24 Years) of Ahmedabad City, Gujarat, India." Journal of Evidence Based Medicine and Healthcare, vol. 8, 2021, pp. 491–496. https://doi.org/10.18410/jebmh/2021/96.

[21] Patki, M. *et al.* "Mobile Phone Usage and Its Perceived Ill Health Effects: A Cross-sectional Study in Chennai, India." International Journal of Community Medicine and Public Health, vol. 7, 2020, pp. 2993–3001. https://doi.org/10.18203/2394-6040.ijcmph20203058.

[22] Bozkurt, H. *et al.* "Internet Use Patterns and Internet Addiction in Children and Adolescents with Obesity." Pediatric Obesity, vol. 13, no. 5, 2023, pp. 301–306. https://doi.org/10.1111/ijpo.12216.

[23] Azizi, M. *et al.* "Relationship between Internet Addiction and Body Mass Index and the Predictive Role of Emotion Dysregulation." Frontiers in Psychology, vol. 14, 2024, article 1305828. https://doi.org/10.3389/fpsyg.2023.1305828.

[24] El-Gamal, S.M.A. and Ahmed, S.R. "Relation between Problematic Smartphone Use and Obesity among Adolescents." Menoufia Nursing Journal, vol. 10, no. 2, 2025, pp. 1–26. https://doi.org/10.21608/menj.2025.432460.