



ASSESSMENT OF ONLINE ADDICTION AND ITS EFFECTS ON PSYCHOSOCIAL AND BEHAVIORAL ASPECTS AMONGST ADOLESCENTS

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ABSTRACT **Background:** Novel technological advancements have paved way for instant access to internet facilities amongst adolescents. However the knowledge about 'pathological internet overuse' and 'internet addiction' remains underdiagnosed though the problem is widely prevalent to a greater extent in developing countries. **Objectives:** (i) To find out the duration of Smartphone and internet usage and (ii) To assess the degree of internet/android mobile addiction and its associated mental stress due to prolonged internet usage, amongst the study group **Method:** A descriptive study, with 100 adolescent age(both gender) adolescents and 30 faculty from same college were included. Validated and widely used Dr. Kimberly young's IAT was used to assess the degree of internet addiction, with self-designed questionnaire to assess the duration of smartphone/internet usage and its influence on psycho-social aspects. Data were analyzed using SPSS 24.0. **Results:** The adolescents exposed to internet for only 2years have shown increased Internet usage than those who use internet over longer time. 38% of the adolescents reported that they were consistent on-line users, 27% expressed their non-regret-fullness for being on-line inspite of their having disturbed daily-routine, 21% of them felt compelled to play social-networking games that require time consumption, 27% expressed the feeling of jealousy and disruption with inter-personal relationship, whereas 36% stated that the problems of their inter-personal relationship were aggravated mainly due to being-online, 40 % showed that they were unable to have a normal life without being online. **Conclusion:** Comparing the two generations, our study showed that current adolescents suffer more from the effects of internet addiction than previous generations which substantiates that easy access to advanced technologies has huge impact on the psycho-social/behavioral aspects of adolescents, getting them addicted to it. Parents must be aware about this and exercise timely intervention in taking care of their children's mental health.

KEYWORDS :

INTRODUCTION:

20th century has marked the age of Internet usage. With recent technological advancements, access to internet has become quiet easier. Fascinating world of internet has drawn attention of many, especially adolescents. Here lies the risk of adolescents who can change from 'Over-users' to 'Internet addicts'. It has become problematic as it makes the adolescents and adult's inability to control their internet use gives a marked distress and behavioral changes. Adolescents show disturbance in inter-personal relationship, neglect of academic work, physical inactivity and social isolation, loss of sleep as described in the psychological literature as 'Internet addiction' and 'pathological internet', based on the DSM-IV definition for substance dependence and pathological gambling, respectively. Studies report depressive symptoms and psychotic behaviors among internet over-users. There is an urgent need to assess their psychological changes along with Internet Addiction Test. Studies should be done taking in account the duration of internet use and changes in social behavior and life style of the individual. This study is ought to replicate and expand Young's survey to assess the psychosomatic changes due to internet addiction also intend to provide extra information about the duration of internet usage and social behavior.

The Internet addiction test was designed in such a way that it clearly questions the social isolation, neglect behavior, difficulty in controlling the impulsivity and the mental deprivation (Young 1996, Young 1996a, Young 1996b). The intention and an increased tendency to be online and forgetting the time spent daily depicts the picture of social isolation. Because of this the adolescents have difficulty to have direct communication and in developing inter-personal relationships. This habit of being online makes them bunk their classes, day-time sleepiness, inability to continue their work and other responsibilities yet they do not regret for being in loss in daily life and this is well defined as neglect behavior or avoidance. Individuals who come under this category feels delighted about being online and they only think about it and not worry about their self. Over a long period, this becomes an addiction where the individuals find it difficult to control their impulsivity and they get depressed when withdrawn from online. Under such circumstance any restriction of their using internet will make them angry, irritable and tensed feeling which are innate properties of a deprived mind.

How far the reliability of IAT is not yet known. Still it has been used as a valid test that predicts easily the psychometric effects due to online addiction. As the behavior and attitude of adolescents is not consistent, subjected to variation every day. The impact of change in behavior might be due to peer pressure, environmental influence, and exposure to technologies, mental comfort and stress on academics. Though these changes can't be quantitatively measured, we intend to find out the current behavioral change in each adolescent influenced by internet, quantitatively using IAT.

REVIEW OF LITERATURE:

Over the years research has been going on to categorize the different dimensions of internet addiction. Many questionnaires has been set to identify and diagnose the phenomenon of internet addiction and distinguish those have behavioral disorders. In 1995 Goldberg gave a new concept for the internet addiction by designing a set of questions which portrays the various psychological aspects of addiction due to online. The Goldberg's IAD scale contains seven diagnostic criteria which describe Internet addiction from both the abuse (failure in role and social problems) and dependence (tolerance, withdrawal symptoms, more than intended, unsuccessful cut-backs, great deal of time) perspectives. A content similar to this scale was proposed in 1998 by Griffiths with proposed six components salience, mood modification, tolerance, withdrawal symptoms, conflict, and relapse – for identifying Internet addicts.

So many questionnaire models were developed with series of lists of symptoms that asks about internet usage. Some examples are Young's (1998b) Diagnostic Questionnaire (YDQ), Brenner's (1997) Internet-Related Addictive Behavior Inventory (IRABI), Scherer's (1997) clinical symptoms of Internet dependency, Morahan-Martin and Schumacker's (2000) Pathological Internet Use (PIU) scale. These subscales depict the alterations in the behavior like anger, repression, affect in academic performance, problems relating to inter-personal issues, tolerance and withdrawal symptoms, alterations in the mood caused due to internet overuse. The degree of internet addiction has been rated and qualitatively measured by likert scale by latest set of tools instead of only comparing the online addicts from normal users. For example, Young (1998a) expanded the original YDQ and developed another measurement called Internet Addiction Test (IAT).

The Internet Addiction Test scale consists of 20 items which assess the severity of negative consequences due to over-usage of Internet. This questionnaire clearly depicts all details concerning an individual's online habits, his/her opinion and thinking about the Internet as well as the problems faced in daily life. For each item, a graded response (1 is "not at all" to 5 is "always") was assigned and the higher scores of 80-100 represents higher level of Internet addiction.

Current years it's a great demand to insist and emphasize that the internet addiction has to be measured as a multifaceted construct. For example, the scale designed by Lin and Tsai et al (2001), the Pathological Internet Use Scale, was used to measure Internet addiction from four aspects for Taiwanese high school adolescents (PIUST). They were assessing the compulsive use, tolerance and withdrawal, problems related to family issues, academic; interpersonal and financial problems. Also, Cheng in 2003 devised the Chinese Internet Addiction Scale (CIAS) which consists of five subscales covering compulsive use, withdrawal, tolerance, time management problem, together with interpersonal and health problems. Moreover, the Generalized Problematic Internet Use Scale (GPIUS) developed by Caplan (2002) has said about seven dimensions like mood alteration, withdrawal, personal benefits, impulsiveness, excessive time spent online, negative behaviors and inability to control Internet use. Davis's (2001) had questionnaire that has cognitive-behavioral approach to problematic Internet use.

As noted, there are disadvantages on various factors of Young's IAT. One study that we know was carried out by Widyanto and McMurrin (2004). They recruited participants through the Internet to fill in a Web-based questionnaire and performed exploratory factor analysis to test the psychometric properties of the IAT scale. Based on 86 valid responses (29 males and 57 females), Widyanto and McMurrin (2004) extracted six factors – salience, excess use, neglecting work, anticipation, lack of self-control, and neglecting social life – from the 20-item IAT and found that these factors had moderate to good internal consistency. Since the sample size of this study is quite small, further validation of IAT should contribute to the study of internet addiction. Our attempt to do that is described in the following sections.

Many studies have been done on Internet use and Internet addiction. Egger and Rautenberg devised a questionnaire to assess usage, feelings, and experiences of internet use. Their results were, the subjects spent significantly more time on the Internet, and their usage was increasing. They were strongly driven to use internet, felt more anxious if use was restricted, and felt more guilty or depressed when they spent a long time on internet. Brenner had undertaken Internet usage survey. A 32-item questionnaire was used for the survey. He found that most common problems faced by the user were problems regarding time management and found that older users experienced lesser problems than the spend as much time online as younger users. Petrie and Gunn conducted online study that gave information about the participant's internet use, attitude, and believes. Those who consider themselves as addicts were more likely to be depressed and introverted.

Young(2004) likened excessive Internet use most closely to pathological gambling, a disorder of impulse control in DSM IV, and adapted the DSM-IV criteria to relate to Internet use in her Internet Addiction Test (IAT). The IAT has high validity, but not has been subjected to rigorous psychometric investigation. Young's results showed that majority of those addicted to the internet use were relatively new users. The collected data using IAT will allow exploration of whether new users are more addicted than more experienced users.

AIM:

1. To find out the duration of Smartphone and internet usage amongst the study group
2. To assess the degree of addiction and its associated mental stress due to prolonged internet usage amongst the study group.

MATERIALS AND METHODS:

STUDY DESIGN:

This is a cross-sectional study and this study was started after obtaining Institutional ethics clearance, A statistically adjusted sample size of 130 participants from the same college were included in this study. This study was conducted in the research laboratory, Department of Physiology, Stanley Medical College, Chennai. We are intending to provide a descriptive data regarding the degree of mental

stress, behavioral aspects and psychological impact among the adolescents who were using Smartphones and Internet.

SAMPLE SIZE:

Among the 130 participants, 100 adolescents of age group 17-20 years, both gender were selected and 30 participants who were faculty of various departments in the same institution were selected, to compare the impact of internet over-use. For the selection of the faculty group, the age of 30-50 years and those who were using android mobile phones were considered. The participants who were clinically normal healthy individuals were included in this study. Those participants with any psychiatric illness, chronic illness, individuals taking drugs, any neurological disorders were excluded from the study.

PROCEDURE:

After obtaining willingness of the participant and written informed consent, a clear and proper instruction was given to all the participants. Adequate time and rest was assured for their full co-operation in this study. After which all the participants were asked to fill two sets of questionnaires, validated Young's Internet Addiction Test and a Self-made Questionnaire, with a duration of 10-15 minutes for each questionnaire. It was priorly informed to all the participants that the time spent online for non-academic purpose alone should be considered while answering both the questionnaires.

Young's Internet Addiction Test(IAT):

It is a 20- item Questionnaire in which the participants respond to each question by rating it from 0-5, following the five Point Likert-scales. This test measures the extent of participant's involvement in the internet on their daily routine and classifies their degree of addictive behavior based on their social life, feelings, sleep pattern, mental comfort and productivity. To assess the level of addiction, each question in this test rated as 0=Not Applicable, 1=rarely, 2=occasionally, 3=frequently, 4=Often, 5=Always. The minimum score is 20 and the maximum score is 100. The higher the scores, the greater is the risk of addiction to internet use. Score of 20-49 suggests mild addiction, an average on-line user who has control over his usage. Score of 50-79 suggests moderate addiction signifies frequent problems due to internet usage. Score of 80-100 suggests severe addiction, which means their quality of life is affected.

Self-made Questionnaire:

It consists of 14 Questions, out of which questions 1-2 give information on duration of years of smartphone usage and hourly on-line exposure per day. Remaining 3-14 questions were Yes or No type, which predicts the mental behaviors like anger, guilt, obsession, regret and jealousy that were expressed because of the habit of being online. It also shows the effect of social networking on Inter-personal relationships and the inability to sustain normal life without being online.

STATISTICAL ANALYSIS:

All responses obtained from the participants were entered into a standard statistical database and analyzed using SPSS 24.0. The variables were expressed in percentage and Chi-square test was used to compare the scores and the IAT. Mann-Whitney's test to compare the addiction scores between the faculty group and the adolescents group.

RESULTS:

Our study helped use in identifying the existence of psychological disturbance, impact on personal and social life caused by internet use for a longer time amongst the adolescent group. From the 14-item Self-made questionnaire used for this study, the following results were observed.

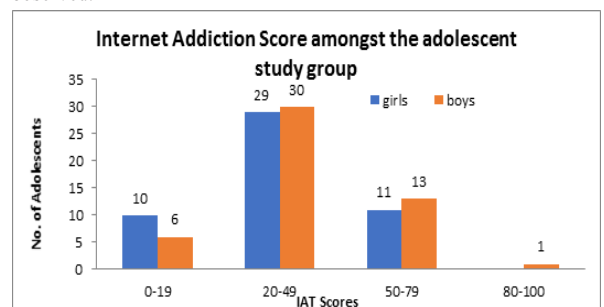


Figure.1: Internet addiction score amongst the adolescent study group:

Figure.I shows Internet Addiction Scores obtained amongst the adolescent group of both gender. (IAT- Young's Internet Addiction Test). The score not above 20 by only 16% of adolescent study group indicates normal level of internet usage, whereas 59% showed mild level addition(score 20-49), 24% showed moderate level addition and 1% showed severe addition, though the scoring expressed by both gender was almost equal and the results were significant (p<0.04)

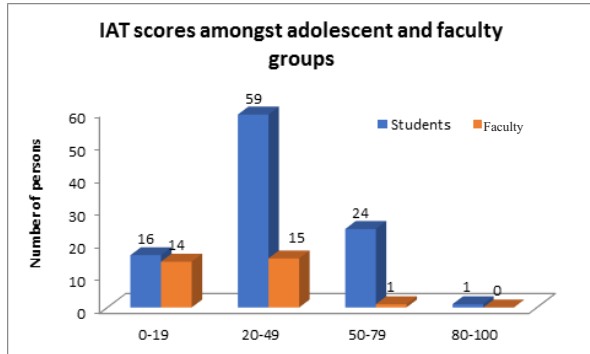


Figure.II: Comparison of Internet addiction test scores amongst adolescent group and faculty group:

Fig.II shows the comparison of IAT (Internet addiction test) scores amongst the adolescent group and faculty group. While concentrating on the graph, about 24% adolescents expressed score(50-79), the moderate level of addiction whereas its only 1% by faculty group. Similarly the difference for the mild level of addiction, henceforth it clearly depicts that the adolescents showed higher level of addiction than that of faculty, as per all levels of IAT scoring (p<0.05).

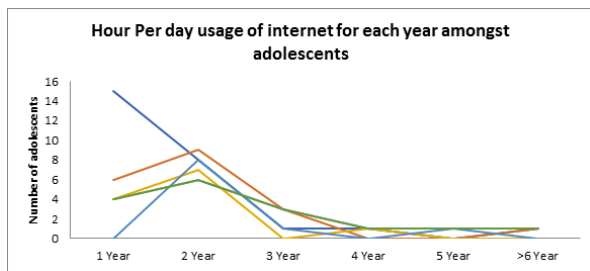


Figure.III: Hours Per day usage of Internet for each year amongst adolescents:

Fig.III shows the hours of internet usage per day for each year amongst the adolescents for over a period of more than 6years. From this, we can find that the number of persons with increased hours of usage, decrease as years proceed, provided with increased Smartphone/net users around second year of usage. It also shows that, addiction over smartphone/net is more around two years of usage and falls as years proceed afterwards. The actual reason couldn't be explained clearly, but due to the loss of interest, newer attraction to technology, busy schedule with work or studies were quoted to be the reasons by the study group (p<0.05).

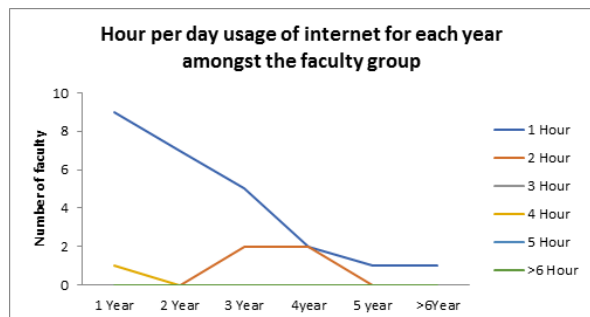


Figure.IV: Hours per day usage of internet for each year amongst the faculty group:

Fig.IV shows the hours per day of internet usage for each year amongst the faculty group. Similar pattern to fig.III was obtained except that it is limited by lesser sample size.

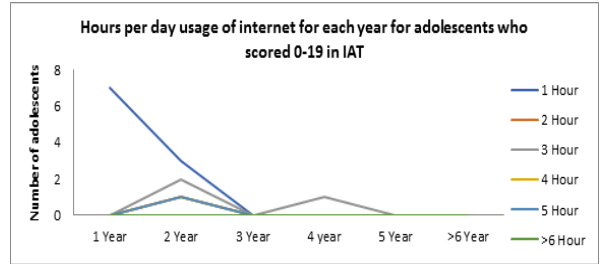


Figure.V: Hours per day usage of internet for each year amongst adolescents under normal internal usage (scored 0-19 in IAT)

Fig.V shows the hours per day usage of internet for each year amongst adolescents who scored 0-19 in IAT.

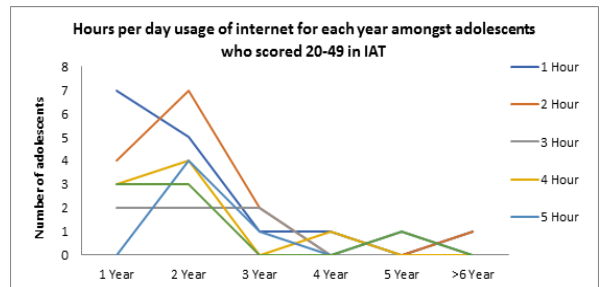


Figure.VI: Hours per day usage of internet for each year amongst adolescents under mild level of addiction (scored 20-49 in IAT)

Fig.VI shows the hours per day usage of internet for each year amongst adolescents who scored 20-49 in IAT.

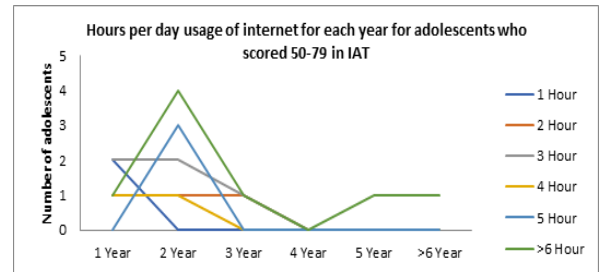


Figure.VII: Hours per day usage of internet for each year amongst adolescents under moderate level of addiction (scored 50-79 in IAT)

Fig.VII shows the hours per day usage of internet for each year amongst adolescents who scored 50-79 in IAT.

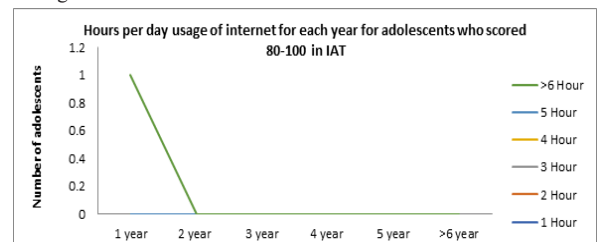


Figure.VIII: Hours per day usage of internet for each year amongst adolescents under severe level of addiction (scored 80-100 in IAT)

Fig.VIII shows the hours per day usage of internet for each year amongst adolescents who scored 80-100 in IAT.

In our results noted from fig.V-VIII, as per IAT classified for levels of addiction such as 0-19 as normal; 20-49 as mild; 50-79 as moderate; 80-100 as severe showed a similar pattern with that of fig.III, where we can find that the number of persons with increased hours of usage, decrease as years proceed, with increased Smartphone/net users around second year of usage. Hence these patterns shows that, addiction over smartphone /net is more around two years of usage and falls as years proceed, irrespective of degree of addiction (p<0.05).

Table.1: Analysis of results obtained from the Self-made questionnaire between the adolescent and the faculty study group

Self-made questionnaire	Adolescents		Faculty	
	Yes%	No %	Yes %	No %
Q3: Do you constantly show up online?	38	62	7	93
Q4: Have you ever lost tract of time being online and regretted that you've wasted your precious time?	73	27	10	90
Q5: Do you feel guilty for spending most of your time being online than spending time with family/friends?	61	39	13	87
Q6: Do you get tensed if you are deprived of your rights of being online by your family members?	39	61	7	93
Q7: Do you get irritated when you are advised not to use your mobile when it is in charging process when you are online?	43	57	7	93
Q8: Do you have the habit of being online and starring at your mobile while you walk/cross road?	33	67	3	97
Q9: Do you get tensed if you are advised not to use online gadgets when you are using it while eating?	27	73	0	100
Q10: Do you have the habit of sneaking your smartphone while lecture is on?	50	50	0	100
Q11: Have you ever felt you are compelled to play social networking games that require constant supervision/time consumption?	21	79	0	100
Q12: Do online jealousies and disputes disrupt your inter-personal relation-ship?	27	73	3	97
Q13: Do you feel social networking has impaired your inter-personal relation-ship?	36	64	20	80
Q-14: Do you think you can sustain without social networking?	40	60	53	47

Table.1 shows the comparison of the response of the adolescent group and the faculty group, to each of the questions in the Self-made questionnaire. Table.2 depicts the statistical analysis of both the questionnaires amongst the study group. The inference from both the table clearly depicts that those adolescents of this generation suffer from effects of Internet addiction more than that of faculty(elders), with a decade of generation gap.

Table.2: Chi-Square Test analysis between IAT vs self-made questionnaire amongst the study group.

SELF-MADE QUESTIONNAIRE	adolescents	Faculty
Q3: Do you constantly show up online?	*20.1(0.000)	2.143 (0.3)
Q4: Have you ever lost tract of time being online and regretted that you've wasted your precious time?	*1.16(0.03)	0.582 (0.7)
Q5: Do you feel guilty for spending most of your time being online than spending time with family/friends?	*4.82(0.01)	*6.964 (0.01)
Q6: Do you get tensed if you are deprived of your rights of being online by your family members?	*11.2(0.01)	2.143 (0.3)
Q7: Do you get irritated when you are advised not to use your mobile when it is in charging process when you are online?	*11.13(0.01)	2.143 (0.3)
Q8: Do you have the habit of being online and starring at your mobile while you walk/cross road?	*8.9(0.03)	1.03 (0.5)
Q9: Do you get tensed if you are advised not to use online gadgets when you are using it while eating?	*12.6 (0.006)	(0)
Q10: Do you have the habit of sneaking your smartphone while lecture is on?	2.8(0.4)	(0)
Q11: Have you ever felt you are compelled to play social networking games that require constant supervision/time consumption?	6.8(0.07)	(0)

Q12: Do online jealousies and disputes disrupt your inter-personal relation-ship?	*16.5(0.001)	1.182 (0.5)
Q13: Do you feel social networking has impaired your inter-personal relation-ship?	*9.13(0.02)	4.286 (0.1)
Q-14: Do you think you can sustain without social networking?	4.78(0.1)	0.522 (0.7)

*p values expressed in the bracket

The significant conclusive results obtained from table.1 and table 2 were 28% of the adolescent study group reported that they were consistent on-line users and about 27% of the adolescent study groups express their non-regret-fulness for being on-line inspite of their having disturbed daily-life. Also 21% of adolescents felt compelled to play social networking games that require time consumption. 27% of the adolescent study group expressed the feeling of jealousy and disruption with inter-personal relation-ship. 36% of adolescents responded 'yes' to the question Q11, stating that the problems of their inter-personal relationship was aggravated mainly due to online. 40 % of the adolescent study group showed that they are unable to have a normal life without being online.

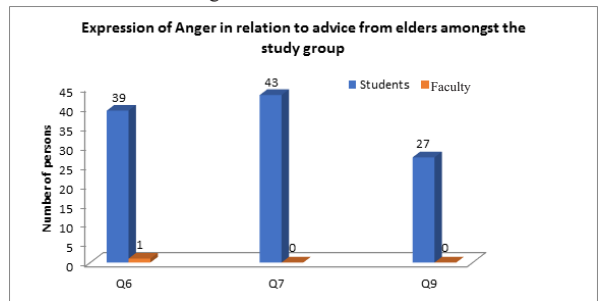


Figure.IX: Comparing the expression of Anger in relation to advice from elders amongst the study group

Fig.IX shows the participant's response to questions related to advice and the anger they felt and showed towards those who advised. As we can see from the graph, Impact on adolescents is significantly higher than that of faculty. Corresponding questions Q6, Q7 and Q9 are mentioned in table. 1

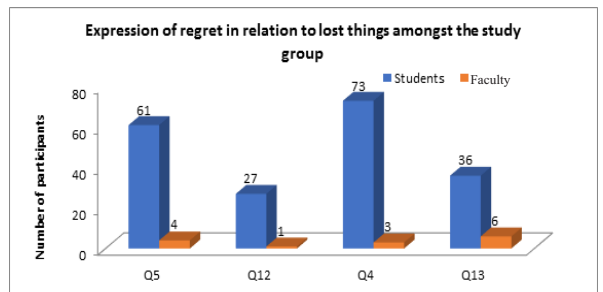


Figure.X: Comparing the expression of regret in relation to lost things amongst the study group

Fig.X shows the participant's response to questions about how they've regret to circumstances/ situations regarding their loss of personal space and faced-troubles due to internet over-usage. As we can see from the graph, adolescents score is significantly higher than that of faculty score. Corresponding questions Q5, Q12, Q4, and Q13 were mentioned in table. 1.

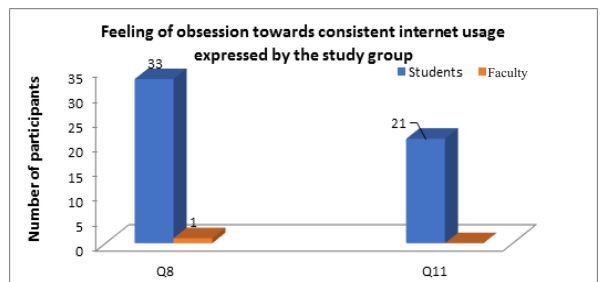


Figure.XI: Comparing the feeling of obsession towards consistent internet usage expressed by the study group

Fig.XI shows the participant's response to questions on how extensive usage of smartphone/Internet is causing obsessing usage. As we can see from the graph, adolescents score were significantly higher than that of faculty score. Corresponding questions Q8, Q11 were mentioned in Table.1.

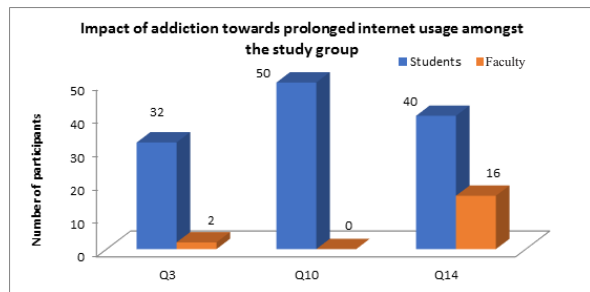


Figure.XII: Comparing the intense impact of prolonged internet usage amongst the study group

Fig.XII shows the response of participant's to questions which describe the impact of prolonged smartphone/Internet usage. As we can see from the graph, adolescents score were significantly higher than that of faculty score. Corresponding questions Q3, Q10, and Q14 were mentioned in Table.1.

DISCUSSION:

Our study mainly explains the prevalence of internet usage and its psychological effects on adolescents. In our results we found a significant discrepancy that females were being online constantly and they express more social isolation compared to the males. In contrary to Busch 1995 ;shouton 1991) who suggested males predominantly use internet and they are more comfortable being online. Like (weissman&Payle 1974) studies that reported females express their emotional disputes more freely than males might be influential to our study.

Similarly compared to males, more number of females reported getting tensed if warned by their family members and they also regret for wasting a lots of time online. Yet they have expressed inspite of lost time, they would like to continue online. This clearly states their neglect behavior. Unexpected significant results like the sneaking of phone during lecture classes was more with females than that of males implies the high emotional impact is earlier for female adolescents. Our study also shows an equal percentage by both sexes was expressed for the habit of using mobile while crossing road or walking depicts their inability to control even at the most crucial times. The males express comfortability over the phone via chatting than talking to the same person directly. And in our study the males showed greater difficulty in facing inter-personal relationships than females which implies their emotional instability is bound to various factors of online addiction. Also males express more depression and difficulty in leading a day to day life without online. The reason underlying such obsession over online, impulse-control difficulty and mental stress have to be dealt further.

Despite the negative results 61% of individuals were more comfortable and do not show the feel of guilt or tensed for being online, this clearly explains that those adolescents who use online do not know that they are slowly getting addicted to it. The 40% of adolescents who reported an inability to sustain explains that their time is pre-occupied because of being online and very rarely they regret it.

The term Pathological Internet use was identified and studied as an issue causing poor performance in academics and deranged personal relationship by an on-line survey conducted by University of Texas at Austin (Scherer, 1997) and Bryant College (Morahan-Martin, 1997). Considering the internet addiction as an obsession among online over-users and as the treatment implications for this is not clear, this may create a potential threat to the dependent population. To minimize this disorder, protocol must be developed in order to monitor the psychological features due to over-usage of Internet. A novel protocol should be developed where the important data of psycho-somatic illness mentioned in this study can be utilized. This study can also be done further by analyzing more on the prevalence, incidence and the impact of negative behavior in many other addictive behaviors (e.g. Drug addicts) or psychiatric disorders.

CONCLUSION:

Our results have shown the current existence of internet addiction among adolescents by comparing it with the previous generation group. Its potential significance has been shown by some symptoms among those who scored high on the IAT. The substantial increase in internet use suggests there exists changes in personal behavior that affects self, family, work and surroundings and this may be a better predictor of an increasingly addictive behavior. As we might have missed to evaluate the extent of problems in-depth because of the inadequate samples and limited number of symptoms that has been verified, further research has to be done in this work in order to the visualize the impact of internet addiction and its severity on personal life.

In this current society of growing technologies, an effective means to identify and diagnose those who are at risk for addiction and those who are already suffering from this problematic behavior due to online addiction has to be renowned. Adults have to be aware of the knowledge about pathological internet use and exercise timely intervention in taking care of their child's mental health. More studies have to be made across the country. Early identification and counselling of pathological users should be given a thought.

SUMMARY:

Currently there is widespread prevalence of internet use mostly among the teenage groups due to the advanced technological benefits. Adolescents who overuse internet fall prey to Internet addiction without their knowledge, especially in developing countries, like India. No studies were found that utilize standardized questionnaires taking in account the duration of internet usage and psychological changes. Our study helps in identifying the psychological disturbance and somatic illness caused by internet use for a longer time. 100 adolescents were recruited to complete Young's Internet Addiction Test and a Self-made questionnaire which has questions about the duration of internet usage and psychological changes due to Internet addiction. Data was collected and evaluated statistically. We were able to get results which significantly proved that the adolescents new to internet for about 2 years of usage have shown increased Internet usage than Adolescents who use internet over long period of time. 38% of the adolescent study group reported that they were consistent on-line users. About 27% of the adolescent study groups express their non-regret-fulness for being on-line inspite of their having disturbed daily-life. 21% of adolescents felt compelled to play social networking games that require time consumption.

27% of the adolescent study group expressed the feeling of jealousy and disruption with inter-personal relation-ship. 36% of adolescent study group stated that the problems of their inter-personal relationship were aggravated mainly due to online. 40 % of the adolescent study group showed that they are unable to have a normal life without being online. 30 faculty members from various departments were also recruited to complete Young's Internet Addiction Test and Self-made questionnaire. The results obtained from comparing the two generations with a decade years gap, has also significantly proven that adolescents of current generation suffer more from the effects of internet addiction, than previous generations which substantiates that recent advanced technologies and easy access to internet among Adolescents causes tendency of getting addicted to internet.

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