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Impact of Smart Phone use Among Doctors During COVID-19 Pandemic in Rural Tamilnadu, India

[1]Vishnu G. Ashok, [2]C.S. Jayasree, [3]Indu K. Pisharody, [4]A.K. Bhuvanesh and [5]G.T. Vaisakh

[1,2,4,5]Department of Community Medicine, Sree Mookambika Institute of Medical sciences, Kulasekharam , Kanyakumari District, India

[3]Department of Physiology, Sree Mookambika Institute of Medical sciences, Kulasekharam , Kanyakumari District, India

ABSTRACT

During the COVID-19 lock down period, smartphones have become an inseparable part of everyone's life including doctors. Mobile technology has helped physicians to facilitate clinical decision-making. Yet the usage of smartphones may lead to distractions during medical procedures and patient care. These distractions can cause serious impacts on their physical and psychological well-being as well as on the patients they take care of. While smartphone use is beneficial in numerous ways, there are disadvantages, including reduced work efficacy. To estimate the proportion of doctors addicted to smartphones during the COVID-19 Pandemic and assess the positive and negative impacts of smartphone use. We conducted a cross-sectional study among 150 doctors working in Government and Private Hospitals of Kanyakumari District, Tamil Nadu. Among the doctors, 31.3% were from government hospitals and 52% were from private hospitals and 16.7% were self-employed. Out of the 150 doctors, 68.7% used smartphones more than 2 hrs per day, 47.3%of participants felt that they have an urge to use their mobile phones, 42.7% of participants felt that their mental/physical health is affected by smartphones and 60% felt their quality of sleep is attenuated. A significant association was found between the negative impact of smartphone usage and the specialty of job (Allopathic/AYUSH) ($p = 0.001$) and marital status of the study participants ($p = 0.029$). More than half of the doctor population is addicted to smartphones. Type of specialty and marital status are found to be significantly associated with smartphone use.

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Key Words
Doctors, smart phone use, COVID-19, pandemic

Corresponding Author
Vishnu G. Ashok,
Department of Community Medicine, Sree Mookambika Institute of Medical Sciences, Kulasekharam, Kanyakumari District
vishnusastha@gmail.com

Author Designation
[1,5]Associate Professor
[2]Professor
[3]Professor
[4]Junior Resident

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INTRODUCTION

The term "Smartphone" which first appeared in 1997 differentiates mobile phones with advanced features from those with basic features[1]. In comparison to traditional mobile phones, smartphones provide integrated services from communication, computing and mobile features such as voice communication, messaging, personal information management apps and wireless communication capabilities. Modern smartphones offer all the features of laptops, including web browsing, wi-fi and a range of other features[2]. As a result of COVID-19's lockdown period, smartphones have become an integral part of everyone's life including doctors .The use of software apps such as Skype, Google Meet, Zoom and Webex has enhanced online classes, webinars, seminars and conferences. Some people use smartphones for a prolonged period for their entertainment by watching videos, gaming and surfing social sites to overcome boredom during the lockdown or containment period which might harm effective brain functioning. Therefore, the usage of smartphones has increased drastically in comparison with regular use before the pandemic[3].

Smartphone technology is a better tool to support various services and people feel better positioned with it. Smartphones with the availability of social media platforms are key factors for providing many services which include better ways to communicate with people, exposure to new learning, ways to personality development, internet, E-mails and social networking sites and the ability to finish multiple tasks simultaneously[4]. Mobile technology has begun to change the field of the medical profession, with more than two-thirds of physicians regularly using smartphones which allowed healthcare professionals and the public to communicate more efficiently. Mobile technology has helped physicians to collect data and to facilitate clinical decision-making[4]. The number of smartphone users has been growing rapidly among healthcare professionals[5].

Increased Usage of smartphones and apps also causes degradation in physical and social interactions, distraction, health problems, etc. Nowadays usage of smartphones has become a serious addiction phenomenon. A new phobia has been developed known as nomophobia-fear of being without a phone. In addition to fear, health-related issues like nerve problems, back pain, sleep deficit, anxiety and depression also occur[5]. Apart from being a distraction use of smartphones in healthcare facilities leads to contamination, infection and hygiene risks. Smartphones used by the hospital staff in the operation room may become contaminated and these devices could possibly cross-contaminate the health worker's hand[6]. Due to the usage of smartphones by doctors, several distractions may occur during the procedures, in the operation theatre and in patient care. These distractions may lead to negligence from the doctor's side and may provoke violence towards doctors that may cause negative impacts on their physical and psychological well-being, which may ultimately limit their work performance and job satisfaction. This affects the functioning and long-term efficiency of the whole healthcare system[7].

Literature shows scanty data on smartphone impact among doctors during COVID-19 Pandemic. Hence it was planned to conduct a study to estimate the proportion of doctors addicted to smartphones during the COVID-19 pandemic and to determine the positive and negative impacts of smartphone use among doctors working in Kanyakumari district of Tamil Nadu, South India.

MATERIAL AND METHODS

We conducted a cross-sectional study among doctors of cadres such as medical officers, general practitioners, consultants, surgeons and specialists, working in government and private Hospitals of Kanyakumari District, TamilNadu from 15th July 2022 to 15th September 2022. A self-administered pretested questionnaire including questions on socio-demographic information, level of addiction and positive and negative impacts of smartphone usage. The questionnaire had four questions to assess the level of positive impact and four questions to assess the level of negative impact of smartphone use. The sample size was calculated as 150 using the prevalence of a study done by Aggarwal *et al.*[8], mobilephoneuse among resident doctors developing a tendency to Addiction-Like Behaviour and an absolute precision of 8%. Smartphone use for more than two hours per day other than for communication purposes was considered as an addiction to smartphones. All doctors who are residing in Kanyakumari district, Tamilnadu and currently workingdoctors who were willing to participate were includedconsecutivelyin the study. Thosedoctors who didn't give consent were excluded from the study. The questionnaire was given to the study participants via personal communication platforms like e-mail and WhatsApp depending upon their convenience. The completed questionnaires were collected back after 48 hrs and were checked for missing entries. Those with missing data were excluded. The responses were coded and the data were tabulated in Microsoft Excel 2019. Data were analyzed using IBM SPSS Statistics Trial version 26.0. The distribution of the responses for each variable was examined using frequencies and percentages. Descriptive statistics were presented for the scores of

questionnaire domains in the subgroups based on age, gender, marital status, place of work, specialty and smartphone use. Prior approval of the institutional ethics committee was obtained for this study.

RESULTS

Out of 150 doctors interviewed 132 were Allopathic practitioners and 18 were AYUSH Practitioners. Among study participants 85 (56.70%) were males and 65 (43.30%) participants were females. In this study, 95 (63.3%) participants were between the age group of 25-35 years, 28 (18.7%)participants were between the age group of 36-50 years and the remaining 27 (18%) participants were more than 50 years old. The mean age group of the study population was 37.11±3.5 years. Regarding the type of job, 47 doctors (31.3%) were from government hospitals and 78 doctors (52%) were from private hospitals while 25 doctors (16.7%) were self-employed or had their own nursing home. The general characteristics of participants are given in Table 1. It was found that 31.3% (47 participants) use mobile phones for less than 2 hrs per day other than for communication purposes, whereas 68.7.% (103 participants) use more than 2 hrs per day other than for communication purposes. Another finding was that 63.3% of participants use mobiles at night, 20.7% use them in the evening, 8.7% in the afternoon and only 7.3% use them in the morning. It was found that 80 (53.3%) participants use smartphones for communication, 51 (34%) use them for social media, 8 (5.3%) use them for academic purposes and 11 (7.3%)for games and entertainment purposes. It is also observed that only 45 (30%) participants share their daily activities with friends/families/public through social media. Remaining 105 (70%) participants don't share them regularly via smartphones. Figure 1 shows the applications commonly used by doctors during the study period. Regarding smartphone usage in the outpatient department while attending patients, 19 (12.7%) use it during consultation time whereas 131 (87.3%) participants don't use mobile phones in OPD. Similarly, only 6 (4%) of the participants reported that they use mobile phones while doing medical/surgical procedures while the majority rest of the 144 (96%) participants don't use. 49 (32.7%) participants accept that their performance is reduced due to over usage of mobile phones. Remaining 101 (67.3%) participants don't feel that their performance is affected because of smartphones. 71 (47.3%) participants feel that they have the urge to use their mobile phones whenever there comes a notification or messageleading to continuous use of mobile phones. While assessing the health impacts of smartphones 64 (42.7%) of participants felt that their mental/physical health is affected by smartphones and 90 participants (60%) felt their quality of sleepis attenuated. The side effects of smartphone usage among participants include headache (61%), redness of the eyes (35%) and general tiredness (40%). About 46.7% of people think that they have been involved very little in social activities and feel that their socialization has decreased. 65.3% of participants consult their patients via smartphones and 86% of participants were using smartphones to have a clinical discussion with their seniors, juniors and colleagues about any cases or doubts regarding the

Table 1: Socio-demographic characteristics of doctors (N = 150)

Variables	Frequency	Percentage
Age (Years)		
<35	95	63.3
35-50	28	18.7
>50	27	18
Gender		
Male	85	56.7
Female	65	43.3
Marital status		
Married	104	69.3
Unmarried	46	30.7
Organization		
Government	47	31.3
Private	78	52
Self-employed	25	16.7
Specialty		
Allopathy	132	88
Ayush	18	12
Years of clinical practice		
<10 years	95	63.3
>10 years	55	36.7

Table 2: Association between the impact of smartphone use and socio-demographic characteristics

		Positive Impact			Negative Impact		
	Variable	Presentage	Absent (N = 103)	p-value (N = 47)	Present (N = 82)	Absent (N = 68)	p-value
Age	<35 years	64 (42.66%)	31 (20.66%)	0.224	39 (26%)	56 (37.33%)	0.118
	35 to 50 years	26 (17.33%)	2 (1.33%)		16 (10.67%)	12 (8%)	
	>50 years	13 (8.66%)	14 (9.33%)		27 (18%)	0 (0%)	
Gender	Male	55 (36.67%)	30 (20%)	0.232	46 (30.67%)	39 (26%)	0.877
	Female	48 (32%)	17 (11.33%)		36 (24%)	29 (19.33%)	
Marital Status	Married	73 (48.67%)	31 (20.67%)	0.545	63 (42%)	41 (27.33%)	0.029*
	Unmarried	30 (20%)	16 (10.67%)		19 (12.66%)	27 (18%)	
Place of Work	Government	28 (18.67%)	19 (12.67%)	0.225	24 (16%)	23 (15.33%)	0.835
	Private	58 (38.67%)	20 (13.33%)		44 (29.33%)	34 (22.67%)	
	Self Employed	17 (11.33%)	8 (5.33%)		14 (9.33%)	11 (7.33%)	
Specialty	Allopathy	87 (58%)	45 (30%)	0.114	78 (52%)	54 (36%)	0.001*
	Ayush	16 (10.66%)	2 (1.33%)		4 (2.67%)	14 (9.33%)	

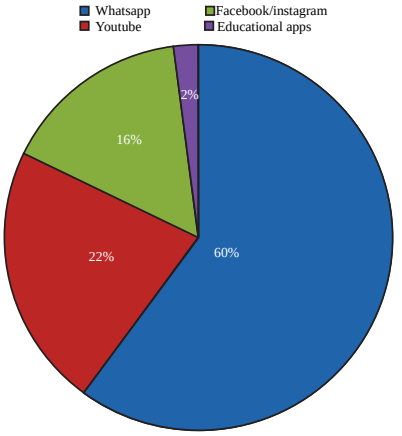

Fig. 1: Common Apps used by the study population during the studyperiod

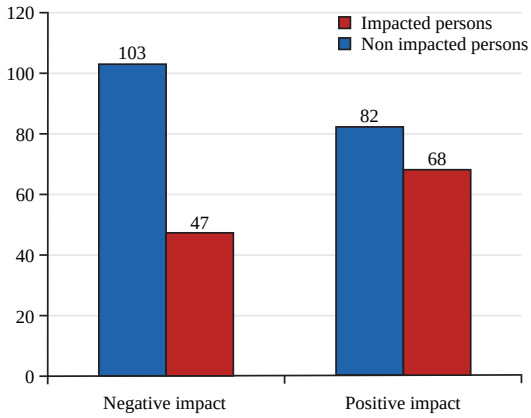

Fig. 1: Impact of smartphones among study participants (N = 150)

same. More than two third (77%) of the study participants believe that the benefits of smartphones outweigh their demerits with the positive impacts they create. Figure 2 shows the level of impact of smartphone usage by doctors.

DISCUSSION

In the present study, it has been found that 68.7% of participants are addictedto the smartphone, whereas studies done during the pandemic period in various parts of the world among medical students show the prevalence of smartphone addiction was found to be 45.1% in India[9], 61% in China[10] and 62.4%[11] in Jordan. These findings show that our study population has a higher addiction prevalence. This may reflect continuous exposure to stress and high workload among doctors currently working in India, in turn leading to a high level ofsmartphone addiction. It was also observed that very few doctors (2%) were using any kind of Educational/Medical Apps. There should be more emphasis on making healthcare professionals aware of medical applications that will help them gather accurate information. Even though the study population may not be aware of such Apps which are useful in improving knowledge as well as upgrading patient care, more than half (65.3%) used smartphones to communicate/consult with their patients.

While assessing the impacts of smartphone use among participants, it has been found that 103 (68.7%) participants had a positive impact by analysing variables such as communication/consultations with patients through smartphones, contact frequently with colleagues/seniors/juniors for discussion and self-update professionally via smartphones. While assessing the negative impacts 82 (54.7%) participants had a negative impactby considering variables such as smartphone use while attending patients in OPD, smartphone use while performing medical/surgical procedures and urge to use frequently during Work time. A system of monitoring the use of smartphone devices within hospitals should be implemented to ensure patient privacy and confidentiality[12].There was a statistically significant association of the type of practitioners (Allopathic/Ayush) with the negative impact of smartphone usage ($p = 0.001$). A significant association was also found between the marital status of the participants and the negative impact of smartphone usage ($p = 0.029$).

Health care is improving with the help of smartphones and Medical/Educational apps. To optimize workflow in the future, addressing the problems associated with these devices in both ambulatory and clinical settings will be necessary. While smartphone use is beneficial in numerous ways, disadvantages include reduced work efficacy, reduced personal attention, social nuisances and psychological dependence. Awareness programs about smartphone addiction and related illnesses have not been organized in large numbers[13]. In this respect, doctors must know about both the positive and negative effects of smartphones because a good doctor-patient relationship will influence a patient's personal health behavior and in turn, will influence the community.

CONCLUSION

More than half of the doctor population is addicted to smartphones. Type of specialty and marital status are found to be significantly associated with smartphone use.

Limitation: The study was done during the later phase of COVID 19 pandemic which might have accelerated the use of smartphones among doctors due to various reasons. A small sample size may limit the scope of the generalisability of the study.

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