RESEARCH ARTICLE

"SMARTPHONE ADDICTION AND ITS HEALTH IMPACTS AMONG B.SC. (HONS.) NURSING STUDENTS"

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Manuscript Info	*Abstract*
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Introduction: Smartphone overuse is a dependence syndrome seen among certain smartphone users. Some smartphone users exhibit problematic behaviors related to smartphone overuse. Smartphone addiction causes certain health impacts and changes in health. Present studywas conducted to assess the smartphone addiction and its health impacts among the B.Sc. (Hons.) Nursing students at All India Institute of Medical Sciences, Jodhpur.

Methodology: Descriptive survey design was used and a total of 148 samples were selected from B.Sc. (Hons.) Nursing students of All India Institute of Medical Sciences, Jodhpurafter considering inclusion and exclusion criteria by total enumeration sampling technique. Data was collected by using self-structured questionnaire on personal variables, Likert scale to assess smartphone addiction and a three-point rating scale on health impacts of smartphone addiction.

Results: On evaluation, 57.43% students were having moderate level of smartphone addiction. Most of the students reported checking their smart phone many times a day even when there was nothing new and checking right after waking up also felt the need to shorten smart phone use time. The commonest health impacts of smart phone addiction were poor concentration,inadequate sleep hours,headacheand tiredness.There was significant association between duration of smart phone use, Self-evaluation of smartphone addiction with the smartphone addiction ($P< 0.05$).

Conclusion: This study concludes that most of the nursing students has moderate levels of smartphone addiction Hence it is crucial to take necessary measures to manage and prevent smartphone addiction.

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Introduction:-

The digital world has grown continuously in the past decade. No aspect of life is untouched by technology. The use of smart phone is a daily task nowadays. Mobile devices are available in a wide variety of types, including laptops, tablets and smart phones.Among all these, the smart phone is the most popular mobile device, it is commonly used, and it is more affordable than a tablet. Smart phones are carried everywhere i.e. in bed, at the restroom, at work, at restaurants, etc. Therefore, smart phone devices are different from other technical devices, as they are extensions of the human being.[i]

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If we see the world view of smartphones, most vulnerable age group is 25-34 years, whose smartphone usage rate is 62%, half of them are android users and nearly 43% uses iPhones. Among the smartphone users 53% are males. Smartphone's addiction is incessantly rising in Indians.One systematic review and meta-analysis revealed that range of smartphone addiction among Indian adolescents is around 39 to 46%, which is an alarming data. In India, smartphone use among the age group of 16-18 years raised by 20% from 2012 to 2014. Smartphone addiction not only caused poor interpersonal skills but also imposed various health risks.[ii]The increasing use of smartphone by Indian youth is becoming a public health concern.[iii] Smartphone addiction also associates with various health problems like sleep disturbances, anxiety and even depression hence students should be carefully monitored[iv]

Smartphones has given rise to newer pathologies like "Nomophobia" (No-Mobile-Phobia), "FOMO" (Fear of Missing Out) – the fear of being without a cell phone, disconnected or off the Internet, "Textaphrenia" and "Ringxiety" – the false sensation of getting a text message or call leading to constantly checking the device, and "Textiety" – the anxiety of receiving and responding immediately to text messages).[v]After the launch of smartphone, internet addiction become so serious that many counties has started de-addiction and rehabilitation for it.[vi]

If the scenario is this, then there will be possible long term health risks linked to overuse of phones. Understanding its' seriousness, we should know the effects of smart phone on the health. If we continue to overuse our smartphones there are possible, long term health risks linked to smartphone addiction. Hence, the present study aimed at exploring smart phone addiction and its health impacts among B.Sc. (Hons.) Nursing students of All India Institute of Medical Sciences, Jodhpur and also the association of smartphone addiction with the selected socio-demographic variables of the students.

Materials And Methods:-
Descriptive survey design was used and a total of 148 studentsof B.Sc. (Hons.) Nursing fromAll India Institute of Medical Sciences, Jodhpur were selected by using total enumeration sampling technique. The researchers collected data in the 3rd week of April, 2017.Students using smartphones and willing to participate in the study were included. Nursing students who were not present at the time of data collection were excluded from the study.

Personal variable data sheet was used to assess the basic information of the participants. A self-structured five point Likert scale of 19 items was used to assess smartphone addiction. To assess the health impacts of smartphone addiction a three-point rating scale was prepared.

Formal approval from institutional ethical committeeandPrincipal College of nursing was obtained. Written informed consent was taken from each participant. Anonymity and confidentiality of the data was maintained throughout the research process.

To ensure content validity of the tool opinions from 6 subject experts were taken. Pilot study was done among 20 4th year students to check for the reliability of the tools. The Karl's Pearson's reliability coefficient for the Likert's scale on test-retest was found to be 0.85 and for rating scale it was 0.97. Pilot study sample was excluded in the main study. Data was analyzed by using Microsoft excel and SPSS version 23.

Results:-
In the present study, students from 3rd, 2ndand 1st year were 39.19%, 31.76% and 29.05% respectively. The monthly family income of most of the students (58.73%) was INR 25000-50000 followed by INR 10000-25000 (19.59%), >50000 (14.20%) and <10000 (7.43%). 66.89%of the students were from urban area and only 33.11% were from rural area.

54.05% of the students reported duration of smart phone use to be <3hours followed by 39.87% students who uses their smartphone for 3-6 hours and only 6.08% reported using their smartphone for more than 6 hours. 100% students reported using their smartphones for social networking and phone calls while most of them also used their smartphone for entertainment and web surfing 81.08% and 63.51% respectively. Majority of the students 90.54% reported no health problem while 9.46% of them where having some kind of health problem. On Self-evaluation of smartphone addiction most of(61.49%) the students reported themselves as non-addicts followed by 13.51% who thought themselves to be addicts of smartphone while 25% were not knowing their status of addiction (Table 1).

Table 1:- Frequency and percentage distribution of personal variablesofstudents N = 148.

Personal Variables	f	%
1. Year of Study		
A. First year	43	29.05
B. Second year	47	31.76
C. Third year	58	39.19
2. Family Monthly Income		
A. <10000	11	7.43
B. 10000-25000	29	19.59
C. 25000-50000	87	58.78
D. >50000	21	14.20
3. Place of Living of Family		
A. Rural	49	33.11
B. Urban	99	66.89
4. Duration of smart phone use		
A. <3hrs	80	54.05
B. 3-6hrs	59	39.87
C. >6hrs	9	6.08
5. Purpose of use (all applicable)		
A. Social networking sites	148	100
B. Phone calls	148	100
C. Entertainment	20	81.08
D. Web suffering	94	63.51
6. Health Problem		
A. Yes	14	9.46
B. No	134	90.54
7. Self-evaluation of Smartphone addiction		
A. Non addiction	91	61.49
B. Addiction	20	13.51
C. Don't know	37	25

Table 2:- Frequency, percentage distribution, Mean, SD and range of levels of smartphone addiction among nursing students N=148.

Levels of perception	Range of scores	Frequency (f)	Mean & SD	Range	Minimum	Maximum
Mild	19-44	56 (37.84%)	49.13±10.76	57	25	82
Moderate	45-69	85 (57.43%)				
Severe	70-95	7 (4.73%)				

Most of students (57.43%) were having moderate level of smartphone addiction, followed by 37.84% who were having mild level of smartphone addiction and only 4.73% students reported severe level of smartphone addiction. The mean smartphone addiction score among students was 49.13 (±10.76) with the minimum and maximum scores of 25 and82 respectively and the range being 57 (Table 2).

Table 3:- Item wise ranking of scores of Smartphone addiction among students N=148.

Item no.	Items	Total score	Mean	Mean %	Ranking
1	I never miss planned work due to smart phone use.	370	2.5	50	12
2	I feel difficulty to concentrate in class due to smart phone use.	335	2.26	45.27	17
3	I do not check my smart phone right after waking up.	441	2.97	59.59	3
4	I won't be able to live without my smart phone.	411	2.77	55.54	5
5	I never keep my smart phone under my pillow while sleeping.	419	2.83	56.62	4

6	Having my smart phone in my mind even when I am not using it.	342	2.31	46.21	16
7	I can't give up using my smart phone even when my daily life is already greatly affected by it.	383	2.58	51.75	11
8	I don't use my smart phone longer than I had intended.	397	2.68	53.64	8
9	Constantly checking my smart phone so as not to miss conversations between other people on social networking sites.	392	2.64	52.97	9
10	The people around me tell me that I use my smart phone too much.	345	2.33	46.62	15
11	I feel the urge to use my smart phone again right after I stopped using it.	386	2.6	52.16	10
12	I tried many times to shorten my smart phone use time, but failed all the times	364	2.45	49.18	14
13	I feel panic when I forget to bring my smart phone with me.	409	2.76	55.27	6
14	I check my smart phone many times a day even there is nothing new.	466	3.14	62.97	1
15	Not being able to use my smart phone would be as painful as losing a friend	400	2.7	54.05	7
16	My life would be empty without my smart phone.	368	2.48	49.72	13
17	I skip my meals due to use of smart phone.	229	1.54	30.94	18
18	I always think that I should shorten my smart phone use time	464	3.13	62.7	2
19	I take my smart phone to the toilet.	345	2.33	46.62	15

The top three items showing smartphone addiction are 'I check my smart phone many times a day even there is nothing new', 'I always think that I should shorten my smart phone use time' and 'I do not check my smart phone right after waking up' respectively (Table 3).

Table 4:- Mean, range and standard deviation of health impacts of smartphone addiction among students N=148.

Range	Minimum	Maximum	Mean	Standard Deviation
25	20	45	28.05	±4.67

The mean score of health impacts of smartphone addiction among nursing students was 28.05 (±4.67) while the minimum score was 20 and maximum was 45 with the range of 25 (Table 4).

Table 5:- Item wise ranking of health impact scores among students N=148.

S. No.	Items	Total score	Mean	Mean %	Ranking
1	Blurred vision	200	1.35	45.04	10
2	Watery eyes	221	1.49	49.77	5
3	Dryness in eye	186	1.26	41.89	14
4	Itching and burning sensation in the eye	220	1.49	49.55	6
5	Eye pain	222	1.5	50	4
6	Headache	233	1.57	52.48	2
7	Neck pain	196	1.32	44.14	12
8	Back pain	186	1.26	41.89	14
9	Pain in wrist	188	1.27	42.34	13
10	Difficulty in falling asleep	217	1.47	48.87	7
11	Restlessness	197	1.33	44.37	11
12	Irritation	205	1.39	46.17	9
13	Aggressiveness	186	1.26	41.89	14
14	Ringing sensation in ear	182	1.23	40.99	15
15	Regret/guilt	206	1.39	46.4	8
16	Anxiety	197	1.33	44.37	11
17	Stress	200	1.35	45.04	10

18	Tired (mental fatigue)	226	1.53	50.9	3
19	Poor concentration	242	1.64	54.5	1
20	Inadequate sleep hours	242	1.64	54.5	1

Inadequate sleep hours, poor concentration, headache, tiredness (mental fatigue) were among the three main health impacts of smartphone addiction among the nursing students (Table 5).

Table 6:- Chi square values showing association of smart phone addiction with selected personal variables N=148.

S.No.	Personal variables	Levels of Smartphone addiction						df	X² (Fisher's exact test)	P value
		Mild		Moderate		Severe				
		f	%	f	%	f	%			
1	**Year of study**									
	A. First year	16	28.57	27	31.76	0	0			
	B. Second year	22	39.28	23	27.06	2	28.57	4	6.52ᴺˢ	0.17
	C. Third year	18	32.14	35	41.18	5	71.47			
2	**Family Monthly Income**									
	A. <10000	7	12.5	4	4.71	0	0			
	B. 10000-25000	11	19.64	17	20	1	14.29	6	5ᴺˢ	0.49
	C. 25000-50000	32	57.14	49	57.65	6	85.71			
	D. >50000	6	10.71	15	17.65	0	0			
3	**Place of Living of Family**									
	A. Rural	20	35.71	29	34.12	0	0	2	3.63ᴺˢ	0.17
	B. Urban	36	64.29	56	65.88	7	100			
4	**Duration of smart phone use**									
	A. <3hrs	41	73.21	38	44.7	1	14.29			
	B. 3-6hrs	14	25	42	49.41	3	42.86	4	21.86*	0
	C. >6hrs	1	1.79	5	5.88	3	42.86			
5	**Health Problems**									
	A. Yes	4	7.14	8	9.41	2	28.57	2	3.34ᴺˢ#	0.17
	B. No	52	92.86	77	90.59	5	71.47			
6	**Self-evaluation of smartphone addiction**									
	A. Non addiction	45	80.36	45	52.94	1	14.29			
	B. Addiction	2	3.57	15	17.65	3	42.86	4	20.08*	0
	C. Don't know	9	16.07	25	29.41	3	42.86			

NS- Not significant (p>0.05), *- significant (p<0.05), #- Chi-Square test was used

There was no significant association between the personal variables of nursing students and smartphone addiction. But duration of smartphone use and self-evaluation of smartphone addiction were found to be significantly associated with smartphone addiction(Table 6).

Discussion:-
Many researches has been conducted in national and international arena to determine the levels of smartphone addiction and its health impacts among students.The present study was done among B.Sc. (Hons.) nursing students. Findings of the study reveals that most of the students (54.05%) use their smart phone for <3hours but a significant number of students (39.87%) use their smartphone for 3-6 hours.100% students reported using their smartphones for social networking and phone calls while most of them also used their smartphone for entertainment and web surfing 81.08% and 63.51% respectively.

Kahyaoglu Sut H et al. (2016) in their study on health sciences students reported that 42% students used their smartphones for <3 hours followed by 42%for 4-6 hour, 11.7% for 7-9 hour and even 5.4% for >9 hour. Most of them (56.8%) mainly used it for social networking.[vii]Another study on medical students of south India found that 37.1% of the students used their smartphones for 1-3 hours followed by 32.5% for <1 hour and 30.4% for >3hour. In this study as well, 74.2% of the students mainly used social networking apps.[viii]Ghosh A et al.(2016)in their study

also found that average daily smartphone use among MBBS students was 6 hours and mainly for social networking.[ix]

In this study, most of students (57.43%) were moderatelyaddicted to their smartphones, followed by mild and severe levels of smartphone addiction, which was 37.84% and 4.73% respectively. Khosla P et al. (2017) also had similar findings in their study among B.Sc. nursing students.[x]Ahmed et al. (2011) who explored the pattern of mobile phone use among university students to delineate the extent of addictive behavior in its usage also found that very few students (4.8-18.5%) exhibited extreme addictive behavior.[xi]

In the present study the maximum smartphone addictive characteristics were:'I check my smart phone many times a day even there is nothing new' 'I always think that I should shorten my smart phone use time' and 'I do not check my smart phone right after waking up' which was consistent with the what found by Davey &Davey (2014)who described the characteristic features of emerging smartphone abuse to addiction in Indian adolescents to be constantly preoccupied with the smartphone all day, thinking to cut-off but an inability to restrict smartphone use despite of knowing harmful effects, sleeping with the phone nearby and repeatedly waking up to check messages and status updates.**Error! Bookmark not defined.**

In the present study, there was no significant relationship with the monthly family income and the levels of smartphone addiction which was inconsistent with the study findings by Zulkefly (2009). Their results indicated that family income highly correlated with the duration of phone use and monthly expenditure. They concluded that students from higher income families spent more time and money on their mobile phones.[xii]

In this study, the main health impacts of smartphone addiction among the nursing students were inadequate sleep hours, poor concentration, headache, tiredness (mental fatigue) similar findings were reported by other studies.[vii, ix,] **Error! Bookmark not defined.**[, xiii]

Limitations, Delimitations And Recommendations:-
This study was delimited to the nursing students of selected institute of Jodhpur only whereby the researchers collected data for a period of one week. No significant limitations were faced by the researchers in carrying out the study. As this is a single set-up study, this limits the generalizability of this research and it can be replicated on a larger sample. Further studies can be carried out to explore various behavioral, psychological or academic impacts of smartphone or mobile phone addiction and how it can be managed.

Conclusion:-
This study concludes that most of the nursing students has moderate levels of smartphone addiction which is directly related to their duration of smartphone use as well as self-evaluation of smartphone addiction. Hence it is crucial to take necessary measures to manage and prevent smartphone addiction.

Acknowledgement:-

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