

ORIGINAL ARTICLE

A study to evaluate pattern and purpose of smartphone usage and its dependence among medical students of government medical college in Northern India

Shiv Kumar Yadav¹, Nidhi Mimani Gupta², Asha Raj Piyush³, Dheeraj Gupta⁴

¹Associate Professor, Department of Community Medicine, Government Doon Medical College, Dehradun; ²Assistant Professor, Department of Dermatology, Gautam Buddha Chikitsa Mahavidyalaya, Dehradun; ³Assistant Professor, Department of Pathology, Government Doon Medical College, Dehradun; ⁴Associate Professor, Department of Community Medicine, Government Doon Medical College, Dehradun

Abstract	Introduction	Methodology	Results	Conclusion	References	Citation	Tables / Figures
--------------------------	------------------------------	-----------------------------	-------------------------	----------------------------	----------------------------	--------------------------	----------------------------------

Corresponding Author

Dr. Dheeraj Gupta, Associate Professor, Department of Community Medicine, Govt. Doon Medical College, Dehradun, Uttarakhand.

E Mail ID: itsdheeraj2003@gmail.com



Citation

Yadav SK, Gupta NM, Piyush AR, Gupta Dheeraj. A study to evaluate pattern and purpose of smartphone usage and its dependence among medical students of government medical college in Northern India. Indian J Comm Health. 2022;34(1):36-41. <https://doi.org/10.47203/IJCH.2022.v34i01.008>

Source of Funding: Nil Conflict of Interest: None declared

Article Cycle

Received: 14/10/2021; Revision: 15/01/2022; Accepted: 07/03/2022; Published: 31/03/2022

This work is licensed under a [Creative Commons Attribution 4.0 International License](https://creativecommons.org/licenses/by/4.0/). ©The Author(s). 2022 Open Access

Abstract

Background: Smartphone usage has become increasingly popular in recent decade. Though it's of great utility in many aspects, excessive usage among youth has shown increased restlessness, careless lifestyles and greater susceptibility to stress. **Aim & Objective:** To assess the pattern and purpose of smartphone usage and its dependence among medical students. **Methods & Material:** A cross-sectional, descriptive study was conducted among 363 MBBS students of 1st, IInd and IIIrd professional year at a government medical college. A 20-item self-administrated questionnaire, focusing on purpose and pattern of use of smart phone and its dependence was filled by all the students. Data was collected, entered and analysed using SPSS Software. **Result:** Among 363 students, 53% participants were males and rest were females. 80% students were using smartphone for more than 2 years, while 60% were having daily usage of more than 3 hours. Significant association between severity of smartphone dependence and variables like MBBS professional year, daily phone call made and received, daily SMS received, daily WhatsApp message sent and received were observed. Dependence was mild in 8.8% of the students; Moderate in 72.2% while 19% were suffering from severe smartphone dependence. **Conclusion:** Smart phone dependence is an established and emerging psychological issue which needs attention and intervention. It is of serious concern that all medical students were suffering from smartphone dependence with varying grades of severity. Increased awareness regarding the harmful effects of smartphone addiction is the need of hour.

Keywords

Smart Phone Usage, Dependence, Medical Students

Introduction

Smartphones have become an indispensable part of our lives. The dawn of mobile phones was marked by its primarily usage as a communication tool, though gradually replaced by smartphone (Smart mobile phones) harbouring multiple features. The key differences being, full-featured internet access and easy installation of numerous applications in the latter.(1) Smartphones functions as a portable pocket size computer with diverse operations like music player, games, internet, video camera, calculator and having many more other perceived

benefits, especially social connectivity, reduced loneliness, and security in emergency situations.(2) Globally, there are six billion mobile phone users.(3) As far as students are concerned, entertainment, health, knowledge and social media remains the main domain for usage. A study proclaimed 57% of cell phone users utilizing their phones mainly for social purposes with around 50 % users always carrying their phones with them. (4) Also in 2017, a survey showed that over 49% of Indians use their mobile phones primarily to access social networking site, while only 9% uses it for listening music. (5)

The smartphone's popularity has risen enormously in recent years making it nearly impossible for the people to stay away from it, raising increasing concerns about its negative ramifications. (6) Its excessive usage has led to its dependence causing discomfort and anxiety during its inaccessibility. A study conducted in Britain documented that as much as 53% of mobile phone users get anxious when they lose their mobile phone, run out of battery or credit or have no network coverage. (7) Persistent smartphone usage has affected the people physically, psychologically, and socially, causing health issues like impaired concentration, headache, dizziness, fatigue, thermal sensations in and around ear, stress, sleep disturbances and frustration. (8) Apart from above concerns, addiction to smartphone among students has led to emotional stress and cognitive/behavioural changes, affecting their academic performances. (9) Other undesirable aspects of smartphone usage includes accidents while driving, virtual contacts/people preferences leading to family ignorance, damaged relationships and behavioural concerns. (10-13) This study focuses on studying the pattern and purpose of smartphone usage and assessing its severity of dependence among medical students.

Aims & Objectives

1. To study the pattern & purpose of smartphone usage among medical students.
2. To assess the severity of smartphone dependence among medical students.

Material & Methods

A cross-sectional, descriptive study was conducted among the MBBS students of a government medical college in northern India. A total of 363 MBBS students of 1st, 2nd & 3rd Professional Year were enrolled in this study. A self-administered questionnaire, also termed as Nomophobia Questionnaire (NMP-Q) (14) with three main sections i.e., demographic details, purpose of smartphone usage and smartphone dependence was filled by every student. 20 items (questions) were included in the questionnaire related to smartphone dependence and each response was rated using a 5-point Likert scale, ranging from 1 (strongly disagree) to 5 (strongly agree). Smartphone dependence score ranging from 20 to 100 was calculated by summing up responses to each item, with higher scores corresponding to greater smartphone dependence severity and vice versa. NMP-Q score of 20 indicates the absence of smartphone dependence; NMP-Q score of 20-46 considered as mild dependence; NMP-Q score of 47 to 73 considered as moderate dependence; NMP-Q score of more than equal to 74 was considered as severe dependence.

A written informed consent was obtained from all the students at the start of the study, after explaining the confidentiality and anonymity of the data collection process.

Inclusion criteria: Students who were having smartphones and volunteered to participate were included in the study. Out of the total 450 students present, 363 students were included in the study.

Exclusion criteria: Students who did not have smartphone were excluded from the study.

Data collection: Data collected was coded and entered into a Microsoft Excel spreadsheet. It was analysed using the Statistical Package for the Social Sciences, version 26, software (SPSS Inc., Chicago, IL, USA). Descriptive statistics (mean, standard deviation, frequencies and percentages) were used to describe the quantitative and categorical variables. Statistical analysis was performed using a chi-square test, and p value < 0.05 was considered significant. Ethical approval was obtained from the institutional ethics committee before the commencement of the study.

Results

Of all 363 students 53% participants were males and rest (47%) were females. All the study participants belong to age group of 17 to 24 years. Among them, 56.5% were of age group 17-20 years and rest 43.5% belong to age group 21-24 years. It was observed that 80% students were using smartphone for more than 2 years, while 60% were having daily usage of more than 3 hours. Certain variables like MBBS professional year, daily phone call made and received, daily SMS received, daily WhatsApp message received and sent showed significant association with severity of smartphone dependence. (Table 1).

Purpose of Smartphone Usage among Medical Undergraduates: Purpose of smartphone usage was also evaluated among study participants and it was found that smartphone use was mainly for 3 purposes: 1) Education /awareness (78% browsing internet, 59% accessing lecture notes, 50% News) 2) Interaction (92% WhatsApp, 81% calls, 63% texting, 31% emails, 25% planning meetings) and 3) Entertainment (89% listening music, 51% killing time, 39% games) as shown in Figure 1.

Pattern of Smartphone Usage among Medical Undergraduates: Students were also enquired about pattern or scenario of smartphone usage and it was found that smartphone use is maximum when bored they are (93%), 89% use smartphone when they are alone and 78% use it during travel, as shown in Figure 2. The most shocking revelation was that 30% of students use smartphone during lectures in classrooms and 53% use smartphone between the classes which strongly suggest smartphone dependence among students.

Perception of inclination towards Smartphone among Medical Undergraduates: Student's perception regarding their inclination towards their smartphone was assessed and it was found that 67% are inclined to use it without any reason and 48% get stressed in its absence however, 39% confessed that they are not able to reduce its usage even after lots of efforts. (Figure 3).

Dependence on Smartphone among Medical Undergraduates: Smartphone dependence was assessed using 20 item (question) questionnaire. Response to questions was assessed on 5-point Likert scale, score was given from 5 (Strongly Agree) to 1 (strongly disagree). It was found that 9% were having mild, 72% were having moderate and 19% were having severe smartphone dependence as shown in [Table 2](#).

In smartphone dependence assessment it was found that 63% had constant desire to use smartphone and 54% got scared when phone gets discharged and 60% gets annoyed when not able to use smartphone which strongly establish smartphone dependence among participants as showing [Figure 4](#).

Discussion

This study explored the context, perception, inclination and dependence of medical students on smartphone. Smartphones are used mainly for communication purpose but its multifunctional ability makes its useful for various purposes mainly in student life. Increasing functionality of smartphone with new added features makes smartphone a must need for college students. (9,15)

Multiple useful applications (apps) especially WhatsApp Chat application which is very popular as it allows sharing of pictures, video message to an individual as well as group communication which makes it very easy for social interactions and planning. (15-17)

In our study, 80% students were using smartphone for more than 2 years which is more compared to study by Bartwal J (18) where 53% of the students were using smartphone for 3 years.

Students inclination towards smartphone is manifested through their Frequency of smartphone checking which was more than 25 times in a day among 40% of students which is similar to study by Bartwal J (18) where 42.4% students check their smartphone up to 10 times per day, and less when compared to another study by Subba et al(19) which showed 85.3% students check their smartphone more than 10 times per day.

In present study, it was found that 60% students were having daily smartphone usage of more than 3 hours, which is similar to study by Bartwal J (18) where 62.1% of the students spend 3 hours on smartphone, while less compared to a study by Gupta et al (20) which reported only 17.8% of the medical students spends more than 3 hours on smartphone.

As per study done by Gupta et al (20) smartphones were used by 71% of students at public places and even at places where it is prohibited, risky or while doing other important works such as eating or studying, driving etc. (20)

Students use smartphone in various scenario like, when they are bored (93%), alone (89%), travel (78%) etc. The most shocking finding was that 30% students use smartphone during lectures in classrooms and 53% use it

between the classes which is similar to a study by Balakrishnan V (2) which showed that 18% of students uses smartphones in classrooms.

In our study, students' perception about inclination towards smartphone was assessed and it was found that 67% expressed that they are inclined to use it without any reason and 48% get stressed in smartphone absence and 39% also confessed that they are not able reduce smartphone usage even after lots of efforts which is similar to study finding by La Porta LD(21) where students admitted that they cannot live without a phone and will immediately buy a new phone if their phone breaks down, which suggested that mobile phone usage is unavoidable and has become an important part of students life.

In the present study, severity of smartphone dependence among students was assessed using 20 item questionnaire and it was found that 9% were having mild, 72% were having moderate and 19% were having severe smartphone dependence which is similar to study done by Bartwal J (20) where 15.5% of the medical students were having mild, 67.2% moderate and 17.3% severe smartphone dependence. An another similar study by Kanmani et al. (22) reported that 1.2% students were normal, 41.6% were having mild, 42% moderate and 15.2% were having severe smartphone dependence.

In the present study, severity of smartphone dependence showed statistically significant association with students MBBS professional years, number of phone calls made and received, daily text messages, daily WhatsApp messages. ($p < 0.05$)

Gender showed no statistically significant association with smartphone dependence in present study which is similar to studies by Bartwal J (18) and study by Alosaimi et al(6), while a study by Dasgupta et al(23) and Yildirim et al(24) observed a statistically significant association between female sex and severity of smartphone dependence.

No statistical significant association of smartphone dependence with Duration of smartphone ownership was found and similar observation was made in studies by Bartwal J (18), Alosaimi et al(7) and Dasgupta et al(23) while study by Yildirim et al(24) found this association to be statistically significant.

Hours of smartphone usage per day was not seen as statistically significant factor associated with severity of smart phone dependence which is dissimilar finding compared to various other studies. (7,18,23)

Study conducted in Japan showed that 68% of the students, who received poor grades, owned a mobile phone (25) thus strongly indicating the impact of smartphone on students' academic performance. An another study showed that study, talking on a cell phone, using e-mail, messaging services and browsing the Internet were found to be the reasons for a significant amount of class tardiness and sleep deprivation. (26,27)

Conclusion

The study concluded that excessive smartphone usage and its dependence is present among medical students and students prefer smartphone over their health and academics.

Recommendation

Long term impact of smart phone on mental and physical health of students needs to be assessed and information should be shared with students and intervention should be planned to reduce it.

Limitation of the study

This study has certain limitations also as it is representing only one segment of society (i.e., medical students) but not the whole community.

Relevance of the study

The study has established that smartphone dependence of moderate to severe degree is present in majority of medical students.

Authors Contribution

All author contributed equally.

Acknowledgement

All the MBBS students who participated in the study.

References

- Zheng P, Ni L. Smart phone and next generation mobile computing. Elsevier; 2010. eBook ISBN: 9780080458342. Available from: <https://www.elsevier.com/books/smart-phone-and-next-generation-mobile-computing/zheng/978-0-12-088560-2>.
- Balakrishnan V, Raj RG. Exploring the relationship between urbanized Malaysian youth and their mobile phones: A quantitative approach. *Telematics and Informatics*. 2012 Aug 1;29(3):263-72.
- World Bank. Information, Communication Technologies, infoDev (Program). Information and Communications for development 2012: Maximizing mobile. World Bank Publications; 2012 Aug 15.
- Wireless Phone Reliance Grows. (2001). *TWICE*, 16(26), 12. Available from: https://www.ril.com/getattachment/299caec5-2e8a-43b7-8f70-d633a150d07e/AnnualReport_2019-20.aspx
- Statista. 2022. India: smartphone penetration rate 2040 | Statista. [online] Available at: <https://www.statista.com/statistics/257048/smartphone-user-penetration-in-india> [Accessed 25 03 2022].
- Alosaimi FD, Alyahya H, Alshahwan H, Al Mahyijari N, Shaik SA. Smartphone addiction among university students in Riyadh, Saudi Arabia. *Saudi medical journal*. 2016 Jun;37(6):675
- Mail D. Nomophobia is the fear of being out of mobile phone contact-and it's the plague of our 24/7 age. Available from: <http://www.dailymail.co.uk/news/article-550610>. [Last accessed on 2018 Dec 28].
- Khan MM. Adverse effects of excessive mobile phone use. *International journal of occupational medicine and environmental health*. 2008 Oct 1;21(4):289.
- Walsh SP, White KM, Young RM. Over-connected? A qualitative exploration of the relationship between Australian youth and their mobile phones. *Journal of adolescence*. 2008 Feb 1;31(1):77-92.
- Jamson AM, Strayer DL, Drews FA. Profiles in Driver Distraction: Effects of Cell Phone Conversations on Younger and Older Drivers. *Human factors*. 2004;46(4).
- Ebesu Hubbard A, Han HL, Kim W, Nakamura L. Analysis of Mobile Phone Interruptions in Dating Relationships: A Face Threatening Act. In 57th Annual Meeting of the International Communication Association. Retrieved 2007;21:2009.
- Ling R. Adolescent girls and young adult men: Two sub-cultures of the mobile telephone. *Revista de Estudios de juventud*. 2002;52(3):33-46.
- Baron NS. *Always on: Language in an online and mobile world*. Oxford University Press; 2010 Mar 3.
- Yildirim C, Correia AP. Exploring the dimensions of nomophobia: Development and validation of a self-reported questionnaire. *Computers in Human Behavior*. 2015 Aug 1;49:130-7.
- Hooper V, Zhou Y. Addictive, dependent, compulsive? A study of mobile phone usage. *Bled 2007 Proceedings*. 2007;1:38.
- Church K, De Oliveira R. What's up with WhatsApp? Comparing mobile instant messaging behaviors with traditional SMS. In proceedings of the 15th international conference on Human-computer interaction with mobile devices and services 2013 Aug 27 (pp. 352-361).
- Lobet-Maris C, Henin J. Talking without communicating or communicating without talking: From the GSM to the SMS. *Estudios de Juventud*. 2002;57:101-14.
- Bartwal J, Nath B. Evaluation of nomophobia among medical students using smartphone in north India. *Medical Journal Armed Forces India*. 2020;76(4):451-5.
- Subba SH, Mandelia C, Pathak V, Reddy D, Goel A, Tayal A, Nair S, Nagaraj K. Ringxiety and the mobile phone usage pattern among the students of a medical college in South India. *Journal of clinical and diagnostic research: JCDR*. 2013 Feb;7(2):205.
- Gupta N, Garg S, Arora K. Pattern of mobile phone usage and its effects on psychological health, sleep, and academic performance in students of a medical university. *National Journal of Physiology, Pharmacy and Pharmacology*. 2016;6(2):132-9.
- LaPorta LD. Cellular Telephones: A New Addiction?. *Psychiatric Times*. 2006 Oct 1;23(11):64.
- Kanmani A, Bhavani U, Maragatham RS. Nomophobia—An insight into its psychological aspects in India. *The International Journal of Indian Psychology*. 2017;4(2):5-15.
- Dasgupta P, Bhattacharjee S, Dasgupta S, Roy JK, Mukherjee A, Biswas R. Nomophobic behaviors among smartphone using medical and engineering students in two colleges of West Bengal. *Indian Journal of Public Health*. 2017 Jul 1;61(3):199.
- Yildirim C, Sumuer E, Adnan M, Yildirim S. A growing fear: Prevalence of nomophobia among Turkish college students. *Information Development*. 2016 Nov;32(5):1322-31.
- Auckerman W. Survey shows cell phone secrets of Japanese youth. *Internetnews.com*. 2001 Jan.
- Massimini M, Peterson M. Information and communication technology: Affects on US college students. *Cyberpsychology: Journal of Psychosocial Research on Cyberspace*. 2009;3(1).
- Brown FC, Buboltz Jr WC, Soper B. Relationship of sleep hygiene awareness, sleep hygiene practices, and sleep quality in university students. *Behavioral medicine*. 2002 Jan 1;28(1):33-8.

Tables

TABLE 1 RELATIONSHIP OF VARIABLES WITH SMARTPHONE DEPENDENCE

Sr.No	Variables		Mild Dependence	Moderate Dependence	Severe Dependence	Total	Chi Square
			n=32(%)	n=262(%)	n=69(%)	N=363 (%)	(P value)
1	Age (Years)	17-20	14(6.8)	147(71.7)	44(21.5)	205(56.5)	3.615
		21-24	18(11.4)	115(72.8)	25(15.8)	158(43.5)	-0.16
2	Gender	Male	19(9.9)	133(69.6)	39(20.5)	191(52.6)	1.369
		Female	13(7.6)	129(75.0)	30(17.4)	172(47.4)	-0.5
3	Professional	1st	04(3.0)	110(81.5)	21(15.5)	135(37.2)	16.74
		2nd	8(8.1)	67(67.7)	24(24.2)	99(27.3)	-0.002
		3rd	20(15.5)	85(65.9)	24(18.6)	129(35.5)	
4	Duration of Smartphone Use (Years)	≤2	07(9.5)	57(77.0)	10(13.5)	74(20.4)	1.823
		>2	25(8.6)	205(70.9)	59(20.5)	289(79.6)	-0.401
5	Daily Usage(Hrs)	≤3	11(7.6)	112(77.2)	22(15.2)	145(39.9)	3.141
		>3	21(9.6)	150(68.8)	47(21.6)	218(60.1)	-0.207
6	Frequency of checking Smartphone	≤25	19(8.8)	163(75.5)	34(15.7)	216(59.5)	3.794
		>25	13(8.8)	99(67.3)	35(23.8)	147(40.5)	-0.15
7	Daily Phone Calls made	≤5	27(9.6)	215(76.5)	39(13.9)	281(77.4)	21.345
		>5	05(6.1)	47(57.3)	30(36.6)	82(22.6)	-0.00002
8	Daily Phone Calls Received	≤5	24(8.8)	207(76.4)	40(14.8)	271(74.6)	12.776
		>5	08(8.7)	55(59.8)	29(31.5)	92(25.4)	-0.001
9	Daily SMS Sent	≤5	30(9.7)	221(71.7)	57(18.6)	308(84.8)	2.292
		>5	2(3.6)	41(74.6)	12(21.8)	55(15.1)	-0.31
10	Daily SMS Received	≤5	27(12.0)	161(71.9)	36(16.1)	224(61.7)	9.62
		>5	05(3.6)	101(72.7)	33(23.7)	139(38.3)	-0.008
11	Daily WhatsApp Message Received	≤50	21(9.9)	162(76.4)	29(13.7)	212(58.4)	9.57
		>50	11(7.3)	100(66.2)	40(26.5)	151(41.6)	-0.008
12	Daily WhatsApp Message Sent	≤50	26(10.0)	195(75.0)	39(15.0)	260(71.6)	10.216
		>50	06(5.8)	67(65.1)	30(29.1)	103(28.4)	-0.006
13	Daily Emails Sent	≤5	30(8.5)	257(72.6)	67(18.9)	354(97.5)	0.829
		>5	02(22.2)	05(55.6)	02(22.2)	09(2.5)	-0.66
14	Daily Emails Received	≤5	20(7.8)	188(73.8)	47(18.4)	255(70.2)	1.354
		>5	12(11.1)	74(68.5)	22(20.4)	108(29.8)	-0.508
15	Apps Installed	≤20	17(7.9)	162(75.3)	36(16.8)	215(59.2)	2.651
		>20	15(10.1)	100(67.6)	33(22.3)	148(40.8)	-0.265
16	Daily Frequency of checking Facebook	≤10	27(8.8)	226(73.3)	55(17.9)	308(84.8)	1.82
		>10	5(9.1)	36(65.5)	14(25.4)	55(15.2)	-0.4

TABLE 2 GRADING OF SMARTPHONE DEPENDENCE

Range of Score	Type of Dependence on smartphone	Number of Students (%)
≤20	No Dependence	00(0.0)
21-46	Mild Dependence	32(8.8)
47-73	Moderate	262(72.2)
≥74	Severe Dependence	69(19)

Figures

FIGURE 1 PURPOSE OF SMART PHONE USAGE AMONG MEDICAL STUDENTS (N=363*)

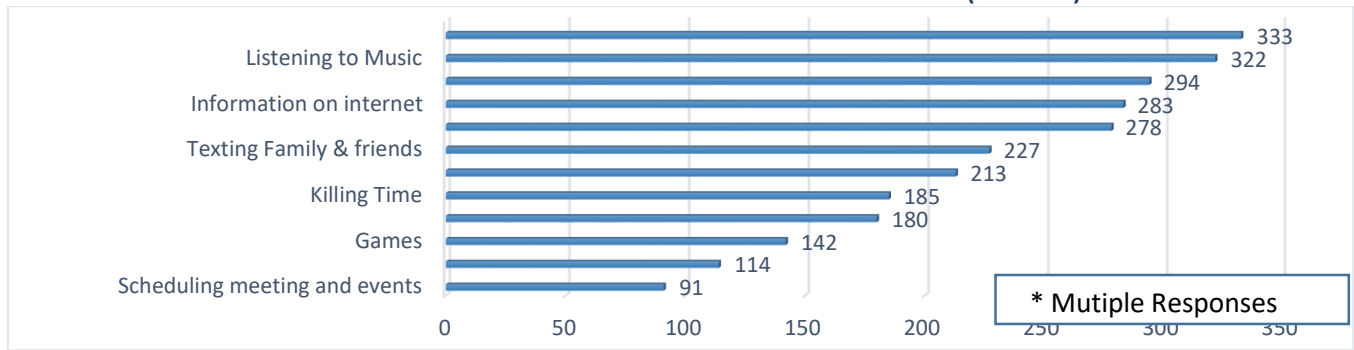


FIGURE 2 PATTERN OF SMART PHONE USAGE AMONG MEDICAL STUDENTS (N=363*)

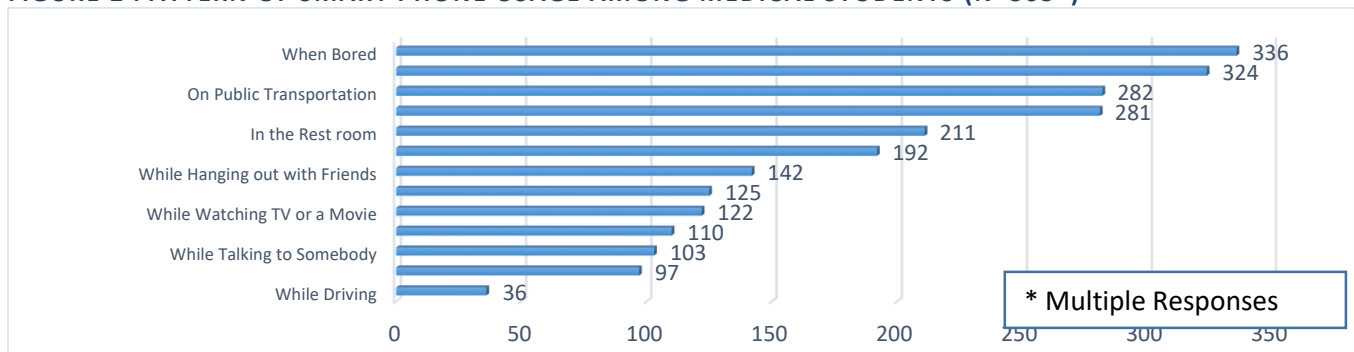


FIGURE 3 PERCEPTION OF INCLINATION TOWARDS SMARTPHONE AMONG MEDICAL UNDERGRADUTES (N=363)

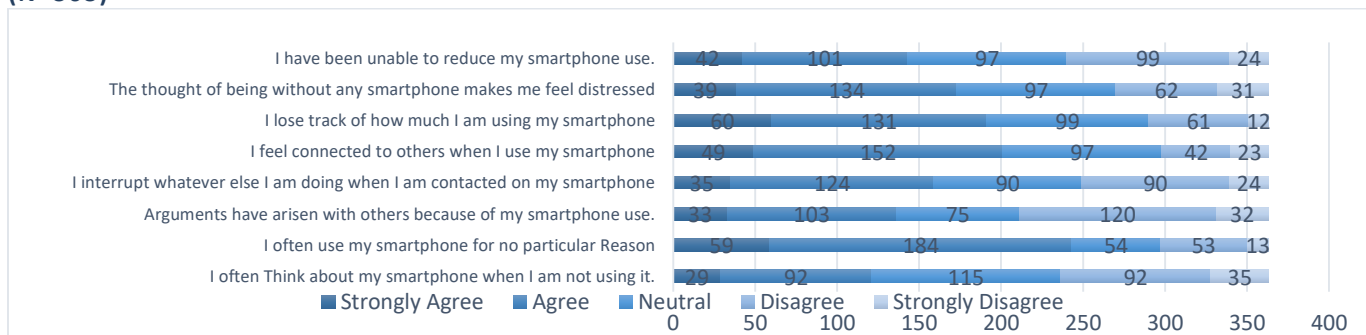


FIGURE 4 DEPENDENCE ON SMARTPHONE AMONG MEDICAL UNDERGRADUTES (N=363)

