Original Article

Journal of Occupational Health and Epidemiology

Journal Homepage: https://johe.rums.ac.ir/

JOHE

Rafsanjan University of Medical Sciences

Smartphone Addiction, Psychological Status, Insomnia, and Pain-related Disability of the Neck among Staff of College of Medicine, University of Lagos, 2022

Ashiyat Kehinde Akodu[1], Binta Fatima Akanni[2], Akinniyi Adediran Osuntoki[3], Rasheedah Adebola Zibiri[4]

1. Associate Prof., Dept. of Physiotherapy, College of Medicine, University of Lagos, Lagos, Nigeria.
2. B.Sc. in Physiotherapy, Dept. of Physiotherapy, College of Medicine, University of Lagos, Lagos, Nigeria.
3. Professor, Dept. of Biochemistry, College of Medicine, University of Lagos, Lagos, Nigeria.
4. M.Sc. in Physiotherapy, Dept. of Rehabilitation Science, College of Technical and Vocational Education Kaduna Polytechnic, Kaduna, Nigeria.

CrossMark

Citation: Akodu AK, Akanni BF, Osuntoki AA, Zibiri RA. Smartphone Addiction, Psychological Status, Insomnia, and Pain-related Disability of the Neck among Staff of College of Medicine, University of Lagos, 2022. J Occup Health Epidemiol. 2023;12(4):242-50.

Copyright: © 2023 The Author(s); Published by Rafsanjan University of Medical Sciences. This is an open-access article distributed under the terms of the Creative Commons Attribution License (https://creativecommons.org/licenses/by/4.0), which permits unrestricted use, distribution, and reproduction in any medium, provided the original work is properly cited.

Article Info

*** Corresponding author:**
Ashiyat Kehinde Akodu,
E-mail:
akoduashiyat@gmail.com

Article history
Received: Jan 2023
Accepted: Nov 2023

10. 61186/johe.12.4.242

Print ISSN: 2251-8096
Online ISSN: 2252-0902

Peer review under responsibility of Journal of Occupational Health and Epidemiology

Abstract

Background: Smartphone is now an inevitable device for the populace, with its use growing progressively worldwide. There is lack of published literature focusing on the consequences of smartphone addiction on middle-aged and older adults in Nigeria. This study investigated the association between smartphone addiction, psychological status, insomnia and pain-related disability of the neck among staff of the College of Medicine, University of Lagos (CMUL).

Materials & Methods: This study involved the use of cross-sectional survey to investigate 271 (106 females, 165 males) staff of CMUL, Lagos, mean age (45.797±9.28 years) via purposive sampling technique in 2022. Four standard questionnaires were used for data collection; smart phone addiction scale (SAS), depression, anxiety and stress scale (DASS), neck pain disability index (NDI), and insomnia severity index (ISI).

Results: The results revealed that 80 (29.5%) staff of college of medicine were addicted to smartphone use. Eleven (4.1%) staff of this college had severe depression, 16 (5.9%) had extremely severe anxiety while nine (3.3%) were severely stressed. Nine (3.3%) participants had clinical insomnia and five (1.8%) had moderate to severe problem with their neck. It was revealed that there was a significant association between smartphone addiction, pain-related disability of the neck (p=0.023), and insomnia (p=0.001). However, no significant association existed between depression (p=0.578), anxiety (p=0.060), stress (0.685), and smartphone addiction level of the participants

Conclusion: Smartphone addiction is predominant among staff of CMUL, and it is associated with neck pain-related disability and insomnia.

Keywords: Smartphone, Addiction, Pain, Disability, Insomnia, Depression.

Introduction

Smartphone is now a necessity for the majority of the populace, due to its importance in messaging, calling, gaming, photography, music, and social media interaction [1]. Most people globally currently make use of smartphones [2]. The universal rating of nations with high usage of smartphone ranked the Nigerian number 17, with an average Nigerian spending approximately 3 hours every day on a mobile device, 1 hour on a laptop, and half an hour on a tablet. [3].

Regardless of the gains experienced with the usage of smartphones, this device can cause smartphone

addiction [4], which has been described as a state of being engrossed in uncontrollable smartphone usage [5]. Globally the adult population have been shown to experience smartphone addiction with a prevalence of 64% [6].

A study by Lin et al, [7] revealed that the use of smartphone can result in the development of device dependency when compared to individuals using traditional mobile phones due to the use of Internet and messaging services as well as looking for social sharing and exciting happenings on social media. Socio-economic level, gender, perceived health condition, and smartphone task are factors related to addiction to smartphones [8].

Jim & Park, [9] indicated that addiction to smartphone has negative effects on mental health. A study by Akodu et al, [10] involving 837 undergraduates reported that smartphone addiction is highly prevalent among the participants and it is correlated with psychological status, high body mass index and weight, as well as pain and disability of the neck and shoulder. Al Mahrooqi et al, [11] conducted another study among students of Oman College of Technology and revealed an association between anxiety, higher perceived stress, poorer sleep quality, and addiction to smartphone. This makes it obvious that smartphones while aiming to improve communication have as many adverse effects on an individual's health, social behavior, learning skills, achievements, and relationships with the environment [4].

Smartphone addiction can have detrimental implications on depression, chronic stress, and rise in suicidal ideation as discovered by Augner & Hacker [12]. Rotondi et al [13] confirmed that the use of smartphone results in the reduction of the quality of face-to-face communication. They discovered that the positive association between "Time spent with friends" and "Satisfaction with friends" was significantly weaker among people using smartphones. Therefore, smartphone addicted individuals with reduced amounts of face-to-face interaction= are likely to experience less feeling of sympathetic and satisfying social relationships, or less of feelings that they actively influence the joy and welfare of others.

One of the most significant problems triggered by the use of smartphone is the possibility of behavioral addictions. In this situation, people will not be able to stop using their smartphone and this may lead to pressure and discomfort [14]. Çalışkan-Ülkü&Demir reported that there are many variables that affect psychological well-being of individuals, and technological products are one of the most important variables affecting human psychology. Technology is known to have a substantial influence on human life. A study reported a relationship between depression and undue texting, social media interaction, gaming, viewing video clips, messaging, and listening to music, all of which can be done through a smartphone [16].

The association of addiction to smartphone usage and quality of sleep was described by Sohn et al [17] and Kumar et al [18]. Cain & Gradisar, [19] mentioned that the use of electronic media can disturb sleep through the light emitted by the device screen, which can lead to emotional, cognitive, and physiological stimulation. Thomée et al [20] reported that smartphone addiction is known to often result in insomnia, which influences individual's mental health. Dworak et al [21] reported that the impact of smartphone addiction on sleep quality may be due to the decrease in rapid eye movement (REM) sleep, slow-wave sleep, and sleep efficiency. Smartphones can delay the circadian clock by releasing bright light, thus prolonging the endogenous clock and causing sleep disorder, which may in turn increase sleep onset latency. There is a negative relationship between possession of smartphone and sleep duration as well as a positive correlation with difficulty in sleeping [20]. It was reported by Huber et al, [22] that use of smartphones may alter physiological factors of the activity of the brain such as the quality of sleep and the melatonin rhythm, especially that of the pineal gland; it could also lead to changes in cerebral blood flow and the electrical activity of the brain via electromagnetic field exposure at sunsets. Insomnia can also be due to prolonged usage of smartphone devices, which can cause physical discomfort, such as muscle cramps, pain and headaches, all of which can adversely affect the quality of sleep [20]. Frequent checking of smartphone which is a sign of addiction can also reduce sleep quality [23].

Smartphone addiction has been related to musculoskeletal discomfort in the neck, wrist, and shoulder [24]. Berolo et al [25] noted that regular use of smartphone can result in adoption of non-neutral neck posture (forward head posture), leading to the development of musculoskeletal disorders of the spine. Most of the activities on the smartphone involve abnormal bending of the neck downwards or holding of arms out in front to read the screen. This position makes the head move forward, thus causing a forward head posture, with extreme anterior curvature in the lower cervical vertebrae and an extreme posterior curve in the upper thoracic vertebrae to sustain balance, thereby exerting stress on the bones and muscles of the neck [26]. Forward neck posture sustained for a long period can have a deleterious effect on the cervical, lumbar spine, and ligaments [27]. This may result in many disturbing symptoms such as neck pain, chronic headaches, and increased curvature of the spine [28]. Individuals susceptible to smartphone addiction show a reduction in the craniovertebral angle, resulting in forward head posture which always causes an increase in scapular dyskinesis, leading to an increase in neck and shoulder pain [29].

Since literature is sparse on this important research area among academic and administrative staff in Africa institution, this study therefore assessed the association between smartphone addiction, psychological status, insomnia, and pain-related disability of the neck among staff of the College of medicine, University of Lagos, Lagos Nigeria.

Materials and Methods

Two hundred and seventy-one (271) staff were involved in this cross-sectional analytical survey conducted between January and August, 2021 with the sample size derived from the formula by Cochran; [30] Z denotes standard normal variate (At 5%), type 1 error ($p< 0.050$) is 1.96, and P shows the prevalence of smartphone addiction among adults, which is 64% [6]. The participants were recruited from administrative departments and different faculties in the College of Medicine, University of Lagos (CMUL), Idi-Araba using a multistage sampling technique. In each of the faculties, a proportionate sampling technique was used to obtain the number of academic and non-academic staff distribution for the faculties, after obtaining the numbers from a list of the staff distributed in rank and sex for the respective faculties. A simple random sampling was employed for selecting the participants for the study.

Academic and administrative staff who had been using smartphones for a period of one year and were currently working in CMUL, with no obvious conditions and no physical disabilities were included in this study. Participants with cognitive impairment and presently undergoing treatment for neck pain were excluded from the survey. Prior to the commencement of the survey, clearance to initiate the survey was requested from health research and ethics committee of CMUL with approval number: CMUL/HREC12/19/708. Participants were briefed about the aim of the survey, and their permission to be involved in the study was obtained and were assured of anonymity of their data. Respondents who passed the criteria for selection were examined for their physical characteristics (weight, height, body mass index) plus age, and they were later administered the self-reported questionnaires; smartphone addiction scale (SAS-SV) , Depression, Anxiety, and Stress Scale, Neck Pain Disability index, and Insomnia Severity Index.

Smartphone addiction Scale (SAS-SV): This is a 10-item questionnaire used to evaluate levels of smartphone addiction. The tool has been validated and was originally developed in South Korea but published in English by Kim et al [31]. Participants were asked to rate on a scale 1 to 6 how much each question relates to them. The total score ranges from 10 to 60, with an average of 30. The participants scoring above 30 are classified as excessive smartphone users and those whose scores are below or equal to 30 are non-excessive smartphone users [31]. The outcome of the SAS-SV analysis indicated a Cronbach's alpha of 0.911, as well as sensitivity and specificity values of 0.875, and 0.886 respectively [31].

Depression, Anxiety, and Stress Scale (DASS-21): The DASS-21 is an assessment tool evaluating the depression, anxiety, and stress. It consists of 22 questions originally developed by Lovibond in 1995, with seven questions each for depression, anxiety, and stress respectively; the final score of each item group was multiplied by two, with the total score ranging from 0 to 100 [32]. DASS-21 showed severity scores from ‘normal’ to ‘extremely severe’ with percentile scores, classifying 0–78 as ‘normal’, 78–87 as ‘mild’, 87–95 as ‘moderate’, 95–98 as ‘severe’, and 98–100 as ‘extremely severe. The reliability scores for the Depression, Anxiety and Stress scale as 0.91, 0.84, and 0.90 respectively [33].

Neck Pain and Disability Index: The Neck Pain and Disability Index (NPAD) is a composite scale comprised of 20 items measuring the intensity of neck pain and related disability. The response of the patients would be recorded by instructing them to mark along a 10cm visual analog scale (VAS). The scoring for each question ranges from 0 to 5, with the total score being a summation of each score (with 0 signifying no pain and 100 denoting maximal pain). Filling of the NPAD can be done in less than 5 minutes, where higher scores indicate greater disability, with severity ranging from 0 to 22= No problem to minimal problem, 23-40= Mild problem, 41-57= Moderate problem, 58-74= Moderate to severe problem, 75-92= Severe problem, 93-100= Extreme pain [34]. The NPAD has been shown to be a valid and reliable measure of disability in other languages with a Cronbach's alpha of 0.93 and correlations ranging from 0.45 to 0.73 [35].

Insomnia Severity Index: The insomnia severity index (ISI) is an outcome scale designed by Morin in 2011 to assess the severity of insomnia. The 7-item scale is used for assessing participants’ sleep disturbance with Likert-type scale. Items relate to subjective qualities of the participant’s sleep, with symptoms severity, satisfaction of participant with his or her patterns of sleep, the extent of which insomnia hinders daily functioning, how conscious the participant can compare his or her insomnia to others, and the general level of distress caused by the sleep problem. Scores range from 0 to 28, where greater scores indicate more acute symptoms of insomnia with severity ranging from 0 to 7 = No clinically significant insomnia, 8–14 = Subthreshold insomnia, 15–21 = Clinical insomnia (moderate severity), 22–28 = Clinical insomnia (severe) [36]. The results of the ISI analysis revealed a Cronbach's alpha of 0.91, a sensitivity value of 0.861, and a specificity value of 0.877 [37].

The data were analyzed by Statistical Package for Social Science (SPSS) windows version 22 and summarized using descriptive statistics of mean, standard deviation, percentages, and frequency, and pie-charts. Inferential statistics of Chi-square test were used to determine the association between variables (smartphone addiction, depression, anxiety, stress, insomnia, pain related disability of the neck) among staff of CMUL at significant level of $p \leq 0.05$.

Results

Three hundred questionnaires were distributed and 271 copies were returned and deemed suitable for analysis, thus giving a response rate of 90.33%.

The majority (n=86, 31.70%) of the respondents were within the age range of 41-50 years, 82 (30.30%) o within 51-60 years, and 14 (5.20%) within 61-70 years of age. The mean age of the participants was 45.80±9.28. One hundred and six (39.10%) of the respondents were female (Figure 1). One hundred and thirty (48.00%) of the respondents were overweight with Body Mass Index (BMI) within 25.0-29.9kg/m2. Their mean BMI was 26.43±3.70 (Table 1). One hundred and fifty-three (56.50%) of them were administrative staff, while 118 (43.50%) of the respondents were academic staff.

Table 1. Socio-demographic variables of the participants

Variable		Frequency (n=271)	Percent (%)
Age (years)	21-30	15	5.50
	31-40	74	27.30
	41-50	86	31.70
	51-60	82	30.30
	61-70	14	5.20
	Mean age = 45.80±9.28		
Sex	Female	106	39.10
	Male	165	60.90
	Total	271	100.00
Height (m)	1.5 - 1.6	73	26.90
	1.61 - 1.7	109	40.20
	1.71 - 1.8	70	25.80
	1.81 - 1.9	19	7.00
	Mean height = 1.67±0.097		
Weight (Kg)	41-62	39	14.40
	63-82	186	68.60
	83-102	45	16.60
	>102	1	0.40
	Mean weight = 73.70±10.34		
BMI (Kg/m^2)	<18.5	3	1.10
	18.5-24.9	96	35.40
	25 - 29.9	130	48.00
	>=30	42	15.50
	Mean BMI = 26.43±3.70		

Key:
BMI- Body mass index
<18.5 Kg/m² = underweight;
18.5 - 24.9 kg/m² = normal weight;
25.00 - 29.90 kg/m² = overweight;
≥30 Kg/m ²= obese.

Eighty (29.50%) of the respondents had excessive smartphone usage (addiction) with a score greater than 30. Sixty-two (22.90%) of the participants had mild pain-related disability of the neck, and only 5 (1.80%) respondents had moderate to severe pain-related disability of the neck. Forty-seven (17.30%) of the respondents had sub-threshold insomnia, and 9 (3.30%) of the respondents showed clinical insomnia of moderate severity (Table 2).

Table 2. Outcome variables of the respondents

Variable		Frequency (n)	Percentage (%)
SAS-SV	Not excessive	191	70.50
	Excessive	80	29.50
	Total	271	100.0
NPAD	No problem – minimal problem	192	70.80
	Mild problem	62	22.90
	Moderate problem	12	4.40
	Moderate - severe	5	1.80
	Severe problem	0	0.00
	Extreme pain	0	0.00
	Total	271	100.00
Insomnia scale	No clinically significant insomnia	214	79.00
	Subthreshold insomnia	47	17.30
	Clinical insomnia (moderate severity)	9	3.30
	Clinical insomnia (severe)	1	0.40
	Total	271	100.0

Key:
Smartphone addiction scale – Excessive…… =>30,
Not excessive……<30
Neck pain and disability scale- No problem- minimal problem…… 0-22
Mild problem…… 23-40
Moderate problem…… 41-57
Moderate- severe…… 58-74
Severe…… 75-92
Extreme pain……93-100
Insomnia severity index- No clinically significant insomnia……0-7
Sub threshold insomnia……8-14
Clinical insomnia (moderate severity)……15-21
Clinical insomnia (severe)……22-28

Sixteen (5.90%) respondents were moderately depressed, 11 (4.10%) were severely depressed, and six (2.20%) of the respondents had extremely severe depression. Twenty-four (8.90%) respondents had moderate anxiety, 10 (3.70%) had severe anxiety, and 16 (5.90%) had extremely severe anxiety. Eleven (4.10%) respondents had moderate stress and nine (3.30%) respondents had severe stress.

Table3. Association between pain-related disability of the neck, insomnia, and smartphone addiction level of the participants

		SAS-SV			X^2	P-value
		Not excessive	Excessive	Total		
NPAD	No problem – minimal problem	143 (74.50%)	49 (25.50%)	192 (100.0%)		
	Mild problem	40 (64.50%)	22 (35.50%)	62 (100.0%)	9.51	0.023*
	Moderate problem	7 (58.30%)	5 (41.70%)	12 (100.0%)		
	Moderate - severe	1 (20.00%)	4 (80.00%)	5 (100.0%)		
	Total	191 (70.50%)	80 (29.50%)	271 (100.0%)		
Insomnia	No clinically significant insomnia	157 (73.40%)	57 (26.60%)	214 (100.0%)		
	Sub-threshold insomnia	33 (70.20%)	14 (29.80%)	47 (100.0%)		
	Clinical insomnia (moderate severity)	1 (11.10%)	8 (88.90%)	9 (100.0%)	18.49	0.001*
	Clinical insomnia (Severe)	0 (0.00%)	1 (100.00%)	1 (100.0%)		
	Total	191 (70.50%)	80 (29.50%)	271 (100.0%)		

***Significant at p< 0.05,**
Key:
X^2- Chi square
Neck pain and disability scale-
No problem- minimal problem…… 0-22
Mild problem…… 23-40
Moderate problem…… 41-57
Moderate- severe…… 58-74
Severe…… 75-92
Extreme pain……93-100
Insomnia severity index- No clinically significant insomnia……0
Sub threshold insomnia……8-14
Clinical insomnia (moderate severity)……15-21
Clinical insomnia (severe)……22-28

Pain-related disability of the neck (p=0.023) and insomnia (p=0.001) were significantly associated with the level of smartphone addiction of the respondents (Table 3), but no significant association existed between depression (p=0.578), anxiety (p=0.060), stress (0.685), and smartphone addiction level of the participants (Table 4).

Table 4. Association between psychological status and smartphone addiction level of the participants

		SAS-SV				
		Not excessive	**Excessive**	**Total**	**X^2**	**P-value**
Depression	Normal	158 (72.50%)	60 (27.50%)	218 (100.0%)		
	Mild	12 (60.00%)	8 (40.00%)	20 (100.0%)	2.88	0.578
	Moderate	11 (68.80%)	5 (31.30%)	16 (100.0%)		
	Severe	6 (54.50%)	5 (45.50%)	11 (100.0%)		
	Extremely severe	4 (66.70%)	2 (33.30%)	6 (100.0%)		
	Total	191 (100.0%)	80 (100.0%)	271 (100.0%)		
Anxiety	Normal	153 (74.30%)	53 (25.70%)	206 (100.0%)		
	Mild	9 (60.00%)	6 (40.00%)	15 (100.0%)	9.05	0.060
	Moderate	12 (50.00%)	12 (50.00%)	24 (100.0%)		
	Severe	8 (80.00%)	2 (20.00%)	10 (100.0%)		
	Extremely severe	9 (56.30%)	7 (43.80%)	16 (100.0%)		
	Total	191 (70.50%)	80 (29.50%)	271 (100.0%)		
Stress	Normal	165 (71.40%)	66 (28.60%)	231 (100.0%)		
	Mild	12 (66.70%)	6 (33.30%)	18 (100.0%)	2.28	0.685
	Moderate	7 (63.60%)	4 (36.40%)	11 (100.0%)		
	Severe	5 (55.60%)	4 (44.40%)	9 (100.0%)		
	Extremely severe	2 (100.00%)	0 (0.00%)	2 (100.0%)		
	Total	191 (70.50%)	80 (29.50%)	271 (100.0%)		

* Significant at p< 0.05,
Key:
X^2- Chi square

Discussion

This study determined smartphone addiction and its association with psychological status, insomnia, and pain-related disability of the neck among staff of College of Medicine, University of Lagos. The prevalence of academic and administrative staff addiction to smartphone in this study was 29.50%. This could probably be due to the amount of time spent browsing the internet and receiving calls due to the work schedule of the participants. It is well known that most academic and administrators use smartphones to respond to email messages, perform virtual statutory meetings, online webinars, and send notices via official social media platform. This assertion was corroborated by the study of Cheever et al, (38) who indicated that the majority of individuals use their phones excessively in manners that hinder their daily lives. A similar prevalence of 27.60% was found in a study among adults in India [39]. Another study by Luk et al [40] found a relatively higher prevalence of 38.5% among adults in Hong Kong.

This study revealed that the prevalence of depression, anxiety, and stress was 19.60%, 24.00%, and 14.70% respectively. In a survey carried out by Mirzaei et al [41] among adults in Iran, it was reported that the prevalence of depression, anxiety, and stress was 29%, 32.2%, and 34.8% respectively. A study in Saudi Arabia reported a prevalence of 54%, 53%, and 38% for depression, anxiety, and stress [42]., This is far higher than the prevalence reported in this study. The lower prevalence reported in this research could be due to the environmental and cultural differences of the participants.

Twenty-nine percent of the participants in this study complained of neck pain, which may be due to the abnormal neck posture assumed by the participants while using their smartphone, which were mentioned in the study by Akodu et al, [29] as possible reasons for the development of musculoskeletal pain among adults. This is in congruence with a study conducted by Genebra et al [42] among adults in Brazil, reporting a prevalence of 20.3%. Another study conducted among University academic staff in Hong Kong found a far higher prevalence of 46.7% [43]. Their study also reported that the complaint of neck pain among participants confirmed that the excessive use of smartphone with an abnormal posture can result in development of symptoms of neck discomfort among individuals addicted to smartphone use.

The outcome of this study revealed that 21% of the participants complained of insomnia, which may be due to the high level of smartphone addiction in the participants; this results in longer smartphone screen-time due to work load of the participants which lead to

sleep disturbance. Cao et al [44] in their survey among adults in China discovered a frequency of 15.00% which is slightly lower than the prevalence reported in this study. The lower prevalence may be due to the total number of the population involved in their study.

In this research, it was discovered that addiction to smartphone does not have an influence on the psychological status (Depression, Anxiety, and Stress) of the participants. This could be due to the age of the participants, being adult population. This reason was confirmed by the study of Zencirci et al (45) who reported that younger individuals encounter addictive behavior more frequently than older counterparts. On the contrary, a survey done by Oraison et al [46] revealed that smartphone addiction significantly predicted increased levels of depression, anxiety, and stress. This may simply be due to the characteristics of the participants involved in their study. Alhassan et al, [6] stated that smartphone addiction is one of the behavioral problems that could lead to the development of depressive symptoms. The result of this survey revealed that smartphone addiction has a relationship with pain-related disability of the neck among participants. This could be because of the forward head posture adopted by the respondents while using smartphone [29], causing smartphone users to have episodes of pain and disability in the neck as revealed in a study conducted by Oraison et al [46]. This forward head posture is the abnormal posture the participants adopt while performing their work on the smartphone. The study by Raoofi et al [47] asserted that pain-related disability of the neck resulting from abnormal posture of the neck originated from abnormality in the activity of the contractile and non-contractile structures of the neck region. There is also a possibility that there may be neck pain resulting from nerve root compression, which can be caused by reduction in the intervertebral disc space as a result of abnormal posture of the neck [48]. This has been in contrast to the study by Foltran-Mescollotto et al [49] reporting no relationship between smartphone use and neck pain.

This survey discovered a significant association between smartphone addiction and insomnia among the participants of this survey. This could be due to the bright light emitted by smartphones, that has been discovered to affect the circadian rhythm and cause sleep disturbances [19]. This happens because some academic and administrative staff may decide to take some of their office work home to complete before the next day work. Sohn et al [17] found smartphone addiction to be associated with poor quality of sleep. Another study among adults found internet addiction and the use of social media to be linked with insomnia [50]. This study had some limitations, with the main one being the reluctance of the participants to fully answer the questionnaire due to the COVID-19 pandemic and lockdown.

Conclusion

Smartphone addiction, depression, anxiety, stress, insomnia, and pain-related disability of the neck are common among staff of College of Medicine, University of Lagos. Smartphone addiction has an impact on insomnia and pain-related disability of the neck. There was a disparity in smartphone addiction level, depression, stress, insomnia, and pain-related disability of the neck among academic and non-academic staff, but no difference was found in their stress level.

Acknowledgement

The authors wish to appreciate the staff who participated in the study.

Conflict of interest: None declared.

References

1. Arslan A, Tutgun Unal A. Examination of cell phone usage habits and purposes of Education faculty students. Int J Hum Sci. 2013;10(1):182-201.
2. Van Velthoven MH, Smith J, Wells G, Brindley D. Digital health app development standards: a systematic review protocol. BMJ Open. 2018;8(8):e022969.
3. Neupane S, Ali U, Mathew A. Text neck syndrome-Systematic review. Imp J interdiscip Res. 2017;3(7):141-8.
4. Gümüş İ, Örgev, C. A study on the possible effects of associate degree students' use of smart mobile phones on the levels of success and spending. Acad Platform. 2015;10(3):310-5.
5. Kim EY, Cho I, Kim EJ. Structural Equation Model of Smartphone Addiction Based on Adult Attachment Theory: Mediating Effects of Loneliness and Depression. Asian Nurs Res. 2017;11(2):92-7.
6. Alhassan AA, Alqadhib EM, Taha NW, Alahmari RA, Salam M, Almutairi A.F. The relationship between addiction to smartphone usage and depression among adults: a cross-sectional study. BMC Psychiatry. 2018;18(1):148.
7. Lin TTC, Chiang YH, Jiang Q. Sociable people beware? Investigating smartphone vs. non-smartphone dependency symptoms among young Singaporeans. Soc Behav Pers. 2015;43(7):1209-16.
8. Zencirci SA, Aygar H, Göktaş S, Önsüz MF, Alaiye M, Metintaş S. Evaluation of smartphone addiction and related factors among university students. Int J Res Med Sci. 2018;6(7):2210-6.
9. Jin B, Park N. Mobile voice communication and loneliness: Cell phone use and the social skills deficit hypothesis. New Media Soc. 2013;15(7):1094-111.
10. Akodu AK, Adenekan YA, Zibiri RA. Smartphone addiction, selected psychological status and clinical

variables among undergraduates in a Nigerian population. S Afr J Public Health. 2020;4(3):71.
11. AL Mahrooqi AM, AL Agbari TA, AL Shidhani AS. The prevalence of smartphone addiction and its correlation with depression among higher college of technology students, Oman. Int J Res Med Sci, 2020;8(5):1833-7.
12. Augner C, Hacker GW, Oberfeld G, Florian M, Hitzl W, Hutter J, et al. Effects of exposure to GSM mobile phone base station signals on salivary cortisol, alpha-amylase, and immunoglobulin A. Biomed Environ Sci. 2010;23(3):199-207.
13. Rotondia V, Stancab L, Tomasuolo M. Connecting alone: Smartphone use, quality of social interactions and well-being. J Econ Psychol. 2017;63:17-26.
14. Grant JE, Potenza MN, Weinstein A, Gorelick DA. Introduction to behavioral addictions. Am J Drug Alcohol Abuse. 2010;36(5):233-41.
15. Ülkü EC, Demir MK. The Effects of Mass Media Tools on Classroom Behaviors of the Students. Int J Soc Sci. 2013;6(1):587-608.
16. Allam S, Flowerday SV, Flowerday E. Smartphone information security awareness: A victim of operational pressures. Comput Secur. 2014;42:56-65.
17. Sohn SY, Krasnoff L, Rees P, Kalk NJ, Carter B. The Association between Smartphone Addiction and Sleep: A UK Cross-Sectional Study of Young Adults. Front Psychiatry. 2021;12:629407.
18. Kumar VA, Chandrasekaran V, Brahadeeswari H. Prevalence of smartphone addiction and its effects on sleep quality: A cross-sectional study among medical students. Ind Psychiatry J. 2019;28(1):82-5.
19. Cain N, Gradisar M. Electronic media use and sleep in school-aged children and adolescents: A review. Sleep Med. 2010;11(8):735-42.
20. Thomée S, Härenstam A, Hagberg M. Mobile phone use and stress, sleep disturbances, and symptoms of depression among young adults--a prospective cohort study. BMC Public Health. 2011;11:66.
21. Dworak M, Schierl T, Bruns T, Strüder HK. Impact of singular excessive computer game and television exposure on sleep patterns and memory performance of school-aged children. Pediatrics. 2007; 120(5):978-85.
22. Huber R, Treyer V, Borbely AA, Schuderer J, Gottselig JM, Landolt HP, et al. Electromagnetic fields, such as those from mobile phones, alter regional cerebral blood flow and sleep and waking EEG. J Sleep Res. 2002;11(4):289-95.
23. Hysing M, Pallesen S, Stormark KM, Jakobsen R, Lundervold AJ, Sivertsen B. Sleep and use of electronic devices in adolescence: results from a large population-based study. BMJ Open. 2015;5(1):e006748.
24. Mustafaoglu R, Yasaci Z, Zirek E, Griffiths MD, Ozdincler AR. The relationship between smartphone addiction and musculoskeletal pain prevalence among young population: a cross-sectional study. Korean J Pain. 2021;34(1):72-81.
25. Berolo S, Wells RP, Amick BC 3rd. Musculoskeletal symptoms among mobile hand-held device users and their relationship to device use: A preliminary study in a Canadian university population. Appl Ergon. 2011;42(2):371-8.
26. Janwantanakul P, Sitthipornvorakul E, Paksaichol A. Risk factors for the onset of non-specific low back pain in office workers: A systematic review of prospective cohort studies. J Manipulative Physiol Ther. 2012;35(7):568-77.
27. Fernández-de-las-Peñas, C, Alonso-Blanco C, Cuadrado ML, Pareja JA. Forward head posture and neck mobility in chronic tension-type headache: a blinded, controlled study. Cephalalgia. 2006;26(3):314-9.
28. Gupta VK, Arora S, Gupta M. Computer-related illnesses and Facebook syndrome: what are they and how do we tackle them. Med Update. 2013;23:676-9.
29. Akodu AK, Akinbo SR, Young QO. Correlation among smartphone addiction, craniovertebral angle, scapular dyskinesis, and selected anthropometric variables in physiotherapy undergraduates. J Taibah Univ Med Sci. 2018;13(6):528-34.
30. Cochran WG. Sampling techniques. 3rd ed. New York, United States: John Wiley & Sons. Inc; 1977.
31. Kwon M, Lee JY, Won WY, Park JW, Min JA, Hahn C, et al. Development and Validation of a Smartphone Addiction Scale (SAS). PLoS One. 2013;8(2):e56936.
32. Lovibond PF, Mitchell CJ, Minard E, Brady A, Menzies RG. Safety behaviours preserve threat beliefs: protection from extinction of human fear conditioning by an avoidance response. Behav Res Ther. 2009;47(8):716-20.
33. Lovibond PF, Lovibond SH. The structure of negative emotional states: Comparison of the Depression Anxiety Stress Scales (DASS) with the Beck Depression and Anxiety Inventories. Behav Res Ther. 1995;33(3):335-43.
34. Wheeler AH, Goolkasian P, Baird AC, Darden BV 2nd. Development of the Neck Pain and Disability Scale. Item analysis, face, and criterion-related validity. Spine (Phila Pa 1976). 1999;24(13):1290-4.
35. Jorritsma W, de Vries GE, Dijkstra PU, Geertzen JH, Reneman MF. Neck Pain and Disability Scale and Neck Disability Index: validity of Dutch language versions. Eur Spine J. 2012;21(1):93-100.
36. Bastien CH, Vallières A, Morin CM. Validation of the Insomnia Severity Index as an outcome measure for insomnia research. Sleep Med. 2001;2(4):297-307
37. Morin CM, Belleville G, Bélanger L, Ivers H. The Insomnia Severity Index: psychometric indicators to detect insomnia cases and evaluate treatment response. Sleep. 2011;34(5):601-8.
38. Renuka K, Gopalakrishnan S, Umadevi R. Prevalence of smartphone addiction in an urban area of Kanchipuram district, Tamil Nadu: a cross-sectional study. Int J Community Med Public Health. 2019;6(10):4218-23.
39. Cheever NA, Rosen LD, Carrier LM, Chavez A. Out of sight is not out of mind: The impact of restricting wireless mobile device use on anxiety levels among low, moderate and high users. Comput Human

Behav. 37:290-7.
40. Luk TT, Wang MP, Shen C, Wan A, Chau PH, Oliffe J, et al. Short version of the smartphone addiction scale in Chinese adults: psychometric properties, sociodemographic, and health behavioral correlates. J Behav Addict. 2018;7(4):1157-65.
41. Mirzaei M, Yasini Ardekani SM, Mirzaei M, Dehghani A. Prevalence of Depression, Anxiety and Stress among Adult Population: Results of Yazd Health Study. Iran J Psychiatry. 2019;14(2):137-46.
42. Mirza AA, Milaat WA, Ramadan IK, Baig M, Elmorsy SA, Beyari GM. et al. Depression, anxiety and stress among medical and non-medical students in Saudi Arabia: An epidemiological comparative cross-sectional study. Neurosciences (Riyadh). 2021;26(2):141-51.
43. Genebra CVDS, Maciel NM, Bento TPF, Simeão SFAP, Vitta A. Prevalence and factors associated with neck pain: a population-based study. Braz J Phys Ther. 2017;21(4):274-80.
44. Chiu TT, Ku WY, Lee MH, Sum WK, Wan MP, Wong CY. A Study on the Prevalence of and Risk Factors for Neck Pain among University Academic Staff in Hong Kong. J Occup Rehabil. 2002;12(2):77-91.
45. Cao XL, Wang SB, Zhong BL, Zhang L, Ungvari GS, Ng CH, et al. The prevalence of insomnia in the general population in China: A meta-analysis. PLoS One. 2017;12(2):e0170772.
46. Akbulut Zencirci S, Aygar H, Göktaş S, Önsüz MF, Alaiye M, Metintaş S. Evaluation of smartphone addiction and related factors among university students. Int J Res Med Sci. 2018;6(7):2210-6.
47. Oraison H, Nash-dolby O, Wilson B, Malhotra R. Smartphone distraction-addiction: Examining the relationship between psychosocial variables and patterns of use. Aust J Psychol. 2020;72(2):188-98.
48. Suresh A, Sudhan SG, Mohan P, Ramalingam, AT. Impact of Smartphone Addiction on Neck Pain and Disability in University Students. J Clin Diagn Res. 2021;15(6):YC01-3.
49. Raoofi Z, Sarrafzadeh J, Emrani A, Ghorbanpour A. Relationship between Forward Head Posture and Neck Pain as Well as Disability. J Clin Physiother Res. 2019;4(1):e5.
50. Diab AA, Moustafa IM. The efficacy of forward head correction on nerve root function and pain in cervical spondylotic radiculopathy: a randomized trial. Clin Rehabil. 2012;26(4):351-61.
51. Foltran-Mescollotto F, Gonçalves ÉB, Castro-Carletti EM., Oliveira AB, Pelai EB, Rodrigues-Bigaton D. Smartphone addiction and the relationship with head and neck pain and electromiographic activity of masticatory muscles. Work. 2021;68(3):633-40.
52. Malaeb D, Salameh P, Barbar S, Awad E, Haddad C, Hallit R, et al. Problematic social media use and mental health (depression, anxiety, and insomnia) among Lebanese adults: Any mediating effect of stress? Perspect Psychiatr Care. 2021;57(2):539-49.