MEDICAL SCIENCE

To Cite:
Abdouh I, Aboalshamat KT, Alzhrani AM, Badri HM, Quronfulah BS, Mahmoud MA, Rajeh MT, Badawoud AM. The influence of smartphone addiction, social media addiction and sleep quality on satisfaction with life among health care professionals in Saudi Arabia. *Medical Science* 2023; 27: e112ms2824.
doi: https://doi.org/10.54905/disssi/v27i132/e112ms2824

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Peer-Review History
Received: 24 January 2023
Reviewed & Revised: 27/January/2023 to 17/February/2023
Accepted: 21 February 2023
Published: 27 February 2023

Peer-review Method
External peer-review was done through double-blind method.

Medical Science
pISSN 2321–7359; eISSN 2321–7367

The influence of smartphone addiction, social media addiction and sleep quality on satisfaction with life among health care professionals in Saudi Arabia

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ABSTRACT

Current increased use of digital technology is not only modifying ways of living and communicating but is also changing social life and psychological well-being. In this study we aimed to assess the influence of smartphone addiction, social media addiction and sleep quality on life satisfaction among healthcare professionals in Saudi Arabia. Participants completed anonymous and self-administered electronic questionnaire encompassing five sections: Demographic data, Smartphone (Application-Based Addiction Scale - SABAS), (Bergen Social Media Addiction Scale - BSMAS), (Sleep Quality Scale - SQS) and (Satisfaction with Life Scale - SWLS). Out of 715 healthcare providers, 40.28% were male and 59.72% were female, with a mean age of 26 (± 8.56) years. Most participants were working as public healthcare providers (37.48%), dentists (25.31%), physicians (22.52%) and pharmacists (14.69%). Overall, 32.6% of participants were satisfied and/or extremely satisfied and 25.3% were dissatisfied and/or extremely dissatisfied. Although the results showed no strong association with smartphone addiction, social media addiction and sleep quality on satisfaction with life, this study highlights the need to raise awareness about the impact of modern lifestyles on psychological health and mental well-being among healthcare professionals.

Keywords: Addiction, Satisfaction with life, Sleep quality, Smartphone, Social media.

1. INTRODUCTION

The modernisation of life over the last century has led to the increased use of

social media in daily life, resulting in the emergence of various applications and the advancement of related technologies. For example, smartphones have become an essential tool of communication and their use has expanded worldwide (Lee et al., 2017).

Smartphones benefit users with a variety of functions that include telephone, camera, multimedia player, internet browser, social media network and other functions. However, the increased use of this technology has a significant impact on health, including psychological health issues and decreased well-being (Aljomaa et al., 2016; Rajeh et al., 2022). Media immersion has been linked with multiple adverse psychological effects called "techno pathologies". Excessive media immersion among workers may lead to significant techno pathologies and/or psychological dysfunctions, including disorders related to attention, cognition, overload and addiction. Furthermore, evidence-based research on these social effects and the implications of contemporary media addiction indicate that these adverse effects may extend further and deeper than causing stress and psychological pathology (Small & Vorgan, 2008).

The definition of life satisfaction is how much one enjoys their life. It is not satisfaction with a specific situation, but it expresses the overall level of well-being based on a variety of aspects leading to satisfaction, happiness and general morale in life (Wang, 2017). Satisfaction with life is directly related to the quality of life as one of the psychological dimensions; consequently, there is a risk that the scale related to both life satisfaction and the quality of life will be inversely correlated (Argan et al., 2018). As yet, no studies have fully explored the relationship between psychological disorders and satisfaction with life or the influence of smartphone addiction, social media addiction and sleep quality on satisfaction with life among healthcare providers. Therefore, further research is clearly warranted. Stress, anxiety and depression are some of the key challenges for healthcare professionals in the workplace because of the responsibilities of their duties providing care for ill patients, which leads to longer working hours and increased workloads compared to professionals in other fields (Salari et al., 2020).

Previous evidence has reported that extended working hours can adversely impact on physical and mental well-being (Ervasti et al., 2021). The World Health Organization claims that mental illnesses, such as depression and/or anxiety, are widespread behavioural problems linked to low mood, loss of interest and sleep issues (Zhu et al., 2020). Thus, an individual who is regularly exposed to constant stress and anxiety may lose self-confidence and become depressed. That may, in turn, increase workplace stress and reduced work performance (Salari et al., 2020).

Healthcare professionals are reported to be regularly subjected to a variety of individual and/or organisational stresses that can adversely affect their health and job satisfaction (Wang et al., 2020). Several reports have studied the effect of stress and/or burnout among variety of healthcare specialties. A Saudi Arabian study of 582 healthcare professionals with different specialties revealed that the majority of the studied communities reported having moderate to high degrees of stress (Alosaimi et al., 2018). In addition, recent evidence regarding the Saudi Arabian healthcare professionals reported an increased level of burnout (75%) of the selected sample (Alsulimani et al., 2021). Smartphone addiction and social media addiction are defined as the excessive use of and attention to social media without appropriate controls on the amount of time spent online. Such addiction may negatively affect mental health, physical health, interpersonal relationships and life satisfaction (Schou Andreassen et al., 2016).

According to research by Surani and colleagues, more than 90% of healthcare professionals utilize social media during working hours for networking, information sharing and actualisation. Such excessive use can also encourage the emergence of addictive habits and have a detrimental effect on a person's physical, psychological and social well-being. Given these possibilities, it is essential to develop greater awareness of lifestyle and career factors that might impact mental health and/or satisfaction with life, especially among healthcare professionals (Surani et al., 2017). Therefore, the primary goal of the current study was to evaluate the satisfaction with life and the influence of smartphone addiction, social media addiction and sleep quality on that satisfaction among health professionals in Saudi Arabia.

2. METHODS

A cross-sectional sample was recruited from universities, governmental and private hospitals and clinics using invitation through social media apps. The eligibility criteria were 1) agreement to the study consent form and 2) studying/working in Saudi Arabia in medicine, public health, pharmacy, or dentistry. This study is one segment of a large study in Saudi Arabia investigating psychological health and lifestyle practices among healthcare professionals.

The study was implemented in line with the Declaration of Helsinki. Data were protected and accessed only by select research team members. The data were gathered between 2022 April 6 and 2022 June 1. Participants had to approve the study consent form before they could complete the questionnaire and the research team was available to answer any questions participants might have had regarding the questionnaire. No incentive was used to attract participants and participation was voluntary and anonymous. The University of Umm Al-Qura Institutional Review Board approved this study with the number HAPO-02-K-012-2022-04-1048.

The questionnaire was in Arabic, self-reported and sent as soft copy (online format). It was composed of 29 questions grouped into five sections. Section one asked about demographic variables, including region, city, nationality, age, gender, qualification and speciality, with a few yes or no questions about chronic disease, walking regularly and consumption of healthy foods. The second section measured smartphone addiction using the Smartphone Application-Based Addiction Scale (SABAS), where the total score could be from 6 to 36 (highest level of addiction) (Csibi et al., 2016). The SABAS included six items answered on a 6-point Likert scale of 1 (strongly disagree) to 6 (strongly agree). It has had a good Cronbach's alpha from 0.78 to 0.83 in different languages.

Section three investigated social media addiction using the scale related to social media addiction (BSMAS) (Andreassen et al., 2016), which was designed to assess addiction to the Facebook social media platform. (The BSMAS) had a good Cronbach's alpha of 0.88. The scale is composed of six statements answered on a 5-point Likert scale ranging from 1 (very rarely) up to 5 (very often). The total of the answers can range from 5 to 30 (greatest level of social media addiction). Utilizing one question from the scale evaluating sleep quality, the fourth section investigated sleep quality, (SQS): "During the past 7 days, how would you rate your sleep quality overall?". Participant answers could range from 10 to 0, where 10 = excellent, 9–7 = good, 6–4 = fair, 3–1= poor and 0 = terrible. The SQS questionnaire has been previously validated with a variety of methods.

The final section assessed life satisfaction as was measured by (SWLS) (Diener et al., 1985). The SWLS is a questionnaire consists of five-items with responses on a Likert scale with a range of 1 (strongly agree) to 7 (strongly agree). The total score ranges from 7 to 35 (highest level of life satisfaction). The SWLS total score is separated into six categories: 5–9 = extremely dissatisfied, 10–14 = dissatisfied, 15–19 = slightly dissatisfied, 20 = neutral, 21–25 = slightly satisfied, 26–30 = satisfied and 31–35 = extremely satisfied. The Arabic version was adapted from a previous study that had translated the SWLS (Aboalshamat et al., 2015).

A pilot was conducted to assess the questionnaire's language, organisation, understandability, syntax and grammar. The research team translated the SBAS, BSMAS and SQS to Arabic language, which were then approved by the pilot study participants. The time to complete the study's questionnaire was approximately 10 minutes. To describe the data, we used frequency and percentages, along with mean and standard deviation (± SD) as needed. The inferential tests applied in this study were linear regression, Mann–Whitney, Kruskal–Wallis, t test and ANOVA. With the aid of Microsoft Excel, data input and coding were performed (Microsoft Corp., Redmond, WA, USA). The data were then entered into SPSS software version 27 and tabulated (IBM Corp., Armonk, NY). Significance level was set at $p < 0.05$.

3. RESULTS

The 715 medical, dental, pharmacy and public health professionals who answered the study's questionnaire came from 33 cities in Saudi Arabia: AlAhsahsa, Jazan, Buraidah, Kharj, Qatif, Dahran, Madinah, Ras Tanura, Umluj, Badaea, Beshah, Buljurashi, Jeddah, Khames Mushait, Skaka, Traif, Muhayel, Shaqra, Tabok, Unyzah, Makkah, Badr, Baha, Najran, Qassim, Taif, Wajh, Yanbu, Dammam, Hafr Albaten, Khobar, Abha and Riyadh. Participants' mean age was 26.3 (± 8.56) years. There were 102 (14.27%) participants with chronic illnesses, 270 (37.76%) who walked regularly and 299 (41.82%) who reported frequent consumption of healthy foods. All of the demographic variables are listed in Table 1.

Table 1 Participants' socio-demographic characteristics

Characteristic		N	%
Nationality	Saudi	690	96.50
	Non-Saudi	25	3.50
Region	Western	443	61.96
	Central	179	25.03
	Southern	64	8.95
	Eastern	19	2.66
	Northern	10	1.40
Gender	Male	288	40.28
	Female	427	59.72
Speciality	Dentistry	181	25.31
	Public health	268	37.48
	Pharmacy	105	14.69
	Medicine	161	22.52

Qualification	Student/Intern	448	62.66
	Resident	120	16.78
	Specialist or consultant	147	20.56

Regarding life satisfaction, the participants had a total mean score of 20.75 (± 7.90) out of 35 points. The mean and SD of each item on the SWLS are provided in Table 2. The participants' answers were classified as extremely satisfied (14.4%), satisfied (18.2%), slightly satisfied (15.4%), neutral (5%), slightly dissatisfied (21.7%), dissatisfied (18.7%) and extremely dissatisfied (6.6%), as shown in Figure 1.

Table 2 Participants' mean and SD for (SWLS) items

SWLS Item	Mean	± SD
My life is generally very near to my ideal	3.70	1.75
The circumstances of my life are really good	4.42	1.75
I'm happy with the way my life is going	4.50	1.84
I have so far achieved the major life goals I have	4.39	1.80
I would essentially make no changes if I could start over in life	3.75	2.07

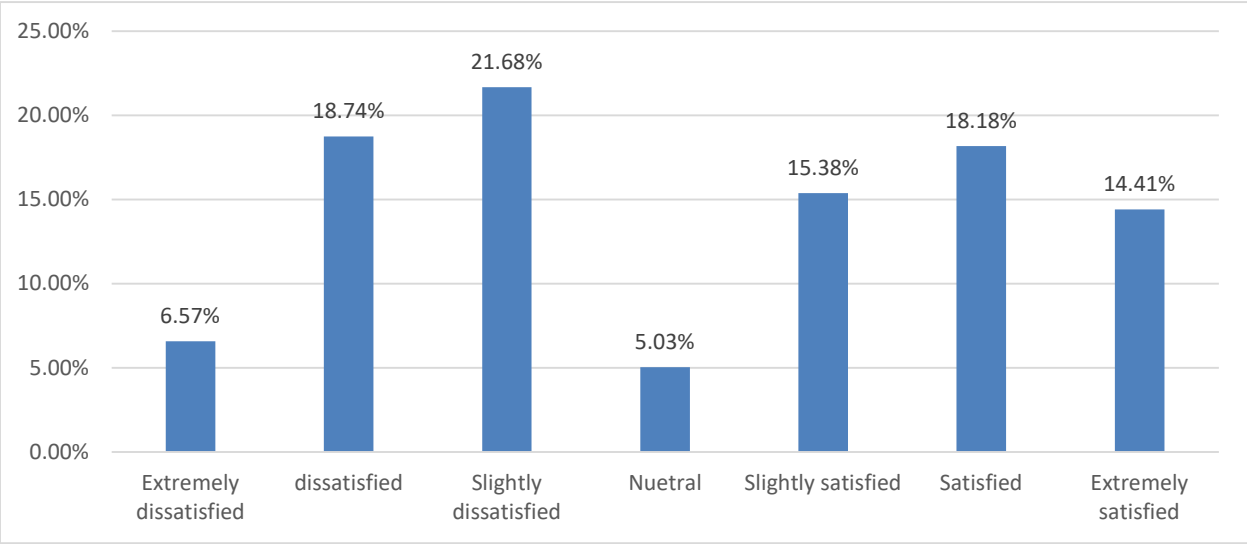

Figure 1 Participants' satisfaction with life.

Participants' answers regarding smartphone Application-Based Addiction Scale are shown in Table 3 for each question. Also, participants' answers regarding social media addiction are shown in Table 4 for each question. In regard to Sleep Quality Scale, participants had a mean of 5.68 with standard deviation of 2.18, in the scale that ranges from 0 to 10 as the highest sleeping quality.

As illustrated in Table 5, there were no statistically significant relationships between life satisfaction and the demographic variables of age ($F(1,713) = 0.502$, $p = 0.479$), gender ($t(713) = 0.897$, $p = 0.377$), qualification ($F(2,712) = 0.191$, $p = 0.826$), speciality ($F(3,711) = 2.403$, $p = 0.066$), nationality ((n Saudi = 690, n non-Saudi = 25) = 7656.5, $z = -0.955$, $p = 0.339$), or region ($H(4) = 2.407$, $p = 0.661$).

The simple linear regression indicated that the SWLS could not be statistically predicted by smartphone Application-based addiction Scale $F(1,713) = 0.066$, $p = 0.797$, (BSMAS) $F(1,713) = 0.777$, $p = 0.378$, or Sleep Quality Scale $F(1,713) = 0.853$, $p = 0.356$. Furthermore, after running a multiple regression model with backward elimination, Age, country, area, gender, specialization, education, social media and smartphone addiction, as well as sleep quality, were all omitted because none of them significantly influenced the SWLS scores.

Table 3 Participants' answers regarding (SABAS)

Item	Strongly disagree n (%)	Disagree n (%)	Neutral n (%)	Agree n (%)	Strongly agree n (%)
The most important item in my life is my smartphone	119 (16.64)	116 (16.22)	211 (29.51)	151 (21.12)	118 (16.5)
I've had arguments with my family or friends because I use my smartphone too much	426 (59.58)	125 (17.48)	95 (13.29)	44 (6.15)	25 (3.5)
I can alter my mood by preoccupying myself with my phone. I get a buzz, or if I need to, I can run away or flee	76 (10.63)	110 (15.38)	187 (26.15)	185 (25.87)	157 (21.96)
I use my smartphone more and more incessantly with time	64 (8.95)	124 (17.34)	201 (28.11)	176 (24.62)	150 (20.98)
When I can't use or use my smartphone whenever I want, I get depressed, grumpy, or irate	160 (22.38)	172 (24.06)	187 (26.15)	118 (16.5)	78 (10.91)
If I make an effort to limit the amount of time I use my smartphone, I am able to do so for a while, but I eventually use it just as much as before	90 (12.59)	138 (19.3)	211 (29.51)	167 (23.36)	109 (15.24)

Table 4 Participants' answers regarding (BSMAS)

Among the previous year, have you been	Mean	± SD
A lot of time was spent contemplating social media or making plans to use it?	3.6	1.08
A want to utilize social media more frequently?	3.11	1.18
Utilised social media to block out personal issues?	3.26	1.3
Attempted to limit your use of social media but were unsuccessful?	2.66	1.25
If utilizing social media is forbidden, do you feel restless or troubled?	2.58	1.27
Frequently used social media to the point that it affected your career or education negatively?	2.62	1.32

Table 5 The levels of SWLS against nationality, region, gender, speciality, qualification, chronic illness, walking habits and healthy food consumption

Characteristic		SWLS Total	
		Mean	± SD
Nationality	Saudi	20.71	7.92
	Non-Saudi	22.20	7.20
Region	Western	20.68	8.07
	Central	21.22	7.69
	Southern	20.56	7.47
	Eastern	18.42	7.86
	Northern	21.10	6.82
Gender	Male	21.08	8.24
	Female	20.54	7.66
Speciality	Dentistry	20.69	7.76
	Public health	20.84	8.14
	Pharmacy	19.11	7.81

	Medicine	21.76	7.59
Qualification	Student/Intern	20.81	7.96
	Resident	20.95	7.73
	Specialist or consultant	20.41	7.87
Chronic illness	Yes	20.37	8.12
	No	20.82	7.87
Practice walking regularly	Yes	20.85	7.97
	No	20.71	7.86
Typically consume healthy foods	Yes	20.53	7.64
	No	20.92	8.08

4. DISCUSSION

In this study, we looked at how sleep quality and life satisfaction were related to smartphone and social media addiction among healthcare professionals in Saudi Arabia. The findings of the present study were that 32.6% of all participants were satisfied and/or extremely satisfied, while up to 25.3% of participants were dissatisfied and/or extremely dissatisfied with their life. The analysis showed no significant relationships with any demographic variable and life satisfaction could not be statistically predicted by social media and smartphone addiction and/or sleep quality. The finding that 25.3% of this study's sample reported having considerable levels of dissatisfaction is consistent with previous findings (Alqutub et al., 2021; Baksh, 2022).

Although there is no clear definition of social media addiction, previous studies have had consistent findings in relation to social media addiction and health problems, including sleep problems, musculoskeletal discomfort, mood changes and impaired performance. Moreover, it has been reported that both social media and smartphone addiction may result in functional and social impairment manifesting as negative social comparisons and excessive escapism, which can lead to mental health problems and advanced psychological disorders (Wong et al., 2020). Participants in the present study were from different geographical regions in Saudi Arabia and from different healthcare specialties. As a result, the current evidence showed that people working in the healthcare industry are more likely to have issues with a low degree of life satisfaction. Although the present study's results showed a negative correlation with all other variables, it is evident that there is a considerable amount of dissatisfaction with life among healthcare professionals. Therefore, further clarification is needed to minimise the associated side effects and investigate the proposed etiological factors. It has been reported that the prevalence of psychological disorders among healthcare practitioners in Saudi Arabia is considered high (Alamri & Nazir, 2022).

Other figures have been reported for elevated stress, anxiety and depressive symptoms among students and healthcare workers in Saudi Arabia (Alamri & Nazir, 2022). The majority of this study's sample were students and/or interns (62.66%), which may explain why the total mean of the SWLS was similar to previous studies that ranged from 22.45 to 24.9 in other populations (Boparai et al., 2013). The difference may be due to those participants seeming to be more satisfied about their lives overall and/or they were able to maintain adequate levels of psychological health. Interestingly, no correlation has been reported between the SWLS and all other demographic variables. Although types of addiction are different, findings from previous reports concluded that smartphone and social media addiction among students vary greatly and this relationship is expected to decrease among students with high levels of meaning in life (Elhai et al., 2020). However, behavioural support and guidance are needed for those at increased risk of developing psychological problems.

Having a good level of life satisfaction is crucial for enabling individuals to be attached to life, fulfil their purpose and be able to cope with certain negative events and life incidents. Although only a few studies on health behaviours have addressed healthcare professionals, satisfaction with life has previously been associated with reductions in rates of obesity, smoking, heavy alcohol consumption and physical inactivity in other populations (Kim et al., 2015). Thus, satisfaction with life is thought to have a significant influence on health-related behaviours. The current study's results underscore that measuring satisfaction with life is a multifactorial aspect that is inadequately detected by any single psychometric measure.

The SWLS is a commonly used tool for measuring life satisfaction that is employed in large studies across different populations (Helliwell et al., 2020). Because the SWLS is meant to measure overall satisfaction with life, it does not capture satisfaction in specific life domains (Alamri & Nazir, 2022). It may be impossible to objectively measure life satisfaction using a subjective one-time interval self-reporting tool such as the SWLS because it may lead to inaccurate results. Although the SWLS is a reliable measuring tool, it cannot cover all related aspects due to the nature of psychometric validity (Alamri & Nazir, 2022). In contrast, a few intervention trials have achieved good results in reducing the high levels of occupational stress and associated psychological

burdens that are commonly considered to be causative factors of problems among healthcare professionals (Salyers et al., 2011). Further research should be directed to identify this aspect among healthcare professionals in Saudi Arabia and to address their needs accordingly.

There are some alarming results in the body of literature arguing that the number of social media users doubled in parallel with the COVID-19 pandemic and the subsequent imposed restrictions and front-line healthcare professionals were among the populations who widely used social media platforms (Zivnuska et al., 2019). Apparently, such behaviour has been searched and concerns have been reported about the increased use of social media among healthcare professionals, both during work hours, which potentially negatively affects the provision of health care through lowered work performance and outside of working hours, which can negatively impact rest time and lead to poor sleep quality (Javed et al., 2019). Investigations of different populations have provided evidence that healthcare professionals are at high risk for psychological disorders (Mata et al., 2015). Recently, the ease accessibility of social media and the internet, together with the affordability and availability of smartphones, created the perfect setting for social media addiction (Liu & Ma, 2020).

According to earlier research, social media addiction can cause problems with mood, cognition, physical and emotional reflexes and interpersonal relationships (Zaremohzzabieh et al., 2014). The majority of such studies were conducted in Asia, Turkey, Egypt and the United States (Alamri & Nazir, 2022). But there have been no such studies exploring the prevalence of social media related addiction disorders in Saudi Arabia. Given the significance of life satisfaction and its alleged link to social media addiction and other forms of internet addictions in combination with the paucity of research on the subject in Saudi Arabia, further studies should attempt to better describe these addictions and their potential impacts on healthcare professionals' satisfaction with life using a variety of validated psychometric tools.

We believe the present evidence is one of the first to investigate the adverse impact of smartphone and social media addiction, and poor sleep quality on satisfaction with life among medical professionals in Saudi Arabia using the previously described instruments. However, there are several limitations to this study. First, due to the cross-sectional nature of the applied methodology, the causality of the results may not be detected and problems related to event recall and social desirability may exist. Second, the prevalence presented might not be representative for all healthcare specialties; hence, comprehensive exploration was not clarified. Despite these limitations, the study nevertheless attempts to fill a gap in the body of research.

5. CONCLUSION

Smartphone and social media addictions, alongside other internet-related addictions, are growing among public and healthcare professionals worldwide. There are no findings in this study directly addressing the relationship between satisfaction with life and smartphone and social media addictions and sleep quality among healthcare professionals. However, almost one quarter of the study's sample reported feeling dissatisfied and/or extremely dissatisfied with life. Expanding the findings and examining the underlying aspects will require additional research. Authorities should also devise measures to address this correlation and research the causes of dissatisfaction that were not examined in this study.

Acknowledgement

We thank the participants who were all contributed samples to the study.

Authors' Contributions

All authors contributed to the research and/or preparation of the manuscript. IA: Study design, data collection, writing–original draft preparation, writing–review and editing. KA: Study design, data collection, statistical analysis, writing review and editing. MA, AB, AA, MR, HB and BQ contributed to the study design, data collection, data review and editing. All authors read and approved the final version of this manuscript.

Funding

This study has not received any external funding.

Conflict of interest

The authors declare that there is no conflict of interests.

Data and materials availability

All data sets collected during this study are available upon reasonable request from the corresponding author.

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