Chapter II

Review of Related Literature
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2.1 Introduction

Reviewing related literature in the researcher’s relevant field was very much important in educational research. For any worthwhile study in any field of knowledge, the researcher needs an adequate familiarity with the work, which has been already done in the area of their choice. In review of related studies, the researcher attempts to know what others had revealed out in his/her research area. This helps to determine and exactly locate the study in its right perspective.

2.2 Need for Related studies

The review of related literature is the foundation stone for the construction of research project. It serves a lot of purpose. It generally proceeds research process and contribute many useful information to any part of research study. Apart from offering conducive contest for research study, the review is also useful in the following ways.

1. Identifying the research problem and hypotheses
2. Informing the researchers of what has already been in the area
3. Providing possible research design and methodological procedures to be used in the research study
4. Imparting constructive suggestion for possible modifications in the research process
5. Finding out the extent of gaps in the research study
6. Providing a backdrop for interpreting the results in the research study

As a part of the review, the researcher presents a summary of past researches to impart an understanding of the studies that have influenced and validated this research. Review of related studies for present investigation has been given below.

2.3 Studies Reviewed

1. Studies related to Internet addiction and loneliness, anxiety, depression, shyness, self-esteem abroad.
2. Related studies in India.

3. Other related studies.

2.3.1 Related studies abroad

2.3.1.1 Studies related to Internet Addiction and Loneliness

Moody (2001) made a study on internet use and its relationship to loneliness. The association between Robert Weiss's bimodal theory of loneliness and internet use was examined. The degree of social and emotional loneliness was assessed using the Social and Emotional Loneliness scale. This was compared with self-report measures of internet use and the breadth of one's network of friends, both online and on a face-to-face basis. Low levels of social and emotional loneliness were both associated with high degrees of face-to-face networks of friends, while high levels of internet use were associated with low levels of social loneliness and high levels of emotional loneliness. This supports recent research that has found that the internet can decrease social well-being, even though it is often used as a communication tool.

Morahan-Martin and Schumacher (2003) conducted their study on loneliness and social uses of the internet. A survey of 277 undergraduate internet users that was used to assess differences between lonely and not-lonely individuals in patterns of internet use. Loneliness was assessed on the UCLA Loneliness Scale; students in the highest 20% (Lonely) were compared with all other students (Non-lonely). Mean, SD and F test were used for analysis of data. Lonely individuals used the internet and e-mail more and were more likely to use the internet for emotional support than others. Social behaviour of lonely individuals consistently was enhanced online, and lonely individuals were more likely to report making online friends and heightened satisfaction with their online friends. The lonely were more likely to use the internet to modulate negative moods, and to report that their internet use was causing disturbances in their daily functioning.

Whang et al. (2003) analyzed on internet over-users’ psychological profiles: A behaviour sampling analysis on internet addiction. Internet users in Korea were investigated in terms of internet over-use and related psychological profiles by the level of internet use. A sample of 13,588 users (7,878 males, 5,710 females), out of 20 million from a major portal site in Korea, participated in this study. Questionnaires including Young’s Internet Addiction Scale and psychological well-being scale. Data
were analyzed using Mean, SD and ANOVA. Among the sample, 3.5% had been diagnosed as Internet Addicts (IA), while 18.4% of them were classified as Possible Internet Addicts (PA). The Internet Addiction Scale showed a strong relationship with dysfunctional social behaviours. More IA tried to escape from reality than PA and Non-addicts (NA). When they got stressed out by work or were just depressed, IA showed a high tendency to access the internet. The IA group also reported the highest degree of loneliness, depressed mood, and compulsivity compared to the other groups. The IA group seemed to be more vulnerable to interpersonal dangers than others, showing an unusually close feeling for strangers.

Matanda, Jenvey, and Phillips (2004) conducted a study on internet use in adulthood: Loneliness, computer anxiety and education. A sample of 158 adults completed questionnaires about computer anxiety, loneliness and internet use. Time spent in activities associated with entertainment, communication, information searches and commerce, and overall time spent on the internet were analyzed using multiple regression. It was difficult to predict overall internet use, but possible to predict specific categories of use. Better-educated participants were more likely to use the internet for communication. Men, the young, and the lonely used the internet more for entertainment. Those with lower computer anxiety used the internet for information searches, and men were more likely than women to use the internet for commercial purposes. It is suggested that computer anxiety and education may constrain the use of specific applications but internet use otherwise follows pre-existing tendencies or interests.

Erdogan (2008) investigated the relationships among internet usage, internet attitudes and loneliness of Turkish adolescents. A survey method was used for the study and the data were collected by an Internet usage questionnaire, Internet attitudes scale and UCLA loneliness scale. 1049 adolescents completed the questionnaires pertaining to their own internet usage, internet attitudes and feelings of loneliness. The data collected were analyzed using multivariate analysis of variance, multiple regression analysis and pearson correlation coefficient. At the end of the study, it was revealed that Turkish adolescents’ loneliness was associated with both increased internet usage and internet attitudes. Adolescents who reported excessive use of the internet for web surfing, instant messaging, emailing and online games had a significantly higher mean score of loneliness than those who did not. In addition, male
adolescents reported a higher frequency of internet usage and more loneliness than females. Male adolescents reported a higher frequency of web surfing and online games than females. However, females reported a higher frequency of e-mailing.

Batigun and Hasta (2010) attempted to examine the relationship between internet dependency and loneliness and interpersonal styles. It was also aimed to investigate certain demographic and descriptive variables associated with internet usage and dependence amongst adolescents. The sample was composed of 213 participants (105 female, 106 male, and two did not mention gender) with an age range of 18-27 (mean= 21.45±2.19). Besides the demographic information questionnaire, Internet Dependency Scale, UCLA Loneliness Scale, and Interpersonal Relationship Styles Scale were used to gather the data. The data were analyzed using Mean, SD,’t’ test, ANOVA, MANCOVA and regression analyses. The analyses revealed that 14% of the participants obtained high scores in internet dependency. The mean duration of internet usage is 2.17±0.70 hours a day which means more than 15 hours a week. It was also found that inhibitory interpersonal relationship style and loneliness are more common in these individuals than the ones who do not have internet dependency. In addition, internet dependents use internet for longer hours and mainly for communication purposes. The duration of internet usage, the usage of internet for communication, and having an inhibitory style in interpersonal relationships were found to be the predictors of internet dependency. The results of this study can shed some light on further research and clinical practices in identifying risk groups, and developing preventive interventions and treatment strategies. For instance, implementation of social skill training programs for improvement of communication skills and reducing loneliness are thought to be effective in prevention and treatment of internet dependency.

Deniz (2010) conducted a study on excessive internet use and loneliness among secondary school students. The association between loneliness and excessive internet use among secondary school students was examined. One hundred and sixty seven secondary school students were administered a questionnaire for some demographic questions and UCLA for determining their loneliness levels. The results showed that the secondary school students who reported greater hours of engagement on the internet have higher loneliness levels than the average users.
Lee (2010) explored the relationships among internet addiction, youths’ self-concept, self-perception, and perceived loneliness. The results revealed that adolescents’ perceived intellectual and school status, physical appearance and attributes and loneliness were significant predictors of their internet addiction tendency. The result suggested the lower the perceived intellectual and school status, and physical appearance and attributes, the higher the internet usage. Moreover, the result from the current study is consistent with the previous research finding that the higher the perceived loneliness, the higher the internet usage.

Robu and Tcaciuc (2010) conducted their study on the association between the internet addiction, the loneliness feeling and the perceived social support among adolescents. Out of 257 high school students, whose responses protocols have represented the selection basis, 6.2% were qualified as Internet-addicted. Compared with the rational internet users, the internet addiction group has obtained a higher level of loneliness, although the difference was not statistically significant. In contrast, the level of involvement in the internet activities had a significant effect on level of the social support perceived by students. Compared with the internet addiction group, the rational internet users, as those who used it excessively have obtained a significant higher level of the perceived social support.

Frangos and Fragkos (2011) conducted their study on psychological predictors and epidemiology of internet addiction among university students in Greece. The aim of this study was to present the epidemiology and psychological predictors of Internet Addiction (IA) among Greek University students. This random sample consisted of 3545 students, drawn from 24 higher education institutions (1618/1927 M/F mean age 20.12±2.4 years). The survey was conducted in the 4 Greek cities: Athens, Preveza, Thessaloniki and Amfissa. The prevalence rates of IA according to Young’s Test in the four cities were: Athens (17.5%), Preveza (15.9%), Thessaloniki (19.3%), and Amfissa (16.3%). There was a statistically significant association between location and IA (χ²=28.251, df=3, p<0.001), gender and IA for males and females (p<0.001). They performed a t-test with the dependent variable S=sum of scores in the psychological features of loneliness, feeling abandoned, disappointed, aimless in life, and with low self-esteem; the grouping variable was IA. Results showed that the variable S was much lower for the non-addicted than for addicted students (t=19.329, p<0.005, df=3085). Binary logistic regression was performed to assess the impact of
psychological characteristics on the likelihood that respondents would be internet addicted. The model was statistically significant $\chi^2 (10, N=3085) = 316.3$, $p<0.001$. The model classified correctly 85.1% of the cases. The strongest predictors of IA were the following: Loneliness (OR=2.15, 95% CI=1.67-2.71), feeling abandoned (OR=1.63, 95% CI=1.2-2.1), low self-esteem (OR=1.72, 95% CI=1.4-2.1) and fear of losing their jobs (OR=1.36, 95% CI=1.01-1.7). Loneliness, helplessness, low self-esteem and fear of unemployment are the strongest predictors of IA among Greek university students.

Ong, Chang, and Wang (2011) conducted a study on comparative loneliness of users versus nonusers of online chatting. This study was designed to show the effect of online chatting on each of the three dimensions of loneliness. The participants in the study were 709 students at two universities in Taiwan who were classified on the basis of whether or not they had ever engaged in online chatting. Of the participants, 651 (91.82%) fully completed the questionnaires that served as the study instruments and were included in data analysis. The study found that individuals who had participated in online chatting exhibited greater familial loneliness than those who had not because the time spent in online chatting reduced the time spent in familial relationships. Social loneliness was related to the quality of internet relationships rather than to the time spent online. Individuals who participated in online chatting had less romantic loneliness because of a greater ease of maintaining romantic relationships online. They conclude that online chatting can reduce social loneliness through high-quality internet relationships but may exacerbate familial loneliness.

Tutgun, Deniz, and Moon (2011) compared the problematic internet use and its relation to loneliness among two nations’ prospective teachers, Turkey and South Korea. Five hundred and ninety five prospective teachers from three universities, two from Turkey and one from South Korea participated in the study. Generalized Problematic Internet Use Scale 2 and UCLA Loneliness Scale were used to collect data. Percentage, Mean, SD,’t’test, F test and correlation were used for analysis of data. Some of the major findings are as follows: a) No differences were found between the problematic internet use of Turkish and Korean prospective teachers; b) Male Turkish prospective teachers were found to have more problematic use of internet than female counterparts. On the other hand no differences were found among South Korean prospective teachers by means of sex; c) Positive but low correlations
between problematic internet use and loneliness levels of prospective teachers of both nations; d) There is a significant difference between Turkish and Korean prospective teachers. South Korean prospective teachers were found to be in higher levels of loneliness than Turkish counterparts.

Arabzadeh, Bayanati, Nikdel, Nadery, and Naimi (2012) conducted a study on the relationship of internet addiction with loneliness and identity styles. The present study examines the relationship between internet addiction on the one hand and loneliness and identity styles of university students on the other hand. To this aim, a sample of 288 undergraduate students (108 male and 180 female) were chosen from of Psychology and Educational Sciences Faculty of Kharazmi University and Agronomy Faculty of Tehran University in educational year of 2009-2010. These students were selected from four faculties through cluster sampling. The research instruments used in this study include Young Internet Addiction Inventory (1998), Russell UCLA Loneliness Scale (1996), and Berzonsky Identity Styles Inventory revised by White and his colleagues (1998). According to the analysis of correlations, internet addiction has a positive and significant relationship with diffuse-avoidant identity style. It also shows a negative and significant relationship with informational and normative identity styles. The results indicate that loneliness shows a negative and significant relationship with informational and normative identity styles and a positive and significant relationship with diffuse-avoidant identity style. The investigation also reveals that the differences in means for the two groups of Tehran Tarbiat Moallem University and Tehran University are not significant in the two scales of loneliness and internet addiction.

Esen, Aktas, and Tuncer (2013) examined the relationship between university students’ internet use and loneliness and social self-efficacy. The sample of the study consists of 507 university students (F=227; M=280). To determine students’ degree of internet use, Young's (1998) ‘Internet addiction Scale’, which was adapted to Turkish by Bayraktar (2001) was used. To determine the degree of loneliness ‘UCLA Loneliness Scale’ was used and to determine the degree of social self-efficacy, Smith-Betz's (2000) ‘Social Self-efficacy Perception Scale’, which was adapted to Turkish by Palanci (2002) was used. The results of the analysis suggest that there is a meaningful relationship between internet use and loneliness scores, whereas no relationship was observed with social self-efficacy scores. On the other hand, it has
been found that students with a higher score on internet use have a higher degree of loneliness when compared to students who have moderate and low degree of internet use.

Ezoe and Toda (2013) conducted their research on relationships of loneliness and mobile phone dependence with Internet addiction in Japanese medical students. The researchers investigated factors contributing to internet addiction in 105 Japanese medical students. The subjects were administered by a self-reporting questionnaire designed to evaluate demographic factors, internet addiction, loneliness, health-related lifestyle factors, depressive state, patterns of behaviour, and mobile phone dependence. Results of multivariate logistic regression analysis indicated that loneliness and mobile phone dependence were positively related to degree of addiction. Findings suggest that internet addiction is associated with loneliness and mobile phone dependence in Japanese students.

Ozben (2013) compared the loneliness levels of Turkish university students in terms of internet use. This was a descriptive and comparative study involving a total of 525 students in Izmir, 258 female and 267 male, who participated voluntarily. The instruments were the personal information form and the UCLA loneliness scale, and a t-test was used to compare the data. The results revealed that loneliness points were significantly higher for students who preferred the internet rather than being with friends (t519 = 6.013, p = .001 and those who preferred social chats online rather than their actual friends (t519= 5.666, p = .001). The loneliness level was higher for those who could not postpone their internet use (t520 = 1.704, p = .089) and those who could not give up internet use (t521 = .126, p = .900); however, a significant relationship was not found. This study reiterates the importance of internet use or online computer hours for students, and the importance of media literacy training. To cope with loneliness, students need to bond with their peers, establish more fulfilling relationships, and develop their social skills. Schools should place importance on social skills training, effective communication skills, and art and cultural activities. It is essential to have some strategies to prevent internet addiction.

Rashedi, Rafat, Norouzi, and Khademi (2013) conducted their research on loneliness and Internet addiction in students of Hamadan University of medical sciences. This study intends to determine the relationship between loneliness and internet addiction in students of Hamadan University of medical sciences in 2013. In
this cross-sectional descriptive-analytic study, students of Hamadan University of medical sciences were research population that sample involved 130 people who have been selected through random sampling. To gather the data, Loneliness Scale and Internet Addiction Questionnaire were used as well as demographic variables questionnaire. To analyze the data SPSS was used. The findings revealed the characteristics of the research population as follows: high internet addiction and relative loneliness. Results showed significant relationship between the internet addiction and age, term and level of education, also factors such as marital status, gender and occupation have no significant relation with internet addiction. Analysis indicated that there were no statistically significant differences between loneliness and age, term, level of education, marital status, gender, and occupation. Due to the relatively high rate of Internet addiction in the study population, the findings will be reported to relevant managers and officials. This will be considered in planning the future.

Zarbakhsh-Bahri, Rashedi, and Khademi (2013) analyzed on loneliness and internet addiction in University students. The aim of this study was to determine the correlation between loneliness and internet addiction in Qom branch of Islamic Azad University students. In this descriptive-correlational study, 148 students of Qom Branch of Islamic Azad University were selected through random sampling. Data collection was carried out through “Loneliness Scale”, Yang “Internet Addiction Test” and demographic variables questionnaire. Data was analyzed by SPSS/12. The sample consisted of 56.08% male and 20.94% married people. Results showed that there was a significant correlation between loneliness and two subscales of relationship with family (P<0.001) and affective symptoms (P<0.001) with internet addiction. Also there was no significant correlation between factors such as age, gender and marital status with internet addiction. It is recommended to provide an appropriate and effective consultation time for the students, identify the causes of loneliness in them and provide appropriate solution for the reduction, prevent secondary complications such as internet addiction.

Yao and Zhong (2014) analyzed on loneliness, social contacts and internet addiction: A cross-lagged panel study. This study aims to examine the causal priority in the observed empirical relationships between internet addiction and other psychological problems. A cross-lagged panel survey of 361 college students in Hong
Kong was conducted. Results show that excessive and unhealthy internet use would increase feelings of loneliness over time. Although depression had a moderate and positive bivariate relationship with internet addiction at each time point, such a relationship was not significant in the cross-lagged analyses. This study also found that online social contacts with friends and family were not an effective alternative for offline social interactions in reducing feelings of loneliness. Furthermore, while an increase in face-to-face contacts could help to reduce symptoms of internet addiction; this effect may be neutralized by the increase in online social contacts as a result of excessive internet use. Taken as a whole, findings from the study show a worrisome vicious cycle between loneliness and internet addiction.

2.3.1.2 Studies related to Internet Addiction and Anxiety

Cao, Su, Liu, and Gao (2007) assessed whether internet addiction is related to impulsivity among Chinese adolescents. This study was performed in two stages. They screened for the presence of internet addiction among 2620 high school students (age ranging from 12 years to 18 years) from four high schools of Changsha City using Diagnostic Questionnaire for Internet Addiction (YDQ). According to the modified YDQ criteria by Beard, 64 students were diagnosed as Internet addiction. Excluding current psychiatric comorbidity, 50 students who were diagnosed as internet addiction (mean age, 14.8 ± 1.4 years) and 50 normal students in internet usage (mean age, 14.5 ± 1.8 years) were included in a case control study. The two groups were assessed using Barratt Impulsiveness Scale 11 (BIS-11) and behavioral measure of impulsivity (GoStop Impulsivity Paradigm). Sixty-four students met the modified YDQ criteria by Beard, of whom 14 students suffered from comorbid psychiatric disorders, especially comorbid ADHD. The internet addiction group had significantly higher scores on the BIS-11 subscales of Attentional key, Motor key, and Total scores than the control group (P < 0.05). The internet addiction group scored higher than the control group on the failure to inhibit responses of GoStop Impulsivity Paradigm (P < 0.05). There was a significant positive correlation between YDQ scores and BIS-11 subscales and the number of failure to inhibit responses of GoStop Impulsivity Paradigm. This study suggests that adolescents with internet addiction exhibit more impulsivity than controls and have various comorbid psychiatric disorders, which could be associated with the psychopathology of internet addiction.
Selfhout, Branje, Delsing, terBogt, and Meeus (2009) conducted a study on different types of internet use, depression, and social anxiety: The role of perceived friendship quality. The current study examined the longitudinal associations of time spent on internet activities for communication purposes (i.e., IM-ing) versus time spent on internet activities for non-communication purposes (i.e., surfing) with depression and social anxiety, as well as the moderating role of perceived friendship quality in these associations. Questionnaire data were gathered from 307 Dutch middle adolescents (average age 15 years) on two waves with a one-year interval. Mean, SD, MANOVA and regression were used for analysis of data. For adolescents who perceive low friendship quality, internet use for communication purposes predicted less depression, whereas internet use for non-communication purposes predicted more depression and more social anxiety. These results support social compensation effects of IMing on depression and poor-get-poorer effects of surfing on depression and social anxiety respectively.

DeRushia (2010) conducted a research on internet usage among college students and its impact on depression, social anxiety, and social engagement. This study looked at the impact that internet usage has on an individual’s psychological well-being in an effort to clarify and expand on the previous research. Participants in this study were undergraduates at a state university in rural Pennsylvania. Participants were randomly selected through a psychology department subject pool. They completed several psychological questionnaires and tracked their internet usage and social engagement for a seven day period. Results indicated that time spent on the internet was not predictive of depression, social anxiety, or social engagement in face-to-face relationships or online relationships. The type of activity engaged in online was also not predictive of depression, social anxiety, or social engagement in face-to-face relationships or online relationships. However, results indicated that there was a significant difference in the way that participants responded to measures of social anxiety when referencing face-to-face relationships as opposed to online relationships. Limitations included not tracking ethnicity of participants, an unequal distribution of gender across the population, and that the population was restricted to undergraduate students in a rural setting. Based on these results, future research would benefit from exploring differences in individual’s perceptions of online relationships compared with face-to-face relationships, and from exploring similar questions in non-college
aged, ethnically diverse populations with gender equally distributed across the sample.

Odaci and Kalkan (2010) analyzed on problematic internet use, loneliness and dating anxiety among young adult university students. This study investigates problematic internet use among young adult university students and examines correlation between problematic internet use and loneliness and dating anxiety. University student internet use patterns are also investigated. The study was conducted among 493 students from the Karadeniz Technical University Fatih Faculty of Education. The Online Cognition Scale, Dating Anxiety Scale, Loneliness Scale and Personal Information Questionnaire were employed in the collection of data. Pearson correlation analysis, the t-test, one-way analysis of variance and chi-square test were used for data analysis. The Pearson correlation analysis results reveal a significant positive correlation between problematic internet use and loneliness ($r = 0.194, p < 0.001$), communication anxiety ($r = 0.15, p < 0.001$), unpopularity anxiety ($r = 0.174, p < 0.001$) and physiological symptoms ($r = 0.125, p < 0.001$) dating anxiety sub-scales. One-way analysis of variance was used to examine whether problematic internet use varies according to length of internet use, and a significantly high level of problematic internet use was observed among those going online for more than 5 h a day compared to other users ($F = 14.327, p < 0.001$). Chi-square results reveal a significant association between length of internet use and how students feel when they do not go online (chi-square = 116.543, $p < 0.001$). The t-test was used to determine whether there was a significant difference in levels of internet use according to gender, and levels of problematic internet use were significantly higher among male students than females ($t = 4.046, p < 0.001$).

Dong, Lu, Zhou, and Zhao (2011) evaluated the roles of pathological disorders in internet addiction disorder and identify the pathological problems in IAD, as well as explore the mental status of internet addicts prior to addiction, including the pathological traits that may trigger internet addiction disorder. 59 students were measured by Symptom CheckList-90 before and after they became addicted to the internet. A comparison of collected data from Symptom CheckList-90 before internet addiction and the data collected after internet addiction illustrated the roles of pathological disorders among people with internet addiction disorder. The obsessive-compulsive dimension was found abnormal before they became addicted to the
internet. After their addiction, significantly higher scores were observed for dimensions on depression, anxiety, hostility, interpersonal sensitivity, and psychoticism, suggesting that these were outcomes of internet addiction disorder. Dimensions on somatisation, paranoid ideation, and phobic anxiety did not change during the study period, signifying that these dimensions are not related to internet addiction disorder.

Koc (2011) examined the relationships between university students’ internet addiction and psychopathology in Turkey. The study was based on data drawn from a national survey of university students in Turkey. 174 university students completed the SCL-90-R scale and Addicted Internet Users Inventory. Results show that students who use internet six hours and more a day have psychiatric symptoms. Students whose addicted internet usage have psychiatric symptoms such as somatization, obsessive compulsive, interpersonal sensitivity, depression, anxiety, hostility, phobic anxiety, paranoid ideation and psychoticism more than students whose nonaddicted internet usage.

Korkmaz, Sahin, and Usta (2011) investigated the relationship between interaction and audience anxiety levels and internet addiction of adults. The research was performed in the survey model as a descriptive study. A total of 384 adults with different ages living in a Central Anatolian city constituted the sample of the study. Data were collected through the Interaction and Audience Anxiety Scale (α=.91) and Internet Addiction Scale (α=.86). The mean, standard deviation, frequency, percentage, t-test, ANOVA, Scheffe test, and Pearson correlation coefficient were employed in analyzing the data (p<.05). The following results were obtained: Both the interaction anxiety and audience anxiety levels of adults were low. The levels among adults in the ages of 20-29 were significantly higher than the levels among adults in other age-groups. The levels of interaction anxiety and audience anxiety in the student group were significantly higher than other occupational groups. Gender did not differentiate interaction and audience anxiety levels of adults. There was also a positive and significant correlation between the levels of anxiety and internet addiction.

Alavi et al. (2012) conducted their study on impact of addiction to internet on a number of psychiatric symptoms in students of Isfahan universities, Iran. This cross-sectional study was conducted among 250 students selected via quota sampling from
universities in Isfahan, Iran. Participants completed demographic questionnaire, Young Diagnostic Questionnaire, Internet Addiction Test and Symptom Checklist-90-Revision (SCL-90-R). Finally, the means of psychiatric symptoms of internet addicted and non-addicted subjects were compared. Also, t-test and multivariate analysis of covariance were used through SPSS\textsubscript{16} software for data analysis. The mean±standard deviation (SD) of psychiatric symptoms such as somatization, obsessive-compulsive disorder, interpersonal sensitivity, depression, anxiety, aggression (hostility), phobic anxiety, paranoid ideation and psychoticism in the addicted group were 11.27 ± 6.66, 14.05 ± 7.91, 10.5 ± 6.20, 15.61 ± 8.88, 10.77 ± 5.52, 6.77 ± 4.88, 7.61 ± 4.28, and 9.66 ± 6.87, respectively, and in the non-addicted group were 6.99 ± 6.42, 7.49 ± 5.23, 5.46 ± 4.95, 9.27 ± 7.92, 6.35 ± 6.69, 3.57 ± 3.35, 2.41 ± 2.79, 5.47 ± 4.1, and 5.29 ± 4.95, respectively. There were significant differences between the means of psychiatric symptoms in all SCL-90-R subscales and Global Severity Index, Positive Symptom Distress Index, Positive Symptom Total in the addicted and non-addicted individuals \((P<0.05)\). Also, internet addiction (with controlling sex variable) seemed to affect psychiatric symptoms. Psychiatrists and psychologists involved in the field of mental health need to be well informed about mental problems due to internet addiction, such as anxiety, depression, aggression, and job and educational dissatisfaction.

Ali, Razieh, Zaman, and Narjesskhatoon (2012) investigated the prevalence of internet addiction among the girls and boys students in the universities students and the relationship between internet addiction with anxiety. Participants were 330 students who randomly selected from universities students. The Questionnaires of internet addiction and anxiety scale were used as instruments for data collection in this study. The data were analyzed using mean, standard deviation, t-test and regression analysis. The results of this study demonstrated that prevalence of internet addiction among boy-students in student universities was more than girls and in science and engineering students was more than art and humanity students. There was a significant difference in four groups in anxiety levels. The result of regression analysis showed that anxiety and sex could significantly predict internet addiction.

Reda, Rabie, Mohsen, and Hassan (2012) conducted a study on problematic internet users and psychiatric morbidity in a sample of Egyptian adolescents. 501 adolescents (295 males), 11 - 18 years old, recruited from 2 private (group 1) and 2
governmental schools (group 2). All were subjected to A Psychiatric sheet, An Informative designed questionnaire, Fahmy and El Sherbiny’s Social Classification Scale, Young Internet Addiction Test (IAT), and Mini International Neuropsychiatric Interview for children and adolescents (MINI KID). Comparison between the two groups in regard to the use of internet, number of computers available, money spent on internet activities, parental knowledge of use, duration of use and purpose of use, revealed significant differences. Problematic internet use was more frequent in group 1, while internet addiction was more frequent in group 2. A significant relation was found between IAT score and social phobia, specific phobia and oppositional defiant disorder, and a highly significant relation with generalized anxiety disorder and ADHD. Female sex, horror movies and internet problematic use are independent predictors of psychiatric morbidity. Male sex, private schools, high social classes are independent predictors for internet use problems in our sample. This study revealed that Egyptian adolescents are at high risk for problematic internet use and to a lesser extent internet addiction. Adolescents with Problematic internet use are more prone to psychiatric disorders (social phobia, specific phobia, oppositional defiant disorders, generalized anxiety disorder and ADHD).

Sepehrian and Jokar (2013) evaluated the relationship between internet addiction and anxiety in personality types A and B and investigate the predictive validity of these two variables and their interaction with gender in predicting internet addiction. Another goal of the study was to determine the effect of the type of university on internet addiction. Therefore, 330 subjects (167 boys and 163 girls) were randomly selected through multiphase cluster sampling from Urmia Universities. The Young Internet addiction questionnaires (1999), Najarean anxiety test (1378), and personality type test (Kangy, 1380) were administered to the subjects. The results revealed that the personality type A subjects have more internet addiction than type B, individuals. But personality types A&B are not significant predictor of internet addiction. Anxiety scores were significant predictors of internet addiction (p<0.005). The difference found between the rate of internet addiction in male students (2/85) and female students (8/14) was significant and the difference between students groups of five universities in their internet addiction was also significant (p<0.005). It is suggested that anxious individuals who use internet act cautiously.
Lack of control of economic and social conditions of users was the limitations of this study.

Azher et al. (2014) conducted a study on the prevalence of internet addiction among the male and female students in the University of Sargodha and the relationship between internet addiction and anxiety level of students. There were 300 students, from Masters’ classes, as sample, selected through cluster sampling. Internet Addiction Scale (I.A.S) and Beck Anxiety Scale were used as assessment tools for data collection. The data were analyzed using mean, standard deviation, t-test and regression analysis. The results showed that prevalence of internet is more in male students than female students. Regression analysis showed a positive and significant relation between internet addiction and anxiety level among University students.

2.3.1.3 Studies related to Internet Addiction and Depression

Morgan and Cotten (2003) conducted a study on the relationship between internet activities and depressive symptoms in a sample of college freshmen. An internet survey of college freshmen at a mid-Atlantic mid-sized university was conducted during the spring of 2002 to determine the impact of Internet activities on social support and well-being. Results obtained from the survey allow examination of the impact of amount of time performing different types of Internet activities on depressive symptoms, as measured by the Iowa version of the Center for Epidemiologic Studies Depression Scale (CES-D) via a semi-elasticity ordinary least squares regression model. Results indicate that increased e-mail and chat room/instant messaging (IM) hours are associated with decreased depressive symptoms, while increased Internet hours for shopping, playing games, or research is associated with increased depressive symptoms.

Oh (2003) conducted a study on factors influencing internet addiction tendency among middle school students in Gyeong-buk area. The purpose of this study was conducted to understand the degree of internet addiction tendency and to find out the factors influencing this addiction tendency among middle school students in Gyeong-buk area. A total of 450 middle school students in the Daegu and Gyeong-buk area were surveyed in this study. Data collection was conducted through the use of questionnaires. Internet addiction among middle school students was relatively low (Average user). In the overall ratio distribution, however, students who were
classified as either addicted or at risk of addiction accounted for a high percentage, 27%. A positive correlation was found between internet addiction and internet expectation, depression and parent control over internet use. A negative correlation was found between internet addiction and interpersonal relationship, parent support and self-control. Multiple regression analysis revealed that the most powerful predictor of internet addiction tendency was depression. Through the above results, it would be necessary to develop an internet addiction prevention program for adolescents taking into account for the psychological factors such as depression and internet use habits. In the future study, the need assessment will be useful for developing this prevention program.

Kim et al. (2006) examined the relationship of internet addiction to depression and suicidal ideation in Korean adolescents. The participants were 1573 high-school students living in a city who completed the self-reported measures of the Internet Addiction Scale, the Korean version of the Diagnostic Interview Schedule for Children-Major Depression Disorder-Simple Questionnaire, and the Suicidal Ideation Questionnaire-Junior. A correlational survey design was employed. Among the samples, 1.6% was diagnosed as Internet addicts, while 38.0% was classified as possible Internet addicts. The prevalence of internet addiction did not vary with gender. The levels of depression and suicide ideation were highest in the Internet-addicts group. Future studies should investigate the direct relationship between psychological health problems and internet dependency.

Ha et al. (2007) evaluated the relationship between depression and internet addiction among adolescents. A total of 452 Korean adolescents were studied. First, they were evaluated for their severity of internet addiction with consideration of their behavioral characteristics and their primary purpose for computer use. Second, the researchers investigated correlations between internet addiction and depression, alcohol dependence and obsessive-compulsive symptoms. Third, the relationship between internet addiction and biogenetic temperament as assessed by the Temperament and Character Inventory was evaluated. Internet addiction was significantly associated with depressive symptoms and obsessive-compulsive symptoms. Regarding biogenetic temperament and character patterns, high harm avoidance, low self-directedness, low cooperativeness and high self-transcendence were correlated with internet addiction. In multivariate analysis, among clinical
symptoms depression was most closely related to internet addiction, even after controlling of differences in biogenetic temperament. This study reveals a significant association between internet addiction and depressive symptoms in adolescents. This association is supported by temperament profiles of the internet addiction group. The data suggest the necessity of the evaluation of the potential underlying depression in the treatment of internet-addicted adolescents.

Thomee, Gustafsson, Eklof, Nilsson, and Hagberg (2007) prospectively investigated whether high quantity of information and communication technology (ICT) use is a risk factor for developing psychological symptoms among young ICT users. A cohort of college students responded to a questionnaire at baseline and at 1-year follow-up (n = 1127). Exposure variables, such as different types of ICT use, and effect variables, such as perceived stress, symptoms of depression and sleep disturbances, were assessed. Prevalence ratios were computed based on symptom-free subjects at baseline and prevalence of symptoms at follow-up. For women, high combined use of computer and mobile phone at baseline was associated with increased risk of reporting prolonged stress and symptoms of depression at follow-up, and number of short message service (SMS) messages per day was associated with prolonged stress. Also online chatting was associated with prolonged stress, and e-mailing and online chatting were associated with symptoms of depression, while internet surfing increased the risk of developing sleep disturbances. For men, number of mobile phone calls and SMS messages per day were associated with sleep disturbances. SMS use was also associated with symptoms of depression.

Ko, Yen, J. Y., Chen, C. S., Chen, C. C., and Yen, C. F. (2008) evaluated the association between internet addiction and depressive disorder, social phobia and adult attention-deficit/hyperactivity disorder (ADHD) in a sample of Taiwanese college students and examine gender differences in the psychiatric comorbidity of internet addiction in this student population. 216 college students (132 males, 84 females) were recruited. Internet addiction, major depressive disorder, dysthymic disorder, social phobia, and adult ADHD of all participants were diagnosed based on psychiatric diagnostic interview. This study revealed that adult ADHD and depressive disorders were associated with internet addiction among college students. However, depressive disorders were associated with internet addiction in the males but not the females. With these results, it seems reasonable to suggest that effective evaluation of,
and treatment for, adult ADHD and depressive disorders is required for college students with internet addiction.

Yen et al. (2008) compared psychiatric symptoms between adolescents with and without internet addiction, as well as between analogs with and without substance use. A total of 3662 students (2328 male and 1334 female) were recruited for the study. Self-report scales were utilized to assess psychiatric symptoms, Internet addiction, and substance use. Data collected were analyzed using percentage, mean, SD, ’t’ test and logistic regression analysis. It was found that internet addiction or substance use in adolescents was associated with more severe psychiatric symptoms. Hostility and depression were associated with internet addiction and substance use after controlling of other symptoms. This result partially supports the hypothesis that internet addiction should be included in the organization of problem behaviour theory, and it is suggested that prevention and intervention can best be carried out when grouped with other problem behaviours. Moreover, more attention should be devoted to hostile and depressed adolescents in the design of preventive strategies and the related therapeutic interventions for internet addiction.

Nastizai (2009) investigated the association between general health and internet addiction. In this descriptive study a total number of 375 students (189 female and 186 male) were randomly selected from Sistan and Baluchestan University between 2007 and 2008. Using the Internet Addiction Test (IAT), the students were divided into two groups: ordinary users and addicted users of internet. The general health questionnaire (GHQ) was used to compare these two groups. The SPSS software and t test were used to analyze the data and P<0.01 was significant. The general health of internet-addicted users in comparison with ordinary users was at a higher risk (P<0.01). But the difference between two groups in general health and disorders of social function were not statistically significant. Depression and anxiety were common in internet addicted users and it was correlated to the amount of time that they were allocating to it.

Fu, Chan, Wong, and Yip (2010) examined the prevalence of adolescents’ internet addiction in Hong Kong, China, to test its differentiation from other correlates and examined its relationships with correlates in a representative community sample of adolescents. A two-wave panel household survey with 208 adolescents (aged 15–19 years) was conducted. Participants were asked to self-report their patterns of
internet usage, symptoms of internet addiction, suicidal ideation, psychiatric symptoms and psychosocial conditions during the study period. The prevalence rate for having five or more symptoms of internet addiction was estimated to be 6.7% (95% CI 3.3–10.2). The discriminatory characteristic of internet addiction was marginally demonstrated. Positive dose–response relationships were found between the number of symptoms of internet addiction and 1-year changes in scores for suicidal ideation and depressive symptoms. Evidence supports the specificity of internet addiction and its symptoms seem to co-occur with individuals’ suicidal ideation and depressive symptoms.

Lam and Peng (2010) examined the effect of pathological use of the internet on the mental health, including anxiety and depression, of adolescents in China. It is hypothesized that pathological use of the internet is detrimental to adolescents’ mental health. A prospective study with a randomly generated cohort from the population. The participants were adolescents aged between 13 and 18 years. Pathological use of the internet was assessed using the Pathological Use of the Internet Test. Depression and anxiety were assessed by the Zung Depression and Anxiety Scales. Multivariate Poisson regression analyses and chi-square test were used for analysis. After adjusting for potential confounding factors, the relative risk of depression for those who used the internet pathologically was about 21.2 times (incidence rate ratio, 2.5; 95% confidence interval, 1.3–4.3) that of those who did not exhibit the targeted pathological internet use behaviours. No significant relationship between pathological use of the internet and anxiety at follow-up was observed. Results suggested that young people who are initially free of mental health problems but use the internet pathologically could develop depression as a consequence. These results have direct implications for the prevention of mental illness in young people, particularly in developing countries.

Morrison and Gore (2010) conducted a study on the relationship between excessive internet use and depression: A questionnaire-based study of 1,319 young people and adults. This study explored the concept of internet addiction and examined the relationship between addictive symptoms and depression. An online questionnaire was used to measure participants’ internet use, the functions for which they used the internet, and their depressive tendencies. Three scales were included: the Internet Addiction Test, the Internet Function Questionnaire and the Beck Depression
Inventory (BDI). 1,319 respondents completed the questionnaires, with 18 (1.2%) identified as falling in the Internet Addiction (IA) category. Correlation analyses were conducted across the whole data sample. In factorial analyses, the 18 IA respondents were compared to a matched group of non-addicted (NA) respondents in terms of their scores on the Function Test and the BDI. Across the whole data sample, there was a close relationship between IA tendencies and depression, such that IA respondents were more depressed; there were also significant differences between the sexes, with men showing more addictive tendencies than women. In addition, young people were significantly more likely to show addictive symptoms than the older people. There was a significant difference between the IA and the NA group in their levels of depressive symptoms, with the NA group firmly in the non-depressed range, and the IA group in the moderately-to-severely depressed range (F 1, 34 = 22.35; p! 0.001). In terms of the function for which they used the Internet, the IA group engaged significantly more than the NA group in sexually gratifying websites, gaming websites and online community/chat websites. The concept of IA is emerging as a construct that must be taken seriously. Moreover, it is linked to depression, such that those who regard themselves as dependent on the internet report high levels of depressive symptoms. Those who show symptoms of IA are likely to engage proportionately more than the normal population in sites that serve as a replacement for real-life socializing. Further work needs to be done on validating this relationship.

Akin and Iskender (2011) conducted their research on internet addiction and depression, anxiety and stress. The purpose of this study is to examine the relationships between internet addiction and depression, anxiety, and stress. Participants were 300 university students who were enrolled in mid-size state University, in Turkey. In this study, the Online Cognition Scale and the Depression Anxiety Stress Scale were used. In correlation analysis, internet addiction was found positively related to depression, anxiety, and stress. According to path analysis results, depression, anxiety, and stress were predicted positively by internet addiction. This research shows that internet addiction has a direct impact on depression, anxiety, and stress.

Christakis, Moreno, Jelenchick, Myaing, and Zhou (2011) conducted a study on problematic internet usage in US college students: A pilot study. A sample of 307 college students at two US universities participated in this pilot study. They
completed the Internet Addiction Test (IAT) as well as the Patient Health Questionnaire. Both are validated measures of problematic internet usage and depression, respectively. For assessing the association between problematic internet usage and moderate to severe depression, a modified Poisson regression approach was used. In addition, this study also examined the associations between individual items in the IAT and depression. A total of 224 eligible respondents completed the survey (73% response rate). Overall, 4% of students scored in the occasionally problematic or addicted range on the IAT, and 12% had moderate to severe depression. Endorsement of individual problematic usage items ranged from 1% to 70%. In the regression analysis, depressive symptoms were significantly associated with several individual items. Relative risk could not be estimated for three of the twenty items because of small cell sizes. Of the remaining 17 items, depressive symptoms were significantly associated with 13 of them, and three others had P values less than 0.10. There was also a significant association between problematic internet usage overall and moderate to severe depression (relative risk 24.07, 95% confidence interval 3.95 to 146.69; P = 0.001). The prevalence of problematic internet usage among the US college students is a cause for concern, and potentially requires intervention and treatment amongst the most vulnerable groups. The prevalence reported in this study is lower than that which has been reported in other studies, however the at-risk population is very high and preventative measures are also recommended.

Adalier and Balkan (2012) revealed the relationship between internet addiction and psychological symptoms among university students. The research was conducted among university students in North Cyprus. The sample for the research consists of 36.5% (n=46) female, 63.5% (n=80) male, 126 university students who were selected according to the criterion sampling method. “Brief Symptom Inventory (BSI)” adapted by Aahin and Durak (1994), the Cronbach’s alpha reliability coefficient of .96, “Internet Addiction Scale (IAS)” adapted by Bayraktar (2001) with a Cronbach alpha reliability coefficient of .90 and Biographic-Demographic Information Form were used for collecting data. Percentage documentation average, ANOVA and Pearson Moment’s correlation tests were used in data analysis. The statistical significance level was accepted as .05 in the study. The results of this study show that there is a significant correlation between internet addiction and psychological symptoms as somatization, obsessive-compulsive, interpersonal
sensitivity, depression, anxiety, hostility, phobic anxiety, paranoid ideation and psychoticism.

Kotikalapudi, Chellappan, Montgomery, Wunsch and Lutzen (2012) conducted a study on associating internet usage with depressive behaviour among college students. In this study, 216 undergraduates were surveyed for depressive symptoms using the CES-D scale. The researchers then collected their on-campus internet usage via Cisco Net Flow records. Subsequent analysis revealed that several internet usage features like average packets per flow, peer-to-peer (octets, packets and duration), chat octets, mail (packets and duration), ftp duration, and remote file octets exhibit a statistically significant correlation with depressive symptoms. Additionally, Mann-Whitney U-test revealed that average packets per flow, remote file octets, chat (octets, packets and duration) and flow duration entropy demonstrate statistically significant differences in the mean values across groups with and without depressive symptoms.

Ayas and Horzum (2013) conducted a study on relation between depression, loneliness, and self-esteem and internet addiction. In this study, analyzing the effects of depression, loneliness and self-esteem has been aimed in the prediction of the internet addiction levels of secondary education students. The research is conducted according to the cross-sectional model as one of the survey models. The sample of the research is comprised of 292 students who continue their education in the first term of 2009-2010 academic year in Trabzon. Internet addiction, Beck depression, UCLA loneliness and Rosenberg self-esteem scale have been used as data collection tool in the research. In consequence of the research a positive, mid-level and significant relation with internet addiction has come out when depression, loneliness and self-esteem variables are considered together. These variables explain 14 % of internet addiction’s total variance. The relative order of importance of the variables on internet addiction is depression, loneliness and self-esteem. While depression and loneliness variables are significant predictors on internet addiction, self-esteem is not a significant predictor.

Bener and Bhugra (2013) conducted a study on lifestyle and depressive risk factors associated with Problematic Internet Use (PIU) in adolescents in an Arabian Gulf culture. The aim of this study was to determine the prevalence of PIU and its association with Beck Depression Inventory (BDI), comorbid, and lifestyle factors.
among adolescent and young adult (12- to 25-year-old) Qatari population. A total of 3000 students (12-25 years of age) were selected through multistage stratified random sampling from public and private schools and university under the overall administration of Qatar Supreme Council of Education. Among them, 2298 students (76.6%) consented to participate in the study during September 2009 to October 2010. Data were collected using a structured questionnaire including sociodemographic details, lifestyle, and dietary habits. Problematic Internet use and depressive tendencies were measured through validated Internet Addiction Test (IAT) and BDI. Of 2298, 71.6% were males and 28.4% were females. The overall prevalence of PIU was 17.6%. This study revealed that a significantly larger proportion of males (64.4%; \( P = 0.001 \)) and Qatari students (62.9%; \( P < 0.001 \)) had PIU. Students with PIU slept significantly less number of hours (6.43 ± 1.70) than non-PIU group (6.6 ± 1.80; \( P = 0.027 \)). The proportion of students participating in moderate physical activity was significantly lower among those with PIU than in other group (47.8% vs 55.7%; \( P = 0.005 \)). Qatari nationality (odds ratio \( [OR] = 1.82; P < 0.001 \)), male sex (\( OR = 1.40; P < 0.001 \)), having nonworking mother (housewife) (\( OR = 1.34; P = 0.009 \)), eating fast foods (\( OR = 1.57; P < 0.001 \)), and BDI score (\( OR = 1.14; P = 0.003 \)) were positively associated with PIU, whereas moderate and mild physical activity were negatively associated with PIU (\( OR = 0.73, P = 0.002; OR, 0.77, P = 0.003 \), respectively). This study adds to the growing body of evidence linking PIU with negative lifestyle and depressive risk factors, among vulnerable adolescent and young adult. Problematic Internet use is becoming a significant public health issue that requires urgent attention.

Cardak (2013) made a study on psychological well-being and internet addiction among university students. The purpose of this research is to examine the relationship between internet addiction and psychological well-being. Participants were 479 university students who completed a questionnaire package that included the Online Cognition Scale and the Scales of Psychological Well-Being. The relationships between internet addiction and psychological well-being were examined using correlation and multiple regression analysis. According to results, psychological well-being was predicted negatively by diminished impulse control, loneliness/depression, social comfort, and distraction. Students with higher levels of internet addiction are more likely to be low in psychological well-being. The results
indicated that psychological well-being was affected by internet addiction negatively; and provided a better understanding on the relationship between psychological well-being and internet addiction.

Ozgul Orsal, Ozlem Orsal, Unsal, and Ozalp (2013) made a study on evaluation of internet addiction and depression among university students. This descriptive study was conducted among first-year students from Eskisehir Osmangazi University. Of the 4585 students on this University campus of Meselik, 3442 (75.1%) students agreed to participate in the study. Questionnaires included Young’s Internet addiction scale and Beck Depression Inventory. The Mann-Whitney U test, Kruskal-Wallis test and Spearman’s rank correlation coefficient were used for statistical analysis. The scores of the students on the Internet Addiction Scale were 08.28±21.89, and the scores on the Depression Scale were 14.72±10.58. Internet addiction among students was significantly higher (p<0.05 for each) among students in the Faculty of Economics and Administrative Sciences, students with high family income, students with large families, students whose parents were university graduates and were employed, students with chronic diseases and students who used the internet more than 13 hours each day. A significant positive correlation was found between the level of depression and the level of internet addiction (rs=0.804; p=0.000).

Romano, Osborne, Truzoli, and Reed (2013) analyzed a study on differential psychological impact of internet exposure on internet addicts. The study explored the immediate impact of internet exposure on the mood and psychological states of internet addicts and low internet-users. Sixty volunteers responded to a request for participation in a psychology study, which was advertised on and around Swansea University campus. Participants were given a battery of psychological tests to explore levels of internet addiction, mood, anxiety, depression, schizotypy, and autism traits. They were then given exposure to the internet for 15 min, and re-tested for mood and current anxiety. Mean, SD and Spearman correlation coefficient were used for analysis. Internet addiction was associated with long-standing depression, impulsive nonconformity, and autism traits. High internet-users also showed a pronounced decrease in mood following internet use compared to the low internet-users. The immediate negative impact of exposure to the internet on the mood of internet addicts may contribute to increased usage by those individuals attempting to reduce their low mood by re-engaging rapidly in internet use.
Şaşmaz et al. (2014) investigated the prevalence and risk factors of internet addiction in high school students. This cross-sectional study was performed in the Mersin Province in 2012. The study sample consisted of students attending high school in the central district of Mersin. The data were summarized by descriptive statistics and compared by a binary logistic regression. The population of this study included 1156 students, among whom 609 (52.7%) were male. The mean age of the students was 16.1 ± 0.9 years. Seventy-nine percent of the students had a computer at home, and 64.0% had a home internet connection. In this study, 175 (15.1%) students were defined as Internet addicts whereas the addiction rate was 9.3% in girls, it was 20.4% in boys ($P < 0.001$). In this study, internet addiction was found to have an independent relationship with gender, grade level, having a hobby, duration of daily computer use, depression and negative self-perception. According to this study results, the prevalence of internet addiction was high among high school students. This study recommends preventing internet addiction among adolescents by building a healthy living environment around them, controlling the computer and internet use, promoting book reading and providing treatment to those with a psychological problem.

Al-hantoushi and Al-abdullateef (2014) made a study on the prevalence of internet addiction among secondary school students in Riyadh city, its correlates and its relation to depression. In a cross sectional study, a total number of 770 secondary schools students were randomly selected. Subjects completed the demographic questionnaire, Young’s internet addiction test, and the Center for epidemiological studies depression scale. The results of this study showed that the prevalence was 5.3%, with male predominance. This study also found internet addiction was associated with a lower degree of school performance, more hours using internet every day, lower level of parental control, and higher level of depression. This study suggests that internet addiction has psychological, physical, and social effects on adolescents’ life, which requires preventive strategies and therapeutic interventions.

Konkan, O. Şenormanci, Güçlü and G. Şenormanci (2014) evaluated the predictor effect of depression, loneliness, anger and interpersonal relationship styles for internet addiction as well as develop a model. Forty (40) male internet addicted patients were selected from hospital’s internet Addiction Outpatient Clinic. During the study, the Internet Addiction Test (IAT), the Beck Depression Inventory (BDI),
the State Trait Anger Expression Scale (STAXI), the UCLA-Loneliness Scale (UCLA-LS), and the Interpersonal Relationship Styles Scale (IRSS) were used for the evaluation of the patients. Median, Correlation and regression were used for data analysis. The results found that the anger and depression were positively correlated with internet addiction. Regression analysis revealed that the ‘duration of internet use’ (B=2.353, p=0.01) and STAXI ‘anger in’ subscale (B=1.487, p=0.01) were the predictors of internet addiction.

2.3.1.4 Studies related to Internet Addiction and Shyness

Scealy, Phillips, and Stevenson (2002) analyzed on shyness and anxiety as predictors of patterns of internet usage. The aim of present study was to understand how personality moderates internet usage. 177 participants completed an Internet Use Survey, the Social Reticence Scale, and a Trait Anxiety Inventory. Shyness, anxiety, gender, and academic achievement were employed within separate multiple regressions to predict forms of internet usage. The use of e-mail and chat-rooms was not related to shyness or anxiety, suggesting that shyness or anxiety does not pose an obstacle to these internet applications. Males were more likely to use the internet for downloading entertainment. Shy males were more likely to use the internet for recreation/leisure searches. Highly educated males were more likely to use the internet for banking and paying bills. Although shyness or anxiety does not seem to modify the communicative functions of the internet, it may influence people’s use of other recreational applications.

Chak and Leung (2004) attempted to examine the potential influences of personality variables, such as shyness and locus of control, online experiences, and demographics on internet addiction. Data were gathered from a convenient sample using a combination of online and offline methods. The respondents comprised 722 internet users mostly from the Net-generation. Results indicated that the higher the tendency of one being addicted to the internet, the shyer the person is, the less faith the person has, the firmer belief the person holds in the irresistible power of others, and the higher trust the person places on chance in determining his or her own course of life. People who are addicted to the internet make intense and frequent use of it both in terms of days per week and in length of each session, especially for online communication via e-mail, ICQ, chat rooms, newsgroups, and online games. Furthermore, full-time students are more likely to be addicted to the internet, as they
are considered high-risk for problems because of free and unlimited access and flexible time schedules. Implications to help professionals and student affairs policy makers are addressed.

Hollingsworth (2005) analyzed on the relationship between shyness and internet addiction: A quantitative study on middle and post secondary school students. This small scale quantitative study looks into the relationship between shyness and internet addiction in middle school students. This study has been conducted on the belief that shyness is a possible predictor of internet addiction. To prove this hypothesis a questionnaire was created and distributed to 53 middle school students and 159 post secondary students. The results showed a relationship between shyness and internet addiction in middle school but not in post secondary students. It was found that time was the predictor for internet addiction with post secondary students. In summary, this study addresses the problem of internet addiction and the possibility of shyness as being one of its forecasters by using Young’s (2002) Internet Addiction Scale and the Cheek and Buss (1981) Shyness Scale. A Pearson’s Correlation was performed to determine if there is a relationship between the two.

Ebeling-Witte, Frank, and Lester (2007) conducted a study on shyness, internet use, and personality. The aim of this study was to investigate the association between shyness and internet usage. 88 undergraduate students completed the Revised Cheek and Buss Shyness Scale, the Online Cognition Scale, a computer/Internet familiarity scale, the Eysenck Personality Questionnaire Revised (short version) and the Abbreviated Duke Social Support Index. Significant correlations were found between shyness, internet use, and personality traits. A stepwise regression analysis indicated that shyness was predicted by introversion, neuroticism, and problematic internet usage as assessed by the Online Cognition Scale.

Ayas (2012) conducted a study on the relationship between internet and computer game addiction level and shyness among high school students. The participants of the study included 365 high school students attending high school in Giresun city centre during 2009-2010 academic year. As a result of the study a positive, meaningful and high correlation between the internet and computer addiction games addiction level was found. When the relationship between shyness and internet and computer addiction games addiction level is studied, another positive correlation is found as well. In this study fit indices obtained from the structural equation model
which was established to determine the relationship among internet addiction, computer addiction and shyness showed that the model was confirmed.

Eldeleklioglu and Vural-Batik (2013) investigated whether internet addiction is related to gender, academic achievement, duration of internet use, loneliness and shyness. The study was carried out with 206 adolescents aged between 15-18 years (X=16.50) studying public high schools. 55.8% (115) of the participant students were females and 44.2% (91) were males. To collect data, the “Personal Information Form” developed by the researchers, the “Internet Addiction Scale” developed by Young (1998), the “UCLA Loneliness Scale” developed by Russel, Peplau and Cutrona (1980), and the “Shyness Scale” developed by Cheek and Buss (1981) were used.

ANOVA, Pearson product moment correlation analysis and multiple regression analysis were used for this study. The results indicated that internet addiction changed according to gender, academic achievement and duration of internet use. Moreover, while academic achievement significantly and negatively predicted internet addiction, duration of internet use and shyness significantly and positively predicted internet addiction. However, the variables of gender and loneliness were found to have no significant effects on internet addiction.

2.3.1.5 Studies related to Internet Addiction and Self-Esteem

Tung (2003) conducted a study on an exploratory study on the interrelationship of internet addiction, internet usage motivation, internet usage behaviour and user characteristics for Taiwan high school students. The purpose of this study was to examine the interrelationship among motivation and gratification level, activities, personality and internet addiction for Taiwan’s high school students based on the Uses and Gratifications Theory. The characteristics of those identified as addicted are investigated along with the factors of demographic data, motivation and gratification, web attitude and personality. Moreover, structural equation modelling was used to verify the Theory. The study was conducted using purposive sampling at two major municipals in Taiwan. Questionnaires included Pathological Internet Use Scale for Taiwan high school student, Diagnostic Questionnaires, Internet usage Motivation and Gratification Scale, Interpersonal Relationship Scale, Self-Esteem Scale, Center for Epidemiologic Studies Depression Scale, Internet Usage Behavior Questionnaire, Perceptions of the Internet Influences and Demographic Data. Of the
1708 qualified samples, 236 were classified as Internet addicted. Major findings of the study are:

1. Students with personality of dependence, shyness, depression or lower self-esteem have higher tendency to become addicted.

2. The probability of males to become addicted is 2.6 times that of females. Vocational high school students have higher tendency to become addicted than Non-vocational high school students.

3. Those identified as addicted have lower self-esteem and higher depression.

4. Internet addiction has significant canonical correlation with motivation on social/entertainment and hours on internet.

5. Internet addiction has significant canonical correlation with shyness, depression emotion, poor interpersonal relationship, negative self-concept and lower self-esteem.

6. The theoretical model constructed in this study could explain the relationship among main variables by Amos.

“Internet usage motivation” has greatest direct effect on addiction. It has greatest total effect when combines with the factor of “Average weekly hours on Internet”. The predictability for internet addiction is 62% when six variables were used (Motivation on social, Motivation on entertainment, Average weekly hours on Internet, Interpersonal relationship, Depression, and Self-esteem). Finally, suggestions on counselling addicted students are made for government and high school authorities, counsellors and parents. Issues for further study are also discussed.

Suh and Choi (2006) conducted their research on internet addiction, self-esteem, and loneliness in adolescents. The purpose of this study was to examine internet addiction, self-esteem and loneliness in adolescents. Subjects were middle and high school students in Daegu (N=486). Self-rating questionnaire included demographic data, the Korean version of Young internet addiction scale, self-rating self-esteem and loneliness scale. Among the subjects, 34% was addicted and internet addiction was significantly different according to gender, record at school, economic status, attitude of mother, father, teacher and friend about internet. There were significant differences in self-esteem and loneliness according to internet addiction.
Internet addiction, self-esteem and loneliness were related to each other. These results indicate that internet addiction would be changed according to gender, record at school, economic status, attitude of mother, father, teacher and friend about internet. Therefore, further studies are needed to generalize these results and examine widely the related variables of internet addiction.

Ko, Yen, J. Y., Lin, Yen, C.F., and Yang (2007) determined the incidence and remission rates for internet addiction and the associated predictive factors in young adolescents over a 1-year follow-up. This was a prospective, population-based investigation. Five hundred seventeen students (267 male and 250 female) were recruited from three junior high schools in southern Taiwan. The factors examined included gender, personality, mental health, self-esteem, family function, life satisfaction, and internet activities. The result revealed that the 1-year incidence and remission rates for internet addiction were 7.5% and 49.5% respectively. High exploratory excitability, low reward dependence, low self-esteem, low family function, and online game playing predicted the emergency of the internet addiction. Further, low hostility and low interpersonal sensitivity predicted remission of internet addiction. The factors predictive incidence and remission of internet addiction identified in this study could be provided for prevention and promoting remission of internet addiction in adolescents.

Ghassemzadeh, Shahraray, and Moradi (2008) analyzed on prevalence of internet addiction and comparison of internet addicts and non-addicts in Iranian high schools. In this study, 1968 high-school students were selected randomly through clustering, who responded to the Persian version of four measures: the Internet Addiction Test (IAT), UCLA Loneliness Scale, Rosenberg Self-Esteem Scale, and Matson Evaluation of Social Skills. Of the sample, 977 students were internet users, who were classified into 37 internet addicts, 304 possible internet addicts, and 636 moderate users. Since possible addicts, moderate users, and nonusers can all be considered nonaddicts, to make a comprehensive and controlled comparison between addicts and nonaddicts, 37 possible addicts, 37 moderate users and 37 nonusers were matched with the internet addicts. Results suggest that internet addicts are lonelier and have lower self-esteem and poorer social skills than moderate users, but not necessarily than possible addicts or nonusers.
Kim and Haridakis (2009) conducted their study on the role of internet user characteristics and motives in explaining three dimensions of internet addiction. The sample included 203 undergraduate students ranging from freshmen to seniors from a variety of majors enrolled in a multisection course required as part of a large Midwestern U.S. university’s liberal education requirement. Internet addiction was measured by asking respondents how often they engaged in each of 31 indicators of Internet addiction (1 = Never, 5 = Very Often). This index consisted of 20 items from Young’s (1996) Internet Addiction Test (IAT) and 11 items from Horvath’s (2004) Television Addiction Scale. Both measures are based on DSM-IV criteria in line with the assumption that media addiction shows symptoms that are similar to addiction to other devices/substances (e.g., drugs). Mean, SD, correlation and regression were used for analysis of the data. Hypothesis 1a and 1b predicted that shyness, sensation-seeking, and loneliness would be positively related to internet addiction, while internal locus of control and self-esteem would relate negatively to internet addiction. H1a was fully supported. Shyness, sensation seeking, and loneliness related positively to all three dimensions of internet addiction. H1b was also fully supported. Internal locus of control and self-esteem were negatively related to all three dimensions of internet addiction. Hypothesis 2 posed that the amount of internet use would be positively related to internet addiction. This hypothesis was supported. The amount of time using the internet was positively related to all three dimensions of internet addiction.

Aydm and San (2011) examined the role of self-esteem on adolescents’ internet addiction. The sample of the study consisted of 324 adolescents from Trabzon, Turkey. “Internet Addiction Scale” and “Coopersmith Self-Esteem Scale” were used as data collection instruments. Obtained data were analyzed through Pearson product moment correlation coefficient and multiple linear regression analysis. The findings showed that general self-esteem, social self-esteem, family-home self-esteem and total self-esteem were significantly and negatively correlated with internet addiction. Furthermore, social self-esteem and family-home self-esteem were found to be significant predictors of internet addiction. These results were discussed and some conclusions were made.

Widyanto and Griffiths (2011) conducted a study on an empirical study of problematic internet use and self-esteem. The main aim of the study was to examine
the relationship between problematic internet use and a number of distinct demographic, behavioural, and psychosocial variables. Using an online survey, a self-selected sample comprising 1,467 internet users participated in the study. The survey comprised 50 questions including validated scales for both self-esteem (Rosenberg’s Self-Esteem Scale) and problematic internet use (Internet Related Problem Scale; IPRS) in addition to demographic information. Based on previous literature, it was hypothesized that problematic internet users were more likely than non-problematic internet users to post low self-esteem scores. Results showed that self-esteem was strongly and negatively associated with IRPS. Also, for those with high IRPS scores, participation in online forums was the primary online activity followed by online gaming and chatting. Although the study comprised a self-selecting sample and utilized self-report, the results appear to provide robust evidence of an association between self-esteem and problematic internet use mirroring prior research in the area.

Bozoglan, Demirer, and Sahin (2013) investigated the relationship among loneliness, self-esteem, life satisfaction, and internet addiction. Participants were 384 university students (114 males, 270 females) from 18 to 24 years old from the faculty of education in Turkey. The Internet Addiction, UCLA Loneliness, Self-esteem, and Life Satisfaction scales were distributed to about 1000 university students, and 38.4% completed the survey. It was found that loneliness, self-esteem, and life satisfaction explained 38% of the total variance in internet addiction. Loneliness was the most important variable associated with internet addiction and its subscales. Loneliness and self-esteem together explained time-management problems and interpersonal and health problems while loneliness, self-esteem, and life satisfaction together explained only the interpersonal and health problems subscales.

Bahrainian and Khazaee (2014) evaluated prevalence of internet addiction and its relation with depression and self-esteem. 408 students (258 males and 150 females) were chosen by multi-step cluster sampling. The tools of measurement were the Young internet addiction, Coopersmith self-esteem and Beck depression questionnaires. Descriptive and correlation analysis have been used to analyze data. The results showed that 40.7% of the students were addicted to the internet which included 2.2% severely addicted and 38.5% moderate one. Both depression and self-esteem were in relation with internet addiction so that the score of depression and self-esteem could anticipate the score of internet addiction to some extent. According
to the study, depression and self-esteem are two main causes and amplifiers of internet addiction, they should mainly be considered to recognize and treat in internet addiction

2.3.2 Related studies in India

Nalwa and Anand (2003) analyzed on internet addiction in students: A cause of concern. This study is a preliminary investigation of the extent of internet addiction in school children 16-18 years old in India. The Davis Online Cognition Scale (DOCS) was used to assess pathological internet use. On the basis of total scores obtained (N = 100) on the DOCS, two groups were identified- dependents (18) and non-dependents (21), using mean ± ½ SD as the criterion for selection. The UCLA loneliness scale was also administered to the subjects. Significant behavioural and functional usage differences were revealed between the two groups. Dependents were found to delay other work to spend time online, lose sleep due to late-night logons, and feel life would be boring without the internet. The hours spent on the internet by dependents were greater than those of non-dependents. On the loneliness measure, significant differences were found between the two groups, with the dependents scoring higher than the non-dependents.

Kumar and Sayadevi (2009) conducted a study on internet addiction among college students. The focus of current study is to assess the personality traits and psychological well being of the internet addicts. 1800 students, both male and female were drawn from three engineering colleges at Andhra Pradesh. They were screened with Young’s internet addiction 8 item diagnostic questionnaire. 100 students were found to have scores above the cut-off indicating problematic usage. The following tools were then administered individually to those 100 students in the order given; Internet Addiction Test (IAT), Eysenck Personality Questionnaire - short scale (EPQ) and Psychological Well-being Scale. SPSS 13 was used to interpret the data. The results indicate that among the 100 students 70% of the sample could be classified as average internet users, 27% as problem over-users and 3% as pathologically addicted to the internet. The type of student’s internet usage was chatting (42%), e-mailing (30%), academic work (13%), cybersex (5%), gaming (3%) and other applications (7%).
Koovakkai and Muhammed (2010) conducted their study on internet abuse among the adolescents: A study on the locale factor. The present study focuses on the locale factor in the abuse of the internet by the adolescents. The study is conducted on a sample of 150 adolescents in Kerala State in India using a structured questionnaire. The responses collected from the adolescents were analyzed using percentage method. The results show that as compared to the urban adolescents, the internet abuse is more among the rural adolescents. This may be because of their ignorance about the seriousness of the matter.

Grover, Chakraborty, and Basu (2010) studied the pattern of internet use across people of various professions who have access to it and the impact of internet use on their personal, social, and occupational life and to evaluate their internet use on the International Classification of Diseases-Tenth Revision (ICD-10) dependence criteria and Young's Internet Addiction Diagnostic Questionnaire (IADQ). 104 respondents were assessed on a 31-items self-rated questionnaire covering all the ICD-10 criteria and Young's criteria for Internet addiction. Mean, standard deviation, frequencies, percentages, student's t test, chi-square test and Spearman's rank order correlation analysis were used. The typical profile of an internet user was as follows: the mean duration of internet use was 73.43 months (SD 44.51), two-thirds (65.38%) of them were using internet on a regular basis for a period of more than a year, the mean duration of daily internet use was 39.13 months (SD 35.97), the average time spent on internet use was 2.13 h (SD 1.98) everyday, more than half (56.73%) of the sample was using internet at least for 2 h/day, and the most common purpose of internet use was educational for two-thirds (62.5%) of the sample. The five most commonly endorsed items were as follows: the need to use the internet everyday (53.8%), internet use helping to overcome bad moods (50%), staying online longer than one originally intends to (43.3%), eating while surfing (24%), and physical activity going down since one has started using the internet (22.1%). When evaluated on ICD-10 substance dependence criteria and Young's IADQ separately, the prevalence of the 'cases' of internet addiction came out to be 51.9 and 3.8%, respectively. The internet affects the users' life in multiple ways. The sharp difference in the prevalence estimates of internet addiction depending on the type of criteria used shows the fragility of the construct of internet addiction.
Bhadauria, Gore, and Pandey (2011) studied the effect of excessive use of internet upon adolescents, mental health. In this study adolescents between age group of 17-18 years were selected from Class XI of senior secondary school of Banda city. Questionnaires included Mental Health Battery and Socio-Economic Status Scale (SESS). The major findings of the study were: (i) Internet usage negatively affects the mental health of adolescents. (ii) Internet usage affects more to the mental health of rural adolescents than that of urban adolescent. (iii) Internet usage affects the mental health of adolescent boys and girls of different SES same way. (iv) Internet usage and area differences are interacting significantly for the adolescents’ mental health and no variables are interacting significantly with one another for the mental health of adolescents.

Chatterjee and Sinha (2012) examined the associations between college students compulsive use of internet in relation to the potential personality variables. 300 college students from various streams (180 male and 120 female) were selected randomly from students who often go online. They were administered with the Compulsive Internet Use Scale (2009) followed by the Revised Eysenck's Personality Questionnaire (1985), Trait Anxiety Inventory (1983) and Trait Aggression Inventory (1988). Neuroticism, extraversion and trait anxiety is found to be positively and significantly correlated with compulsive use of internet, while trait aggression is found to be negatively but significantly correlated with compulsive internet use. Psychoticism was unrelated to compulsive internet use. Further, indepth interview revealed that internet usage increased under disturbed interpersonal relation like conflict with friends, parents, lover and failure. However, internet use promoted well-being by providing security, sense of belongingness by keeping oneself busy from social obligations and responsibilities.

Das (2012) conducted a study on net addicted adolescents at risk of mental health. The aim of the study was to see the impact of internet addiction on mental health. The sample comprised 70 adolescents (boys & girls) aged 14-18 years who were internet users. The tools for assessment were Mental Health checklist (Kumar) and Internet Addiction Test (Young). The hypotheses that (1) Internet addiction affects mental health, (2) there is significant difference between Mental Health of Net Addicted and Net Non- Addicted subjects were proved. It was concluded that internet addicted had poor mental health.
More and Nalawade (2012) made a study on study of internet use and health related implications of internet users. The objectives are 1. To study the frequency of internet use by different demographic classes. 2. To find out amount of time spent on internet use by different demographic classes. 3. To study purposes for which internet is used. 4. To study demographic and other health related implications of internet user. Total sample selected for study were 320 but at the time of study researchers got data from 275 samples. The data has been analyzed by using simple statistical tools. The results suggest that, in general, majority of the users use the internet as informative source. The survey shows that the ratio of users of entertainment is significant. From the statistical analysis internet usage is independent with reference to demographic variables like age and gender. The average time spent on internet in male is more than female. Maximum use of internet in male and female for entertainment and communication. The use of internet has its impact on health of internet user. The physical and mental effects of the health are associated with the internet use. In this study, 80% people have declined the effect of internet on their routine physical activities.

Goel, Subramanyam, and Kamath (2013) made a study on the prevalence of internet addiction and its association with psychopathology in Indian adolescents. A cross-sectional study sample comprising of 987 students of various faculties across the city of Mumbai was conducted after obtaining Institutional Ethics Committee approval and permission from the concerned colleges. Students were assessed with a specially constructed semi-structured proforma and The Internet Addiction Test (IAT; Young, 1998) which was self-administered by the students after giving them brief instructions. Dukes Health Profile was used to study physical and psychosocial quality of life of students. Subjects were classified into moderate users, possible addicts, and addicts for comparison. Of the 987 adolescents who took part in the study, 681 (68.9%) were females and 306 (31.1%) were males. The mean age of adolescents was 16.82 years. Of the total, about 74.5% were moderate (average) users. Using Young’s original criteria, 0.7% was found to be addicts. Those with excessive use of internet had high scores on anxiety and depression.

Kodavanji, Chathoth, Arunkumar, and Pai (2013) conducted a study on internet behaviour pattern in undergraduate medical students in Mangalore. Considering the explosive growth in internet use among medical students in India,
this study aimed to determine the prevalence of internet addiction in undergraduate medical students. This cross-sectional study involved 90 subjects (18-20 years of age) selected by random sampling from the first year undergraduate medical student population at Kasturba Medical College Mangalore. Young’s Internet addiction test questionnaire was administered. Mean and standard deviation were calculated for the continuous variables and frequencies, and percentages were computed for the discontinuous variables. Based on the scoring, subjects were classified into normal users (score <20), mild (score 20-49), moderate (score 50-79) and severe (score >79) internet addiction groups. The prevalence of internet addiction (moderate and severe) was determined to be 18.88%. Majority (57.77%) conformed to mild addiction. The most common purpose for internet use was found to be social networking (97.8%), followed closely by e-mailing (87.8%). The prevalence of moderate to severe internet addiction appeared to be low, a significant number of students conform to mild addiction.

Naranbhai (2013) conducted a study on internet addiction among undergraduate and post-graduate students. This study is to evaluate explore the impact of gender and education level in internet addiction. The participants were 160 students in the different colleges and university departments in Rajkot city, Internet Addiction Scale by Young (1998). To examine the impact of gender and educational qualification on internet addiction data were analyzed using F-test. The results demonstrated that male students are more internet addicted than female students and undergraduate student more internet addicted than post-graduate student.

Premsingh and Prajina (2013) conducted their research on a study on the impact of internet addiction among adolescents. The objectives of the present study are i) To study the extent of using internet. ii) To study the impact of internet addiction on the academic performance iii) To study the impact of internet addiction on social life iv) To study the impact of internet addiction on psychological well-being v) To study the economic aspect of using internet. A descriptive study was conducted among 30 higher secondary students (15 boys and 15 girls) who were studying in a govt. school at Kerala. The data was collected by using both primary and secondary sources. An internet addiction test scale developed by Dr. Kimberly Young, and a structured questionnaire specially drafted for the purpose was used for collecting the data. The collected primary data was analyzed by using percentages and
proportions. The study results show severe cases are rarer than that of moderate cases. But there are further chances to fall down the moderate cases to severe cases. The boys are more addicted to internet than girls because they are getting more opportunity to mingle with friends and different people in the community. They are allowed to spend more time in internet café even in night than girls. They can understand from the study that the academic and social impact is prominent than psychological impact. It may be due to the unique nature of respondents. Adolescents give more importance to instant pleasure. No more people are concerned about after effects. Hence in this progressive world -the society, the family, and the parents- must be aware of the trap around.

Savitha, Kumari, D'souza, Dhar, and Alex (2013) analyzed a study on severity of mobile phone use and internet use among BSc. nursing students. The Objectives of the study are to assess the severity score of mobile phone use and internet use among BSc. Nursing students and to find the relationship between mobile phone and internet use. This study was conducted among 114 BSc. nursing students in Manipal College of nursing Manipal. A convenient sampling technique was used. The data was obtained by using a demographic proforma, mobile phone addiction test and internet addiction test. Data were analyzed using frequency, percentage and Pearson correlation. Results show most of the subjects 50 (43.9%) belong to 19-20 years of age. 1.8% subjects reported of having mild addiction to mobile phone use. Three (2.6%) subjects had moderate internet addiction and 35 (30.7%) subjects reported of having mild internet addiction. The ‘r’ value (r=0.610, p=≤0.001) showed that there is a positive relationship between the use of mobile phone and internet use.

Srikanth, Deodurg, Nandini, and Doddamani (2013) conducted a research on internet usage among doctors in South India. The present study was undertaken to know the trend of internet usage among doctors. This was a cross-sectional questionnaire-based study conducted in two medical colleges in south India. The participants were divided according to academic grade, from professors to tutors. A total of 411 participants were given questionnaire, out of which 395 completed the questionnaire. The highest users for medical information were Assistant professors/Senior residents (80%), followed by associate professors (71.7%). For general as well as medical purpose, Assistant professor/Senior resident used the internet daily. PubMed was the most commonly used website by Assistant
professor/Senior resident (81.9%), followed by Tutor/junior resident (79.5%). Most common barrier was lack of time for using internet among all the staff, followed by not reliable information. Majority of the doctors had access to internet and were using it for both medical and general purpose reasons. It was observed that there is under utilization internet resources for medical purpose. Increase in awareness, training in computer and Internet skills, availability of requisite facilities are required for better utilization of the internet by doctors. This will be helpful for promoting and practicing evidence based learning.

Subathra, Nimisha, and Hakeem (2013) conducted a study on the level of social network addiction among college students. The objectives were i) To understand the socio demographic profile of the respondents ii) To find out the level of social network addiction among the college students iii) To study the level of social network addiction among college students. The researcher has used descriptive research design for the study. The universe consists of the students studying in SNG College at Coimbatore. There are 1500 students studying in this college. The researcher used stratified random sampling for selecting samples. Stratifications were on degrees and batches. And lottery method was employed to select 100 samples from different stratifications. The researcher used self prepared questionnaire to collect the data from the respondents. The findings were i) The nearly half (46%) of the respondents belong to the age group of 18-21. ii) The more than half (67%) of the respondents were undergraduate. iii) More than half (62%) of the respondents are from rural areas. iv) The majority (39%) of the respondents have a family income of below 5000-10000. v) The vast majority (82%) of the respondents are from nuclear family. vi) More than half (57%) of the respondents have 1-4 members in their family. vii) More than half (76%) of the respondents live with their parents. viii) The vast majority (84%) of the respondents have been inspired by their friends for using the social network for the first time. ix) More than half (70%) of the respondents spend less than 100Rs for social network services. x) The vast majority (88%) of the respondents spend less than 3hrs on chatting per day. xi) The majority (73%) of the respondents start using social network below 2yrs. xii) More than half (57%) of the respondents grades are affected in college because of the amount of time they spend for chatting. xiii) More than half (55%) of the respondents often stay online longer than they intended xiv) Very few (35%) of the respondents are always aware about
the consequences of long time chatting in social network. xv) Majority (63%) of the respondents don’t lose sleep due to late night chatting. xvi) Nearly half (47%) of the respondents don’t feel that wasting money and time after long time chatting in social network. xvii) As per this study 98% of the respondents were addicted with social network chatting at medium level. The researchers conclude from the study that various aspects such as sex, source of motivation, amount spent per month, primary mode of accessing social network and time spent per session have had an influence over addiction of social network in students.

Thenu and Keerthi (2013) analyzed a study on prevalence of digital addiction and use of digital devices by students. This study was conducted in parts of Tamil Nadu (Coimbatore, Chennai and Vellore) where 275 male and 386 female samples were studied. A questionnaire designed by the investigators was used to provide information on various aspects pertaining to the relation between individuals and their use of digital devices (cell phone, television, computer and video games). The percentage of the sample in accordance with the various aspects of the study was calculated. Any significant relationship between variables was also analyzed. Majority of the student youth find themselves addicted to their television sets followed by their cell phones and finally the computer and video games. Majority of the student youth have joined social networking because of their friends, hence peer pressure seems to play a role in social networking rather than their personal interest. Male student youth are given access to cell phones at a younger age than female students. Of all the behavioural changes that the youth have claimed to experience, health comes first with over half the student population experiencing a decline in health that correlates with the hours they spend in front of the television. There is a negative correlation between age and video gaming. There is a negative correlation between age and cell phone use.

Trott (2013) conducted a study on Virtual addiction- a terrific Mania. The main objectives of study are to classify the respondents on the degree of intensity of virtual addiction and to suggest ways and means to get rid of virtual addiction among management students. Data is collected from 200 respondents who are pursuing MBA. The respondents are chosen from a leading b-school of Mumbai and Pune through random sampling method. The data is collected through questionnaire method. All the questions are close ended on a five point likert scale (1- strongly
disagree, 5- strongly agree). Pilot study was done before actual data collection by taking a sample of 50 respondents. Data is analyzed using SPSS software. Reliability test is done before actual analysis. Cluster analysis was used to group the respondents on the basis of degree of virtual addiction. On the basis of analysis there are five clusters which were identified. The study is of great use to the corporate world as well as the management institutes to know the degree to which virtual addiction is present and various steps taken to reduce them. Therefore, virtual addiction is a growing mania among management.

Yadav, Banwari, Parmar, and Maniar (2013) conducted a study on internet addiction and its correlates among high school students: A preliminary study from Ahmedabad, India. Internet Addiction (IA) is an upcoming and less researched entity in psychiatry, especially in low and middle income countries. This is the first such effort to study IA amongst Indian school students of class 11th and 12th and to find its correlation with socio-educational characteristics, internet use patterns and psychological variables, namely depression, anxiety and stress. Internet addiction (IA) is an upcoming and less researched entity in psychiatry, especially in low and middle income countries. This is the first such effort to study IA amongst Indian school students of class 11th and 12th and to find its correlation with socio-educational characteristics, internet use patterns and psychological variables, namely depression, anxiety and stress. Six hundred and twenty one students of six English medium schools of Ahmadabad participated, of which 552 (88.9%) who completed forms were analyzed. Young's Internet Addiction Test and 21 item Depression Anxiety and Stress Scale were used to measure IA and psychological variables respectively. Logistic regression analysis was applied to find the predictors of IA. Sixty-five (11.8%) students had IA; it was predicted by time spent online, usage of social networking sites and chat rooms, and also by presence of anxiety and stress. Age, gender and self-rated academic performance did not predict IA. There was a strong positive correlation between IA and depression, anxiety and stress. IA may be a relevant clinical construct, and needs extensive research even in developing nations. All high school students suffering from depression, anxiety and stress must be screened for IA, and vice versa.

Amin and Kaur (2014) analyzed a study on exploring internet addiction among university students and its relation to academic performance. The data were
collected from 210 Punjabi University, Patiala students through Young's Internet Addiction Test (IAT). The results of correlation analysis revealed negative relationship between internet addiction and academic performance of university students, though not significantly so. The result of the study revealed significant gender differences in internet addiction among university students. Further, male university students were found to be significantly more addicted to the use of internet than their female counterparts. On the contrary, no significant differences were found in internet addiction among university students in relation to locale and subject stream. Internet addiction was found to have a significant negative impact on academic performance of adolescents. Further, perceived behaviour control emerged as the most significant predictor of academic performance of the university students. These results of the study have implications for counsellors, teachers and parents.

Govindappa, Kasi, and Henry (2014) conducted a study on internet use and risk taking behaviours among adolescents. The present study aimed at assessing the risk taking behaviours of the adolescents in the internet use. Seventy five samples were drawn from three English medium schools of West Bangalore by using simple random sampling technique and the data were collected using semi structured interview schedule. Results show that 74.7 % of the respondents were male with the mean age of 15.05(±1.25) y. The mean age at the time of initiation to use the computers was 10.22 (±2.49) y. Total mean time spent was 7.23 (±7.02) h with maximum number of hours spent was 34 h a week for various purposes. Majority (34.7 %) of the respondents had ranked ‘playing online games’ as their first choice, 29.3 % use internet for academic purpose as their second choice and 29.3 % of respondents ranked the choice of sending emails as third. About 62.7 % play online games, 10.7 % claimed that someone revealed their personal details, 5.3 % reported that they were requested to engage in sexual activities/talk by an adult, 16 % got to know a teenager online and made contact with him/her by mail/telephone/in person. Majority (90.7 %) of them had come across nudity and sexual images, 45.3 % have placed their personal details in websites such as Orkut, Facebook, MySpace, and 6.7 % reported that they sought professional help for their pattern of use. Though, majority (40 %) of the respondents access the computer at home, 66.7 % had no proper guidance and monitoring in using the internet that would increase the risk taking behaviour of the adolescents. Thus the internet should be used in the right way
with proper guidance from the care takers and the relevant use of internet by children solely depends on such important factors.

Malviya et al. (2014) conducted a study on prevalence of internet addiction disorder among college students. This cross-sectional study was conducted among 242 undergraduate students selected via simple random sampling from Medical College of Indore city. The data was collected by interpersonal interviews using a standardized ‘Internet Addiction Test’ questionnaire developed by Dr. Kimberly S. Young in 1998. Among 242 study subjects, 164 (67.8%) were males and 78 (32.2%) were females. Overall analysis to find out proportion of study subjects falling in the category of internet addicts on the basis of scoring system adapted for the study reveals that 23 (9.5%) subjects have been found to be internet addicts i.e. have scores 80-100. Among 23 (9.5%) internet addicts found in the study, 15 (6.1%) were males and 8 (3.3%) were females. (n=242).

2.3.3 Other studies related to internet addiction

Young and Rodgers (1998b) conducted their study on internet addiction: Personality traits associated with its development. This study investigated personality traits of those considered dependent users of the internet utilizing the 16PF. Data collected were analyzed using Percentage, Mean and SD. Results showed that 259 cases of Dependents were classified based upon modified DSM-IV criteria for Pathological Gambling. Dependents ranked high in terms of self-reliance, emotional sensitivity and reactivity, vigilance, low self-disclosure, and non-conformist characteristics. This preliminary analysis discusses how such traits may act as triggers of addiction in order to fulfill an unmet psychological need through on-line stimulation.

Rumbough (2001) conducted a study on controversial uses of the internet by college students. A total of 985 university students completed a 55-item survey that determined how they use the internet (World Wide Web, Internet Relay Chat, e-mail, and instant messaging) for a variety of controversial purposes. Topics surveyed include how students use the internet for academic cheating, fake e-mail, inappropriate e-mail, and improper use of copyrighted materials. In addition, subjects were surveyed about their habits of accessing controversial Web sites that involve topics such as fake IDs, illegal drugs, illegal weapons, pornography, racism, and
gambling. Sample results indicate that more than 17 percent of subjects have used the internet to cheat on class assignments, over 38 percent of subjects have accessed pornography Web sites, 9 percent have accessed sites that involve illegal drugs, and more than 18 percent have successfully accessed someone else’s e-mail account without the other person’s knowledge. The results also revealed many significant differences in how males and females participated in controversial internet activities.

Rotsztein (2003) investigated the relationship between problem internet use and locus of control among 706 undergraduate college students who completed questionnaires. The data were analyzed using chi square test and Pearson correlation analysis. Results indicated that a large proportion of students reported feelings of dissociation and symptoms of tolerance, withdrawal and escape. Moreover, frequent interpersonal and academic conflicts, and physical health-threatening risks related to problem internet use were found. While men reported more internet-related problems overall, women were more likely to attempt to cut back or stop their internet use. A significant positive correlation between external locus of control and problem internet use was found. Finally, men were seven times more likely to gamble online.

Sally (2006) analyzed on prediction of internet addiction for undergraduates in Hong Kong. The focus of current study is to identify any predictors of internet addiction, intending to explain the addictive behaviour of internet users. Four hundred and ten data samples were collected through questionnaires from undergraduates of eight local universities. Using Young’s Internet Addiction Test (IAT), 18% of the respondents were identified as excessive internet users, showing the prevalence of internet addiction among undergraduates in Hong Kong. Data collected were analyzed using Chi-square, correlation and multiple regression. Results of statistical analyses show that academic performance is the most important predictor of internet addiction, followed by perceived behavioural control, gender, and attitude toward using the Internet. Apart from this, the study of predictors for the excessive IAT group has also been performed and the result shows that the level of internet addiction for this group is predicted by a different combination of variables. This indicates there may be some behavioural differences that discriminates the excessive users from the others. The findings here provide explanations on some addictive behaviour of the internet users and open up new paths for further research.
Hardie and Tee (2007) conducted a study on excessive internet use: The role of personality, loneliness and social support networks in internet addiction. An online survey of 96 adults showed that, based on Young's (1998) criteria for the Internet Addiction Test, 40% of the sample could be classified as average internet users, 52% as problem over-users and 8% as pathologically addicted to the internet. Data collected were analyzed using Mean, SD, Chi square test and multiple regression analysis. The three groups differed on a range of factors, with over-users and addicts spending increasingly more time on online activities, being more neurotic and less extroverted, more socially anxious and emotionally lonely, and gaining greater support from internet social networks than average internet users. Further analysis revealed that only neuroticism and perceived support from online social networks were significant predictors of excessive internet use. In addition, over-users were found to be younger and less experienced in computer use than average or addicted users.

Mythily, Qiu, and Winslow (2008) conducted a study on prevalence and correlates of excessive internet use among youth in Singapore. The survey consisted of a 69-item, anonymous, self-administered paper-and-pencil questionnaire. Data collected included demographic data, academic performance, social support and general wellbeing as well as questions pertaining to internet use. For the purposes of this study, they defined internet use of more than 5 hours a day as “excessive use”. Of the 2735 adolescents who took part in the study, 1349 (49.3%) were males and 1383 (50.6%) were females. The mean age of the adolescents was 13.9 years [standard deviation (SD), 1.0]. A quarter of the adolescents surveyed (25%) reported that they did not access the internet every day, while 17.1% of adolescents reported using it for more than 5 hours every day. Excessive internet use was associated with (i) no rules of internet use at home (x² = 313.1, P<0.001), (ii) less likelihood of having confidants (x² = 15.8, P = 0.003), (iii) feelings of sadness or depression (x² = 49.6, P <0.001) and (iv) perceived poorer grade/school work (x² = 226.1, P <0.001). The high figures of excessive internet use (17.1%) reported in this study is not equivalent to internet addiction as no diagnostic instruments were used. However, school counsellors and teachers need to be made aware of the prevalence of and problematic behaviours associated with excessive internet use. Training and resources should also be made
available to parents and caregivers so that they can play a greater role in setting boundaries and detecting early warning signs.

Lam, Peng, Mai, and Jing (2009) examined factors associated with internet addiction in adolescence using a population-based cross-sectional survey with self-reported questionnaires. Participants were recruited from high school students, ages 13 to 18 years, registered on the secondary school registry in Guangzhou city using a stratified random sampling technique. Internet addiction was assessed using the Internet Addiction Test (IAT). Information was also collected on demographics, health behaviours, and perception of personal condition. Depression was assessed by the Zung Self-Rating Depression Scale. The majority of respondents were classified as normal users of the internet (n = 1,392, 89.2%), with 158 (10.2%) moderately and 10 (0.6%) severely addicted to the internet. Results from the multivariate logistic regression analyses suggested a 50% increased odds for males to be addicted to the Internet (OR = 1.5, 95% CI = 1.1–2.2) when compared to females. Other potential risk factors included drinking behaviour (OR = 1.7, 95% CI = 1.1–2.8), family dissatisfaction (OR = 2.4, 95% CI = 1.3–4.3), and experience of recent stressful events (OR = 10.0, 95% CI = 6.5–12.2). Stress-related variables were associated with internet addiction among adolescents as they are also related to other addictions. Clinicians need to be aware of potential comorbidities of other problems such as stress and family dissatisfaction among adolescent Internet addiction patients.

Esen and Gundogdu (2010) investigated the relationships between internet addiction, peer pressure and social support among adolescents. The sample of the study consisted of 558 adolescents (290 female 268 male) selected from high school 9th and 10th grade at Mersin. The data related with the internet addiction was gathered by means of Internet Addiction Questionnaire developed by Young (1998) and adapted to Turkish culture by Bayraktar (2001). The data related with the peer pressure gathered with the peer Pressure Questionnaire developed by Kiran (2002) and Perceived Social Support Measure developed by Yildirim (1997) was used to measure the social support. To examine the relationships between internet addiction, peer pressure and social support, gender X peer pressure (low-medium high), gender X peer support (low-medium-high), gender X parental support (low-medium high) and gender X teachers’ support (low-medium-high) design four different analyses of variance was applied to the Internet Addiction Questionnaire scores of the
adolescents. For low, medium and high peer pressure, peer support, parental support and teachers’ support, 0.5 standard deviation was used as cut off point. The results showed that the lower the peer pressure, internet addiction decreases. Moreover, the more the parental and teachers’ support increase, internet addiction scores of the adolescents decrease. Furthermore, it was observed that internet addiction scores of the adolescents differed according to gender, and the internet addiction scores of the girls were lower than that of boys. Otherwise, no relationship was observed between internet addiction and peer support.

Ko et al. (2010) analyzed on the characteristics of decision making, potential to take risks, and personality of college students with internet addiction. This study aimed to identify risk factors involved in internet addiction. A total of 216 college students (132 males and 84 females) were given the following: (a) the diagnostic interview for internet addiction, (b) the Iowa gambling test for decision-making deficits, (c) the Balloon Analog Risk Test (BART) to assess risk-taking tendencies, and (d) the Tridimensional Personality Questionnaire (TPQ) for personality characteristics. The results revealed the following: (a) 49% of males and 17% of females were addicted, (b) the addicted students tended to select more advantageous cards in the last 40 cards of the Iowa test, indicating better decision making, (c) no difference was found for the BART, indicating that addicted subjects were not more likely to engage in risk-taking behaviours and (d) TPQ scores showed lower reward dependence (RD) and higher novelty seeking (NS) for the addicts. Their higher performance on the Iowa gambling test differentiates the internet addiction group from the substance use and pathologic gambling groups that have been shown to be deficient in decision making on the Iowa test. Thus, students that fit these characteristics should be closely monitored to prevent internet addiction.

Qin (2011) made a study of internet addiction among students of Sekolah Menengah Jenis Kebangsaan Pei Yuan, Kampar. This study examines the internet addiction in secondary school students. The sample consisted of 120 students in Sekolah Menengah Kebangsaan Jenis Pei Yuan Kampar, Perak. The study utilized an instrument to measure the internet addiction; namely Internet Addiction Test (IAT). Demographic factors (age, gender and grade of level) were examined too. Data analysis included descriptive and inferential statistic (Chi-square and T-test). The result suggests that the level of internet addiction among SMJK Pei Yuan is moderate.
and tends to minimal. Moreover, there is a significant gender difference in internet addiction, \( t (118) = 2.380, p = 0.019 \). However, there is no significant association between internet addiction among the lower and upper secondary students of SMJK Pei Yuan, Kampar, \( x^2 (1, n = 120) = 0.306 \). It is recommended that problem of internet addiction should be made aware to prevent growing of internet addiction.

Dong, Wang, Yang, and Zhou (2013) conducted a study on risk personality traits of internet addiction: A longitudinal study of Internet-addicted Chinese university students. The present study aimed to examine the potential personality predictors of internet addicts. Eight hundred and sixty-eight students were tested using the Eysenck Personality Questionnaire after they had just entered university. Two years later, 49 were found to be addicted to the internet as defined by high internet addiction test scores. Comparisons of means and logistic regression analysis were used to explore their relationship. Students addicted to the internet showed higher Neuroticism/Stability scores, higher Psychoticism/Socialization scores, and lower Lie scores than their normal peers before their addiction. Regression results showed that internet addiction was accounted by three independent variables: Neuroticism/Stability, Psychoticism/Socialization, and Lie. These results suggest that the risk personality traits of internet addiction include neuroticism, psychoticism, and immaturity.

Jahanian and Seifury (2013) investigated the extent to which the internet addiction may have impacts on students' mental health in technical and vocational colleges in Alborz province. 150 college students of the whole 260 female students in technical and vocational colleges in Alborz province were selected according to stratified random sampling on the basis of Morgan table, General Health Questionnaire (GHQ) and Young Internet addiction test. Descriptive and Inferential statistics have been used to analyze data. The results reveal that there is a significant and inverse relationship between internet addiction and students' mental health. In addition, the obtained results indicate that regarding the occurrence of addiction to the internet 36.6% of the subjects were slightly addicted to the internet; 55.3% of the subjects were respectively addicted to the internet; 7.3% of the subjects were moderately addicted to the internet and 0.6% of the subjects were severely addicted.

Shinde and Parandin (2013) analyzed on personality factors among internet addicted and non-internet addicted Iranian and Indian Students. In this study both
male and female Iranian and Indian students were compared on dependent variables. The main objectives of this study were "To study the differences if any, in personality of internet addicted and non-addicted students. The instruments used to measure the variables were Internet Addiction Test (IAT) by Young (1998) to measure the internet addiction and NEO Five-Factor Inventory-R by Costa and McCrae (1992) for measuring the personality factors. The results indicated that: Internet addicted students were higher on neuroticism, and lower on extroversion, agreeableness, openness to experience and conscientiousness than non-internet addicted students. Iranian students were higher on extroversion, agreeableness, and openness to experience and conscientiousness and lower on Neuroticism than Indian students. Female students were higher on neuroticism and lower on extroversion and conscientiousness than male students and there is no any difference in terms of agreeableness and openness to experience between male students and female students.

Li et al. (2014) examined the prevalence of internet addiction in a nationally representative sample of Chinese elementary and middle school students and to investigate internet addiction among internet users with different usages. The data were from the National Children's Study of China (NCSC) in which 24,013 fourth- to ninth-grade students were recruited from 100 counties in 31 provinces in China. Only 54.2% of the students had accessed the internet. According to the criteria of Young's Diagnostic Questionnaire (YDQ), an eight-item instrument, the prevalence of internet addiction in the total sample was 6.3%, and among internet users was 11.7%. Among the internet users, males (14.8%) and rural students (12.1%) reported internet addiction more than females (7.0%) and urban students (10.6%). The percentage of internet addicts in elementary school students (11.5%) was not significantly lower than the percentage of middle school students (11.9%). There was no statistically significant difference between the four geographical regions (9.6%, 11.5%, 12.3%, 11.1%) characterized by different levels of economy, health, education, and social environment. As the frequency of internet use and time spent online per week increased, the percentage of internet addicts increased. When considering the location and purpose of the internet use, the percentage of internet addicts was highest in adolescents typically surfing in Internet cafes (18.1%) and playing internet games (22.5%).
2.4 Summary of review of related literature

The review of related literature presented in this chapter included the theoretical details related to internet addiction and its psychological problems and also the researches conducted in this area. The investigator reviewed 104 studies related with internet addiction and loneliness, anxiety, depression, shyness and self-esteem. Of those related studies 83 studies have been conducted abroad and 21 studies in India.


Cao et al. (2007) assessed whether internet addiction is related to impulsivity among Chinese adolescents. Selfhout et al. (2009), Odaci and Kalkan (2010) and DeRushia (2010) conducted a study on different types of internet use and anxiety. Dong et al. (2011) evaluated the roles of pathological disorders in Internet addiction disorder and identify the pathological problems in IAD, as well as explore the mental status of internet addicts prior to addiction, including the pathological traits that may trigger internet addiction disorder. Same way Reda et al. (2012) conducted a study on problematic internet users and psychiatric morbidity in a sample of Egyptian adolescents. Korkmaz et al. (2011), Koc (2011), Ali et al. (2012), Alavi et al. (2012), Sepehrian and Jokar (2013) and Azher et al. (2014) investigated the relationship between internet addiction and anxiety.

Yen et al. (2008), Adalyer and Balkan (2012) and Romano et al. (2013) conducted their research on psychiatric symptoms and internet addiction. Ko et al. (2008) and Nastizai (2009) investigated the association between general health and internet addiction. Akin and Iskender (2011) examined the relationship between internet addiction and depression, anxiety, and stress. They found that depression, anxiety, and stress were predicted positively by internet addiction. Ayas and Horzum (2013) conducted a study on relation between depression, loneliness, and self-esteem and internet addiction.

Scealy et al. (2002) analyzed on shyness and anxiety as predictors of patterns of internet usage. Chak and Leung (2004) attempted to examine the potential influences of personality variables, such as shyness and locus of control, online experiences, and demographics on internet addiction. Hollingsworth (2005) analyzed on the relationship between shyness and internet addiction. The results showed a relationship between shyness and internet addiction in middle school students. Ebeling-Witte et al. (2007) conducted a study on shyness, internet use, and personality. They reported significant correlations were found between shyness, internet use, and personality traits. Ayas (2012) analyzed a study on the relationship between internet and computer game addiction level and shyness among high school students. His study revealed that there is a significant positive relationship between
shyness and internet and computer game addiction. Further Eldeleklioglu and Vural-Batik (2013) investigated whether internet addiction is related to gender, academic achievement, duration of internet use, loneliness and shyness. They reported academic achievement significantly and negatively predicted internet addiction, duration of internet use and shyness significantly and positively predicted internet addiction.

Tung (2003) made a study on an exploratory study on the interrelationship of internet addiction, internet usage motivation, internet usage behaviour and user characteristics for Taiwan high school students. He found students with personality of dependence, shyness, depression or lower self-esteem have higher tendency to become addicted. Suh and Choi (2006) conducted their research on internet addiction, self-esteem, and loneliness in adolescents. Ko et al. (2007) determined the incidence and remission rates for internet addiction and the associated predictive factors in young adolescents over a 1-year follow-up. High exploratory excitability, low reward dependence, low self-esteem, low family function, and online game playing predicted the emergency of the internet addiction. Ghassemzadeh et al. (2008) analyzed on prevalence of internet addiction and comparison of internet addicts and non-addicts in Iranian high schools. Results suggest that internet addicts are lonelier and have lower self-esteem and poorer social skills than moderate users, but not necessarily than possible addicts or nonusers. Kim and Haridakis (2009) conducted their study on the role of internet user characteristics and motives in explaining three dimensions of internet addiction. They found internal locus of control and self-esteem were negatively related to all three dimensions of internet addiction. Widyanto and Griffiths (2011) conducted a study on an empirical study of problematic internet use and self-esteem. Aydm and San (2011) examined the role of self-esteem on adolescents’ Internet addiction. Bozoglan et al. (2013) and Bahrainian and Khazaee (2014) investigated the relationship among loneliness, self-esteem, life satisfaction, and internet addiction.


Yadav et al. (2013) conducted a study on internet addiction and its correlates among high school students. They found that there was a strong positive correlation between internet addiction and depression, anxiety and stress. Trott (2013) conducted a study on Virtual addiction- a terrific Mania. Savitha et al. (2013) analyzed a study on severity of mobile phone use and internet use among BSc. nursing students. Subathra (2013) conducted a study on the level of social network addiction among college students. Thenu and Keerthi (2013) analyzed a study on prevalence of digital addiction and use of digital devices by students.

2.5 Rationale of the study

The present study deals with the growing problem of internet addiction among college students in this modern world. Even though all the students are using the internet, some of them are addicted to it. The students those who have psychological problems are using more of the internet activities like chatting, playing games and viewing movies when compared with others. They try to escape from the
psychological problems by using internet continuously which leads them to internet addiction. The review of literature reveals that internet addiction is related with psychological problems such as loneliness, anxiety, depression, shyness and low self-esteem. Studies about the reasons for internet addiction showed that characteristics like shyness, depressive signs and low self-esteem (Aydm & San, 2011) attributed with inclination towards internet addiction (Yang & Tung, 2007). Chen (2000) also found that increased levels of depression (variables such as low self-esteem, poor motivation, fear of rejection, need for approval) were also found to contribute to internet addiction. Other studies find that feelings of loneliness and low self-esteem may lead students to become addicted to the internet (Frangos & Fragkos, 2011). Several studies have reviewed the relationship among the internet addiction and adolescents' psychological characteristics including depression (Morgan & Cotton, 2003), anxiety, social phobia (Reda et al., 2012) and loneliness, depressed mood and compulsivity (Whang et al., 2003).

Although many studies have been conducted in relating to internet addiction and psychological problems, the present study differs from those reviewed studies in many ways of its variables. Many studies have been conducted on internet addiction and loneliness, internet addiction and anxiety, internet addiction and depression. But a few studies were conducted on internet addiction and shyness, internet addiction and self-esteem. Likewise, some studies have been conducted on internet addiction and combination of loneliness, anxiety and depression. But no study has not yet focused on the combination of variables such as loneliness, anxiety, depression, shyness, self-esteem and internet addiction.

Therefore, the present study is a new one and it differs from the reviewed studies of its variables and also differs from others in terms of area, population and sample. Hence, it is relevant for the researcher to study the relationship between internet addiction and selected psychological variables among college students.

2.6 Conclusion

The survey of the related literature has helped much to have a proper perspective of the problem chosen for the study. The review of related literature has enabled the investigator to formulate relevant hypotheses for the present study and insight into the selection and the use of effective methods of study, analysis and interpretation.