Assessing the Impact of Smartphone Addiction among medical and health faculty students at university of Kirkuk

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KEYWORDS

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ABSTRACT

Background: Modern smartphones have become an integral part of daily life, particularly among medical students who experience significant academic pressure and stress This study aimed to assess the extent of students' impact from smartphone addiction and investigate its association with their demographic characteristics, socio-economic status, and associated risk factors.

Methods: A descriptive cross-sectional study design was used in this study. 772 students from all stages of study in the medical faculties of Kirkuk University. using Smartphone Addiction Scale (SAS), Nordic questionnaires for the analysis of musculoskeletal symptoms, and the severity of digital vision syndrome (DES) was measured using 12 items, The Data was analyzed through Statistical Package for Social Sciences (SPSS) 22.

Results: The result of the current study shows that 55.1% were female and the male were 347 (44.9%). the average age of the students was 21.09 ± 1.75. 46.80% of the sample were overweight and obese. around 343(44.4%) sampled are assigned intermittent sleep. while significant relationships are obtained with each of Socio-Economic Status, specialization, using Smartphone in 24hrs, sleeping hours during a day in at least at $P<0.05$. an overall through global mean of score for the studied domains was assessed in compact form a moderate level, with percentile ranged responses from 5.65 to 80.61 for the studied sample.

Conclusion: Our study substantiated that health and medical students are progressing into a state of addiction. no significant difference between males and females when considering of smartphone addiction. The age group most affected was individuals aged 22-23. while the Individuals with moderate to high SES are more susceptibility to addiction. Smartphone use should be limited. To increase awareness and knowledge about the detrimental impacts of smartphone addiction, workshops, courses, and conferences should be held.

1. Introduction

The usage of smartphones has had a significant and rapid growth, becoming an indispensable aspect of daily life due to its numerous advantages, including convenience and ease of use. (Kim et al., 2024).

Smartphones are sophisticated touchscreen gadgets with various functionalities, have become essential in society and have continuously increased in popularity over the years. They enable individuals to rapidly communicate with friends and family and offer a variety of applications for communication and entertainment, which include internet browsing, navigation, email communication, gaming, and access to social networking platforms like Facebook and Twitter (Aftab & Khyzer, 2023).

Global smartphone mobile network subscriptions were about 6.4 billion in 2022 and are projected to surpass 7.7 billion by 2028 (Taylor, 2023).

This addiction is characterized by an individual's inability to control their smartphone usage, even when it has negative effects on their daily life, relationships, work, or overall well-being (Abuhamdah & Naser, 2023).

Overuse of smartphones encourages addiction by having a detrimental effect on users' academic performance as well as other daily activities, such as their social connections and physical and mental health (Obi & MO, 2020). and physical issues include headaches, earaches, impaired vision, exhaustion, and difficulty focusing (Shahrestanaki et al., 2020). Moreover, conflicts with their parents and feel dissatisfied with their lives. This might hinder their ability to complete important developmental tasks and make it harder for them to adapt to different situations (Hong et al., 2021). in addition, can lead to various adverse physical and mental health consequences, including discomfort in the head and neck area, pain in the lower back, impaired gastrointestinal function, disrupted sleep

patterns, insomnia, heightened anxiety, melancholy, and diminished self-esteem (Zhong et al.,2022). And, visual fatigue, eye strain, and dry and irritated eyes (Okela, 2023). Furthermore, can cause hearing and visual issues, as well as pain in shoulders. Despite the applicable ban and risk, many even use smartphones while driving. As the negative impacts grew, the phrase "smartphone addiction" was coined (Ge et al., 2023).

Smartphone addiction refers to the psychological or behavioral issues experienced by individuals who excessively utilize smartphones (Yang et al., 2023). Utilizing a smartphone not only generates enjoyment and diminishes sensations of discomfort and tension, but also results in an inability to regulate the level of usage despite substantial detrimental effects on one's financial, physical, psychological, and social well-being (Cha & Seo, 2018).

Smartphone addiction is sometimes referred to as 'smartphone overuse' and is also known as 'nomophobia' or 'problematic smartphone use'. Smartphone addiction mostly pertains to an individual's reliance on or addiction to their cellphones, as well as an inability to handle the anxiety of being without a mobile phone or lacking touch with it (Kim et al., 2024).

The main indicators of smartphone addiction are obsessive thoughts about mobile phones (craving), increased time spent on smartphones (tolerance), and feeling worried when unable to access a smartphone (Liu et al., 2022).

Four characteristics make up smartphone addiction: functional impairment, withdrawal, compulsion, and tolerance. Anxiety, decreased ability to focus and make decisions, and diminished function are all common signs of smartphone addiction (Liu et al., 2022).

University students with smartphone addictions are known for their propensity to feel lost without their device, difficulty controlling impulses, low ability to plan ahead, and rapid onset of boredom (Liu et al., 2022).

College students' academic performance, energy level, and food and exercise habits are all negatively impacted by smartphone addiction. It also increases anxiety, sadness, insomnia, emotional instability, and even increases the risk of suicide due to cyberbullying and online fraud (Wang et al., 2023).

Individuals with a strong inclination towards interpersonal relationships often opt for activities that include social engagement. Conversely, individuals with inadequate interpersonal relationships and low self-esteem are more likely to exhibit smartphone addiction. The disorder leads to the disruption of everyday routines and a preference for communication through social media due to discomfort in interpersonal communication (Kil et al., 2021).

Moreover, Smartphone addiction can lead to mental, behavioral, and social problems, and is associated with various aspects of health and well-being. It can result in attention deficits, maladaptive behavior, academic and work interference, decreased school performance, and reduced face-to-face social interactions (Abuhamdah & Naser, 2023). reduced appetite, obesity, alterations in sleep patterns (J & Tauro, 2024). One of the physical health problems caused by smartphone addiction myofascial pain syndrome in the wrists and neck (Boonluksiri, 2018). amplified muscle issues (Hajesmaeel-Gohari et al., 2024).

According to Alsanosi et al, 2013. a phone call lasting 60 minutes not only impacts the ability to hear, but also leads to headaches, vertigo, and tinnitus. Additionally, it has been discovered that it diminishes the quality of sleep and has a detrimental impact on mood and energy levels. Inadequate sleep can result in endothelial dysfunction, a known risk factor for cardiovascular disease. (Aftab & Khyzer, 2023).

There are concerns regarding the negative health effects linked to the use of smartphones. A major worry that is frequently raised is the potential risk of brain cancer caused by the emission of radiofrequency (RF) waves during use (Tariq et al., 2019). in addition, brain tumors, nervous disorders, weakened immune system, eardrum issues, wrist, neck, and joint discomfort, weariness, and sleep

difficulties (Cha & Seo, 2018).

Integrating the mobile devices into the Internet of Things (IoT) might serve as an effective means of enhancing teaching methods by facilitating interaction among individual's teachers and students within the academic setting (I.Mohammed Ali & Nihad, 2021). University classrooms have changed as a result of IoT's integration of mobile devices into the environment. This has given educators and students a fantastic opportunity to learn and work together more effectively. To draw in students (I.Mohammed Ali & Nihad, 2021).

Smartphone addiction is strongly correlated with Internet addiction because to the similarities in their features. Internet addiction typically originates from behaviors such as excessive checking, and digital addictions often develop as a means of coping with suffering or avoiding reality. Consequently, certain behaviors like playing games or spending time on social media or forums often lead to negative situations. Certain factors, such as stress, loneliness, or isolation, may also have an influence (Choi, 2015).

Individuals suffering from smartphone addiction may face challenges in adapting to social interactions and may experience heightened difficulty in engaging in face-to-face communication (Kwon &Peak, 2016).

Excessive usage of it can result in cognitive impairments, including deficits in memory and attention, physical abnormalities, changes in eating habits, and disturbances in sleep (Alkhateeb et al., 2020).

Individuals may undergo mental breakdowns, contemplate self-harm, harbor suicidal ideas, and even attempt suicide as a result of stressful events and experiences brought on by their addiction, which can become very difficult to control both physically and mentally (Shinetsetseg et al., 2022)

Several research investigating the determinants of smartphone addiction have identified gender, age, monthly income from one's family, negative emotions, high impulsivity, and narcissism as potential characteristics that can contribute to the development of smartphone addiction (Liu, et al., 2022).

The World Health Organization views smartphone addiction as a public health issue that requires additional study to fully comprehend this phenomenon (Okasha et al., 2022). The prevalence of smartphone addiction has recently experienced a substantial rise, particularly among university students. In Turkey, the rate of smartphone addiction among university students reached 34.6%, while in Iran it was as high as 97.8%, and in South India it stood at 44.0%. These findings indicate a significant variation across studies, which may be attributed to the utilization of different scales to measure smartphone addiction and the reliance on smartphone applications as the foundation for the addiction scale (Abuhamdah & Naser, 2023). Nevertheless, there is a limited of research conducted on smartphone addiction and its impact on Iraqi medical students. This study aimed (i) to determine level of student's impact regarding Smartphone addiction. (ii) To find out the association between students' level of Smartphone addiction and their demographic data, and Socio-Economic status. and Risk factors associated with Smartphone addiction.

2. Methodology

A descriptive cross-sectional study design was used in this work. The sample of study consisted of students (n = 772) male and female who attending the faculty of medical at University of Kirkuk, Iraq, from all years of study, during the period from (February 2024 to July 2024). The sample were selected randomly in this study. participants were chosen in for the study using stratified sampling. The inclusions criteria for the sample were predicated on the willingness and voluntary consent to participate in the study. The exclusions were (i)Postgraduate students (ii)Evening studies students. The participants were briefed on the study's objective before providing consent. The data was collected via questionnaires that were provided in both English and Arabic. a questionnaire was used, that consisted of three parts. The first part of the questionnaire collected "Socio-demographic characteristics", and the second part measured risk factors of smartphone, while the third part measured smartphone addiction

using Smartphone Addiction Scale (SAS) after taking permission from the author of the instrument (Kwon et al., 2013), and also suing Nordic questionnaires for the analysis of musculoskeletal symptoms (Kuorinka et al., 1987), and the severity of DVS was measured using a twelve-item (Hundekari et al., 2021), through proposed of five meaningful domains, such that: "Social Problems (Family Environment), Social Problems (External Environment), Health problems with reference to vision disorders, Health problems related to Musculoskeletal pains, and the Psychological Problems", using Likert scoring scales of 3 differentiated categories, such that: "Never, Sometimes, and Always". Reliability of the questionnaire showed that a very high level of stability and internal consistency of the studied subjective at the level of items of the applied questionnaire. In this study, Cronbach's α coefficient was 0.70.

Statistical analysis

The data were analyzed using the Statistical Package for Social Sciences (SPSS) version 22 and the analysis included descriptive (Observed Frequencies, Percentages for categorical variables) as well as comparisons significant are presenting for purpose of showing whether the observed frequencies of each category's variable had a random or restrict distribution. and also, mean of score (MS), Standard Deviation (SD) were calculated for continuous variables. and inferential procedures (Chi-Square test, Contingency Coefficients (C.C.) test).

Table (3) shows a summary statistics for an overall assessments of for the studied domains in compact form, including the following estimates: Minimum, and Maximum, percentile grand/global mean of score - PGMS, pooled standard deviation - PSD, as well as different responding levels of assessing studied domain's responding through percentile transform formula using three differentiate categories' levels, such as (Low impact, Moderate impact, and High impact), through the following intervals: [(0.00 – 33.33), (33.34 – 66.66), and (66.67 – 100)] respectively.

3. Result and Discussion

A total of 772 participants answered the survey, regarding sex, out of all participants around 425(55.1%) of the sample were female and male were 347 (44.9%). The average age was 21.09 ± 1.75. concerning marital status that most of the studied sample are assigned "Single", and they are accounted 742(96.1%), while leftover was assigned married status. and the majority of the participants were urban residency, and they are accounted 719(93.1%). as for Socio-Economic Status that more than three quarters of the studied sample are assigned "Low, and Moderate" levels, and that through applying the WHO score, and they are accounted 597(77.3%). about half of the sampled are assigned an overweight, and obese, as well as highly significant different are accounted at P<0.01between distribution of the observed frequencies.

Table (1). Socio-Demographic Characteristics Variables

SDCv.	**Classes**	**No.**	**%**	**C.S. (*) P-value**
Gender	Male	347	44.9	P=0.006 (HS)
	Female	425	55.1	
Age Groups Yrs.	< 20 yrs.	177	22.9	χ^2= 152.67 P=0.000 (HS)
	20 _ 21	213	27.6	
	22 _ 23	342	44.3	
	> 24 yrs.	40	5.2	
	Mean ± SD	21.09 ± 1.75		
Marital Status	Married	30	3.9	P=0.000 (HS)
	Single	742	96.1	
Residency	Urban	719	93.1	P=0.000 (HS)
	Rural	53	6.9	

Socio-Economic Status	Low	95	12.3	χ^2= 152.67 P=0.000 (HS)
	Moderate	502	65.0	
	High	175	22.7	
Body Mass Index BMI	Under weight	4	0.50	χ^2= 668.155 P=0.000 (HS)
	Normal weight	407	52.7	
	Overweight	334	43.3	
	Obese	27	3.50	
	Total	772	100	

HS: Highly Sig. at P<0.01; Testing based on One-Sample Chi-Square test, and Binomial test.

Table (2) showed four specializes are formed the studied sample, and of them 270(35.0%) from Medicine college, of them 118(15.3%) from Dentistry college, of them 216(28.0%) from Pharmacy college, and of them 168(21.8%) from nurse college. The breakdown of the subjects with respect to Stages, 13.2% were first-year students 16.1% were second-year students, 20.2% were third-year students, 33.5% were fourth-year students, and 14.6% were fifth-year students, 2.30% were six-year students. Most of the participants are used Smartphone in 3 hrs. and more, since they are accounted 707(91.6%), while 65(8.40%) are assigned less than 3 hrs. and 513(66.5%) participants was sleeping less than 3 hrs. while About half of studied sample are sleeping in not more than 5 hrs. during at night. around 343(44.4%) sampled are assigned intermittent sleep.

Table (2) Risk factors and Some Related Variables

Some related variables	Classes	No.	%	C.S. (*) P-value
Specialization	Medicine	270	35.0	χ^2= 65.845 P=0.000 (HS)
	Dentistry	118	15.3	
	Pharmacy	216	28.0	
	Nurse	168	21.8	
In which stage you are?	1st	102	13.2	χ^2= 668.155 P=0.000 (HS)
	2nd	124	16.1	
	3rd	156	20.2	
	4th	259	33.5	
	5th	113	14.6	
	6th	18	2.30	
Rate of hours using smart phone per 24hrs?	1 _ 3	65	8.40	χ^2= 261.11 P=0.000 (HS)
	3 _ 5	277	35.9	
	> 5	430	55.7	
Rate of sleeping hours during a day?	1 _ 3	513	66.5	χ^2= 381.87 P=0.000 (HS)
	3 _ 5	119	15.4	
	> 5	140	18.1	
Rate of sleeping hours at night?	1 _ 3	86	11.1	χ^2= 220.85 P=0.000 (HS)
	3 _ 5	263	34.1	
	> 5	423	54.8	
Sleep Pattern	Intermittent	343	44.4	P=0.002 (HS)
	Continuous	429	55.6	

HS: Highly Sig. at P<0.01; Testing based on One-Sample Chi-Square test, and Binomial test.

Table (3) Summary Statistics of Overall Percentile Grand/Global Mean of Score for the Studied Domains in Compact Form (N=772)

Studied Domains	No.	Min.	Max.	PGMS	PSD	Impact Ass.
Social Problems (Family Environment)	772	0.00	90.91	42.110	0.631	M
Social Problems (External Environment)	772	4.17	83.33	40.415	0.529	M
Health problems related to vision	772	3.85	88.46	37.226	0.465	M
Health problems related to Musculoskeletal pain	772	0.00	100	30.793	0.659	L
Psychological Problems	772	0.00	100	51.369	0.660	M
Overall measuring the level of Smartphone Addiction	772	5.65	80.61	40.383	0.390	M

PGMS: Percentile Grand Mean of Score; PSD: Pooled Standard deviation; r Impact assess by: (Low, Moderate, and High) according to [(0.0 – 33.33), (33.34 – 66.66), and (66.67 – 100)] intervals respectively.

Regarding to subjects of the studied assessed domains, according to what achieved by estimating of PGMS, results showed that a moderate level of assessing were presented mostly regarding of studying Smartphone addiction for medical faculty students responding among a sample at Kirkuk university, exceptional for [Health problems related to Musculoskeletal pains] domain, since low impact assessed was reported. In addition to that, an overall through global mean of score for the studied domains was assessed in compact form a moderate level, with percentile ranged responses from 5.65 to 80.61 for the studied sample.

Table (4) Association between an Overall Assessment Through PGMS and Respondent's (SDCv.)

SDCv.	Classes	No. & %	Overall Domains		C.S. P-value
			Under Md	Upper Md	
Gender	Male	No.	169	178	C.C. = 0.026 P = 0.474 NS
		%	48.7%	51.3%	
	Female	No.	218	207	
		%	51.3%	48.7%	
Age Groups	< 20 yrs.	No.	95	82	C.C. = 0.207 P = 0.000 HS
		%	53.7%	46.3%	
	20 _ 21	No.	135	78	
		%	63.4%	36.6%	
	22 _ 23	No.	133	209	
		%	38.9%	61.1%	
	> 24 yrs.	No.	24	16	
		%	60.0%	40.0%	
Marital Status	Married	No.	13	17	C.C. = 0.027 P = 0.448 NS
		%	43.3%	56.7%	
	Single	No.	374	368	
		%	50.4%	49.6%	

Socio-Economic Status	Low	No.	59	36	C.C. = 0.089 P = 0.044 S
		%	61.1%	37.9%	
	Moderate	No.	244	258	
		%	48.6%	51.4%	
	High	No.	84	91	
		%	48.0%	52.0%	

(*) HS: Sig. at P<0.05; S: Sig. at P<0.05; NS: No Sig. at P>0.05; Statistical hypothesis are based on a Contingency's Coefficient test with significant levels of Chi-Square for independency test.

Table (5): Association between overall assessment through PGMS and respondent's Associated with Risk Factors

Associated Risk Factors	Classes	No. & %	Overall		C.S. P-value
			Under Md	Upper Md	
Body Mass Index	Under weight	No.	4	0	C.C. = 0.076 P = 0.209 NS
		%	100%	0.00%	
	Normal weight	No.	205	202	
		%	50.4%	49.6%	
	Over weight	No.	163	171	
		%	48.8%	51.2%	
	Obese	No.	15	12	
		%	55.6%	44.4%	
Specialization	Medicine	No.	123	147	C.C. = 0.131 P = 0.004 HS
		%	45.6%	54.4%	
	Dentistry	No.	55	63	
		%	46.6%	53.4%	
	Pharmacy	No.	104	112	
		%	48.1%	51.9%	
	Nurse	No.	105	63	
		%	62.5%	37.5%	

Associated Risk Factors	Classes	No. & %	Overall		C.S. P-value
			Under Md	Upper Md	
In which stage you are?	1st	No.	60	42	C.C. = 0.207 P = 0.000 HS
		%	58.8%	41.2%	
	2nd	No.	65	59	
		%	52.4%	47.6%	
	3rd	No.	99	57	
		%	63.5%	36.5%	
	4th	No.	111	148	
		%	42.9%	57.1%	
	5th	No.	39	74	
		%	34.5%	65.5%	
	6th	No.	13	5	
		%	72.2%	27.8%	
Rate of hours using Smartphone per 24hrs?	1 _ 3	No.	44	21	C.C. = 0.108 P = 0.010 S
		%	67.7%	32.3%	
	3 _ 5	No.	138	139	
		%	49.8%	50.2%	

	> 5	No.	205	225	
		%	47.7%	52.3%	
Rate of sleeping hours during a day?	1 _ 3	No.	277	236	C.C. = 0.108 P = 0.010 S
		%	54.0%	46.0%	
	3 _ 5	No.	50	69	
		%	42.0%	58.0%	
	> 5	No.	60	80	
		%	42.9%	57.1%	
Rate of sleeping hours at night?	1 _ 3	No.	36	50	C.C. = 0.083 P = 0.067 NS
		%	41.9%	58.1%	
	3 _ 5	No.	124	139	
		%	47.1%	52.9%	
	> 5	No.	227	196	
		%	53.7%	46.3%	
Sleep Pattern	Intermittent	No.	163	180	C.C. = 0.047 P = 0.195 NS
		%	47.5%	52.5%	
	Continuous	No.	224	205	
		%	52.2%	47.8%	

(*) HS: Sig. at P<0.05; S: Sig. at P<0.05; NS: No Sig. at P>0.05; Statistical hypothesis are based on a Contingency's Coefficient test with significant levels of Chi-Square for independency test.

Discussion

In our study, we found no statistically significant difference between males and females in the prevalence of smartphone addiction among medical college students. This result is consistent with the findings of Nikolic et al. (2023). However, other research has reported a higher prevalence of smartphone addiction among women, such as studies conducted by Alkhateeb in Saudi Arabia (2020) and Soliman Elserty in Egypt (2020). Some literature suggests potential gender differences in smartphone usage patterns, with men potentially more inclined towards apps associated with gambling or excessive gaming, while women may be more likely to engage with e-commerce apps and social media platforms, which are linked to addictive behaviors (Derevensky et al., 2021; Okai-Ugbaje et al., 2020; James et al., 2019). There was high difference in age groups especially at (22 _ 23) years, where they showed a high increase of impact due to their misuse of Smartphone addiction, it was consistent with a study conducted by Alsalameh in 2019. While several studies have demonstrated a higher prevalence of addiction among younger individuals (Haug et al., 2015; Lee et al.,2017), recent research has indicated that there is no variation in smartphone addiction among different age groups (Nikolic et al., 2023). The current study did not find any significant relationship between marital status and smartphone addiction, which is consistent with a 2024 study by Elamin et al. Although there is study have proven that a person's marital status is one of the risk factors for addiction and being single increases the prevalence of smartphone addiction Mokhtarinia et al., 2024. These differences may be attributed to cultural variations across different countries. Moreover, results shows that moderate and high socio-economic status level experienced a greater impact as a result of their overuse of smartphones, the findings of the study by Demirkan in 2024 agree with this result. In addition, Alotaibi et al. (2022) found that small family size and high family income are the primary socio-demographic characteristics associated with smartphone addiction. The research conducted by Yayan et al. (2018) and Aljomaa et al. (2016) found that students with smartphone addiction tend to have a lower socioeconomic status. The observed disparities may arise from variations in the instruments and categorization methodologies employed, as well as differences among the participants throughout the various research. The present study reported there was no statistically significant differences accounted at P>0.05 with "BMI, this finding contradicts the results of a study conducted in Saudi Arabia by Aftab & Khyzer in 2023, which revealed a strong correlation between excessive smartphone use and high BMI. In another study conducted by Nikolic et al. in 2023

found that prolonged use of smartphone and tablet screens is associated with decreased participation in physical activity, resulting in increased body mass index, reduced levels of physical activity, and various health problems including visual impairments and musculoskeletal issues (Venkatesh et al., 2019; Zagalaz-Sánchez et al., 2019; Bell et al., 2014). There was a strong correlation in specialization. Participants experienced greater negative effects as a result of their excessive use of smartphones. this outcome was in line with research done in Malaysia by Said et al. in 2022. In addition, the study revealed that respondents in the 4th and 5th stages had a greater increase in the negative effects of smartphone addiction as a result of their overuse. The findings of this study contradict the results of Sarhan's 2024 study, which showed that first-year university students are more susceptible to SPA compared to students in other years of study. table 5 showed a significant relationship between smartphone addiction and the length of daily usage. Participants who used their smartphones for more than five hours per day were shown to have a higher level of addiction compared to those who used their smartphones for less than five hours per day. The findings of the study conducted by Mokhtarinia et al. in 2024 align with our current study. according to several research. (Duan et al., 2020; de Freitas et al., 2021) the most significant elements contributing to smartphone addiction were the duration of daily usage, engagement in social networking, web surfing, phone conversations, and gameplay. Also, longer usage durations were linked to increased levels of addiction. Furthermore, as per the research conducted by Wibowo et al. in 2024, it was shown that the duration of smartphone usage is a significant element that can have an impact on smartphone addiction. A current study showed a relationship between smartphone addiction and sleeping hours during a day, in line with previous study conducted by Alotaibi et al., in 2022, which demonstrated that individuals who were excessively reliant on smartphones were more susceptible to sleeping fewer than six hours per day in comparison to those who were not addicted. This can be ascribed to the correlation between smartphone addiction and a tendency to delay bedtime. Individuals who have a strong reliance on smartphones may face difficulties in abstaining from using their gadgets before going to sleep. This behavior may lead to a higher inclination to postpone sleep, leading to a decrease in the amount of sleep and a decline in the quality of sleep (Zhang & Wu, 2020). The findings of our investigation indicated that there was no significant correlation between excessive smartphone usage and sleep duration of fewer than five hours. This outcome aligns with the findings of a previous study conducted by Boonluksiri in 2018. In 2023, Wang et al. stated that students who had a smartphone addiction were more prone to experiencing sleep difficulties at night. A study conducted by Dewi et al. in 2021 found a correlation between nighttime smartphone use and sleep disruption in adolescents. Another study has shown a correlation between smartphone addiction and inadequate sleep quality, which in turn has a direct negative impact on academic performance. This is mostly due to the distraction caused by smartphones, as well as the negative impact on students' physical and mental well-being (Ibrahim et al., 2018). A current study suggests that there is no correlation between smartphone addiction and sleep patterns. However, this finding contradicts a study conducted by Oka et al. in 2008, which reported a connection between sleep patterns and the use of electronic media in bed. The study found that using a smartphone before bedtime can have a similar impact on sleep phase delay due to exposure to bright and blue light emitted by the device. In another study by Zou et al. In 2019, smartphone addiction and poor sleep quality were linked to high blood pressure. Furthermore, research conducted by Nikolic et al. in 2023 revealed that persons with elevated levels of smartphone addiction are prone to disrupted sleep patterns and heightened psychological distress. Moreover, A study conducted by Susmitha et al. in 2024, it was found that sleep abnormalities among individuals with addiction have a negative impact on their mental wellbeing over time. Also, the study conducted by Alzahrani et al. in 2023 reveals that increased smartphone addiction is associated with lower sleep quality, which might have negative effects on the user's overall health.

Overall, the results indicate a moderate level in the Social Problems (Family Environment) domain when analyzing the items, and similar to the findings of the study of Tariq et al. (2019) conducted in Karachi. reported that individuals often experience negative impacts on their family relationships as a result of insufficient communication with their family members. Additionally, noted that students face family-related challenges such as feelings of depression and a sense of deprivation when they compare

themselves to others who post artificial happy photos and selfies. Concerning the "Social Problems (External Environment) domain evaluation, the results show a moderate level overall. By evaluating the items, the finding is in line with that of a study conducted in 2023 in Punjab, Pakistan, by Iqbal et al., which found that the use of smartphones had an impact on academic achievement and mental health. This addiction can impede concentration, induce anxiety, and hinder the maintenance of interpersonal connections, also mentioned that excessive smartphone usage significantly hinders in-person connection.

the domain of "Health problems related to vision" received a moderate evaluation for all items. This finding aligns with a study conducted by Hundekari et al. in 2021, where 75% of the students reported experiencing overall ocular symptoms. Additionally, there was a significant association found between digital vision syndrome and its associated risk factors, exposure duration and screen distance, and also another study conducted by Ismael in 2022, at college of science-Salahaddin University-Erbil, it was found that students who are exposed to blue light from mobile devices, such as smartphones, have an increased risk of developing visual disorders, particularly astigmatism and strabismus. Furthermore, this exposure can even lead to permanent eye damage. Moreover, multiple studies have discovered that using a smartphone while sleeping disrupts the circadian system, affects cerebral blood flow, and even causes changes in cardiac rhythms, resulting in adverse effects on sleep (Andrzejak et al., 2008). In addition, the blue light emitted by a smartphone can disrupt an individual's circadian rhythms, resulting in adverse sleep outcomes, such as delayed.

Concerning "Health problems related to Musculoskeletal pain", domain evaluation revealed a low level as overall, by evaluating the items, this finding was contradicted of the of a study conducted in 2019 by Alsalameh et al., They reported about more than half of smartphone addicts suffer from musculoskeletal pain.

Regarding the psychological problems domain, the results showed a moderate to high level overall. By evaluating items, this result is similar to a study conducted in Malaysia in 2020 by Lie et al., They reported that smartphone addiction leads to psychological problems, in another study in 2024 in Jeddah city, Saudi Arabia, by Elamin et al., They discovered positive connections between problematic smartphone use (PSU) and stress and depression levels, confirming the high rates of stress and depression among medical students who use smartphones. PSU may exacerbate previous mental health issues or function as a risk factor.

4. Conclusion and future scope

sociodemographic characteristic variables shows that no significant difference between males and females when considering the prevalence of smartphone addiction among medical colleges students, The age group most affected was individuals aged 22-23, and did not reveal a significant association between smartphone addiction and marital status or residential location, while the Individuals with moderate to high socio-economic status are more susceptibility to addiction. One potential disadvantage of using smartphones is an elevated susceptibility to overweight problems. Specifically, respondents in the 4th and 5th stages susceptibility to the adverse effects of smartphone addiction due to excessive usage. The factors contributing significantly to smartphone addiction were found to be the daily duration of usage, Participants who used for more than five hours per day exhibited higher levels of addiction in comparison to those who used they’re for fewer than five hours daily. posing potential risks to health status. Our findings confirmed the health and medical students is heading toward addiction status, since most of the studied items regarding of social problems (Family Environment, External Environment), psychological problem and Health problems related to vision disorders had registered at a moderate impact 's level. While health problems related to musculoskeletal pains had at the low impact 's level. Smartphone use should be limited. Holding workshops, courses, and conferences to increase awareness and knowledge about the detrimental impacts of smartphone

addiction. And encourage all family members to put their phones away during shared activities to enhance interpersonal relationships and communication. Use phone stands to keep your device at the optimal height and angle, thus avoiding prolonged neck bending and associated strain. Additionally, utilize blue light filters to mitigate eye fatigue and enhance sleep quality

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