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Effectiveness Of A Nurse Led Educational Package Regarding Smart Phone Addiction And Associated Health Problems Among Adolescents In Selected Schools At Patiala, Punjab.

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Abstract

Research problem: effectiveness of a nurse led educational package regarding smart phone addiction and associated health problems among adolescents in selected schools at patiala, punjab.

Background of the study: it is often stated that children are the world's most valuable resources and assets, but their rights throughout the world are largely ignored often resulting into tragic outcomes.

Aim of the study: to assess the effectiveness of a nurse led educational package regarding smart phone addiction and associated health problems among adolescents in selected schools at patiala, punjab.

Methodology: a quantitative approach with two group experimental research design was used for this study**.** **A sample size** of 560 adolescents 280 in each, from experimental and control group at selected schools of patiala punjab was selected using **probability stratified sampling technique**. Structured questionnaire and sas scale was administered to assess knowledge regarding smartphone addiction and the prevalence of smartphone addiction among adolescents at selected schools of patiala, punjab.

Results: In the analysis report of this study, Out of total 560 subjects (Experimental group, N=280 +Control group,N=280), the majority 183 (32.67%) subjects (experimental 92 and control 91) had severe Smartphone addiction followed by 193(34.46%) subjects from both groups had reported with the moderate addiction score while the remaining 184 (32.85%) had been found at the risk or in the low addiction score. An notable effectiveness of a nurse led educational package regarding smartphone addiction among adolescents on severe addiction score of experimental group had been reported with the post- test addiction score of 4 (1.4%) that was shifted from a higher pre-test mean score of severe addiction 92 (32.5 %) of experimental group . The moderate addiction score was raised up to mean score 140(50%) from 99(35.4%) Followed by the low addiction mean score 136 (48.6%) from the 94 (33.6%) of the addiction score of experimental group .The pre-test mean percentile addiction score was 114.35 %which decreased up to post –test score of 94.71%after the intervention

On the other hand the addiction score among the adolescents of the control group had remained same that was as severe 85(30.4%), moderate, 107(38.2%) and mild 88(31.4%) with the pre -test addiction score as 91(32.5%), 99(35.4%) and 90(32.1%) respectively. The post –test mean score of control group was found almost the same as 115.78% and 115.29 % of the pre test and post test respectively

CONCLUSION:

It was concluded in this study, that there is a noticeable effectiveness of the intervention 'A nurse led educational package regarding smartphone addiction among adolescents at selected schools of Patiala, Punjab, which had shown a substantial gain in knowledge compared to the pre-test scores as a significance difference in the pre-test and post test prevalence score of Smartphone addiction among the adolescents of

the experimental group, after intervention that was shifted from severe to moderate and low addiction score .

KEY WORDS: knowledge, Effectiveness, Smartphone, Smartphone addiction, adolescents

INTRODUCTION

"We must protect families, we must protect children, who have inalienable rights and should be loved, should be taken care of physically and mentally, and should not be brought into the world only to suffer" Mrs. Indira Gandhi.

The 21st century is known as the era of information technology, when technology advancement hits civilization, parental care, and guidance slowly replaced by variety of technological innovations. The term "smartphone" was used in 1997 by Ericson. Smatphone is providing integrated services from communication, computing and mobile sectors such as voice communication, messaging, personal information management applications and wireless communication capability. The internet fuels the smartphone uses and is useful for a variety of purposes, such as convenient, rapid sharing of information, and contact with other cultures, emotional and feasibility and an easy charring of a smartphone makes it possible to use it anywhere, Because Smartphone's currently include all the features of a laptop, including web browsing, Wi-Fi, a bundle of apps. All over the world, adolescents are the more vulnerable group for the smartphone usages and abuse. According to WHO, Adolescents are defined as young people between the ages of 10 and 19 years. Today 20% of the world population is of adolescents, constituting 1.2 billion people worldwide. Nearly 243 million adolescents live in India.[4]

A UN report has raised concerns about the increased use of Smartphone in schools all over the world. This report shows the impact of technology shared objectives of on teaching and learning. And also abuse of technology for non-educational activities like entertainment and commercial use. UN also warned and suggested the whole countries to maintain the human –centred use of technology only to support the education, not to supplement the teachers led instructions. The Adolescents should know and use only the relevant content and ignore the unnecessary and irrelevant content. The technology has a double edge sword so adolescents should select only the use of technology to enhance their knowledgeand growth , not to replace the human relationship. [1]

COVID-19 outbreak was declared as the Public Health Emergency of International concern by WHO. So all of the educational institutions and companies were shut down, and people were forced to work from home. Various students were provided online-based. Apart from communication, smartphones were used to access social media platforms, for information, entertainment through movies and games, and educational purposes.[58]

This Pandemic period had also reduced opportunities for direct face to face interactions, and hence people started relying more on internet-based services. As a result to overcome boredom, seek information, and relieve anxiety related to the pandemic, people rely on unhealthy coping strategies like spending more time on the internet and social media through smartphones. Due to increased smartphone usage time after the outbreak of COVID-19, most of the adolescents suffered with the symptoms of Smartphone addiction like depression, self-control deficit and cyber bullying victimization. There is also a huge impact of smartphone abuse on economic status and academic performance among students.[2, 56]

According to a study report the Smartphones were used by 1.85 billion people in 2014. And it had increased to 2.87 billion in 2020. This data jumped to 8 billion in 2023 after impact of COVID-19. All around the world, people almost spend an average of 5.4 hours per day on their smart phones. All over the world about 95% of adolescents and graduates use smart phones and the dependency on smartphones is growing day by day among the adolescents, as a use of social media, violent online games etc. There is a strong relationship between Smartphone usage and feeling of restlessness without phone .[3]

All over the world the prevalence of smart phone addiction is about 2.4% to as high as 60.3% among adolescents and school-going children .There are about 560 million Internet subscribers about nearly 41% in India in 2018 that is second only to China. The average Indian users spend about 17 hours on the screen for social media each week, even more than social media users in China and the United States. Maximum smartphone entry-level users for are between 15 and 24 years old and most of them are the students .[33]

Excessive use of smart phone can cause so many physical, psychological and social problems in every user. The school children and adolescents are the most vulnerable group for its misuse and addiction. It interferes with school and daily routine work, decrease real-life social interaction, decrease academic ability, cause relationship problems. Furthermore it may cause physical and mental health-related problems including blurred vision and pain in fingers, wrist and pain in the or on the back of the neck. Memory loss, Brain tumour and cyber loafing are the major problems with smart phone addiction.[12]

About 58% of school population gets mobile phone during 14–16 years of age. The school ch ildren and adolescent use the smartphone for about 2-4 hours per day and maximum it is being used to look frequently at their phone about 1–50 times in a day. Majority of the students use mobile phone for communication/call/messages, photographs, entertainment, social media, education, games/sports, and reading newspapers/novels.[5]

Although many smart phone holders can regulate the duration they have to spend staring at their screen. Most of the smart phone users find it hard to interact with the world around them and they use their maximum time on their smart phones even at social events than meeting with their real friends Smart phone addiction in Indian teens can not only damage interpersonal skills, but also it can lead to significant negative health and harmful psychological effects on adolescents.[6]

Technology has made our life easy. We have gadgets that save our time and energy, entertain and inform us and play the role of companions. On the other hand, though, these gadgets had made our lives very comfortable .These gadgets not only make us lazy and inactive but they are also harmful to physical, social and mental well-being. Along with the worldwide population, Adolescents and children are the vulnerable group. In the childhood parents provide the mobile to their children for playing and learning. The parents don't monitor their children when they use smartphones . The content on smartphones is not correct and suitable for children always and the use of screens for a long duration, have bad affects on the, eyes, brain and mind, and also alter their way of thinking.[7]

Children also get disturbed by smartphones while studying due to the constant beeps of notifications that demand instant attention. They get introduced and put themselves in the virtual world via smartphones .They cannot distinguish the real and virtual world and are left confused about the reality and to believe. They also unable to make their attention only get lost in their smartphones.[8]

world health organization has issued recommendations even before this major issue of smartphone addiction1n 2019, regarding lifestyle ,sleep and screen time for children up to five years of age , that limit the daily screen time to one hour , and no screen time up to two years of age . They also recommended the sleep time minimum for 10 hours for children. But according to the data from the various studies, mostly children use their smartphones at late night for watching movies, playing games and for chatting and suffering with insomnia that is the main cause of depression.[38]

The radiofrequency radiation emitted by the Smartphone had shown the connections between EMR exposure and cancer. That exposure to EMR may result in structural damage to neurons. The studies had demonstrated the presence of strongly stained areas in the brains of rats that were exposed to mobile phone EMR. So it was concluded that EMR have a negative impact on mood and ability to learn.EMR exposure may also leads to other abnormal brain functions.[9]

The light and heat also cause the various vision disorders. The blue light of smartphone screen causes degeneration of optical tissues as reported in 2014 by the BBC concerns from opticians regarding blue-violet light emitted by smartphone phone screens, may be potentially hazardous to the eye and long term it may possibly increase the risk of Macular Degeneration The major harmful effects of mobile phones are ; Poor vision, Lack of focus, Anxiety, Isolation, Poor academic performance, Accidents, Sleep loss, Bad posture, Immoral activities, and Cyber bullying.[10]

Smartphone overuse" has been introduced as a form of "digital addiction" or "digital dependence", describing increasing trends of compulsive behaviour among users of technological devices. Researchers have termed these behaviours as "smartphone addiction" and "problematic smartphone use .Smartphone user gets socially isolated and suffers with loneliness. [36]

Most of the people, particularly adolescents use online communication and they prefer to be online for various consultations and meetings and avoid face to face interaction. Loneliness and isolation puts the user in depression, anxiety and restlessness. To get fear of missing mobile phone "FOMO" is one of most common the behaviour disorders in adolescent. Most of the adolescents check their phone within the repeatedly in a hour when they awake. And frequently check their phone screen about 50-100 times in a day. Thus they lose the social interactions and support and suffer with the behaviour disorders.[37]

The very common and severe impact on physical health of a long-term use of smart phones are reported as upper limb muscle or joint damage, neck stiffness and back ,pain visual problems, tympanic membrane problems, cancer, immune system diseases and eating behavior changes. These are accompanied with psychological health problems like anxiety, depression, memory and concentration problems, sleep disorders, There is also a higher risk of Neurological disorders including brain tumor and virtual autism due to prolonged use of smartphones. [11]

Physical disorder including Obesity and diabetes are very common to find in the students due to smartphone overuse. There is a reducing trend of walking and exercises due to smartphone overuse and addiction. Excessive use of smart phones interferes with physical activity of daily life. Smartphone Functions such as

sending and receiving text messages and browsing the Internet is responsible for a sedentary behaviour. This sedentary behaviour is associated with a variety of health problems, including obesity or metabolic syndrome. Because it leads to low energy expenditure, Cardiac problems, hypertension and heart attack among young adults has become a new challenge for health care system.[12]

The excessive usage of smartphones and social networking sites by students had resulted in serious stress disorders. This Stress directly affects individual's daily life activities such as concentration, making decisions, trusting others, and maintaining self-esteem and motivation. These psychological changes are also linked to various physical, social and behavioural disorders and poor social bonding resulting in the poor academic performance.[67]

A long term use and exposure to smart phone screens develops retinal detachment and myopia among younger users .Due to Heat and its light, dryness of eyes and vision disorders are very commonly seen in young population of smartphone users. There is about one in every four children suffers with the vision disorder, due to Smartphone overuse and/or its addiction, according to a study at AIMS.[13]

Indian teens are driving Smartphone's market rapidly in India, where the age group of 16-18 years has shown a rapid rise in smartphone use from 5% in 2012 to 25% in early 2014. According to a report published on statistics of smartphone users all around the world, adults of age group 25-35 years had shown the highest smartphone user rate of 62%. From which 50% users were of Android smartphones and the others 43% users were of Apple iPhone. [49]

Smart phone addiction can not only damage interpersonal skills, but also leads to significant negative health and harmful psychological effects on the adolescents. Although, the physical consequences of the overuse of smart phones can be easily diagnosed and managed but mental health issues are statistically significant concerns with smartphones overuse. The signs and symptoms of smartphone addiction Like Withdrawal, preoccupation, tolerance, lack of control, mood modification, conflict, lies, and loss of interest are more comm**only** reported among students**.**[14]

Adolescents in the age group of 10-19 use their mobile phones for various tasks like alarm, camera, social media, accessing the internet for information, projects, gaming, etc. The rate of texting has also increased exponentially due to rise in social media. Adolescent feel it a "status quo" to keep a branded smartphone. Influenced with a lot of peer pressure involved on usage of this device.[19]

Smartphone addiction badly affects the mental health of adolescents. **Smartphone addictives tend to feel depressed and isolated without their smart phones** and they look anxious, depressed and angry and sometimes commit suicide. Mostly, adolescents use cell phones at night, which leads to insomnia. This prolonged Insomnia ultimately results in depression and anxiety, is increasing by day. **Depression, lack of self-confidence, low self-esteem and negative self-image, is also a cause of** the increasing the suicidal rate in adolescents**.** [40],

An opposite type of behaviour of disorder of smart phone addiction is accumulating narcissistic character traits. Social media is responsible for these personality trait and people have the character traits of high levels of self-importance, fantasies of unlimited success, feeling special and unique, and shows lack of empathy, envy, and arrogance. However, some of these traits have been viewed as healthy because these traits make the self-esteem and self-confidence very strong among adolescents. [42]

One of the other bad effects of smartphone addiction has been seen on communication skills of the students, that is phubbing behaviours. Phubbing or phone snubbing behaviour. Adolescents often use a phone call or chatting instead to visit the relatives or friends. Thus they lose their real friends and relatives. Smartphone users get cut off the society and usually are unaware of the social values and ethics.[16]

There is a trend to perform dual or multitasking function at a time Use of cell phones while driving is very common, which lead to a high risk for road accidents. Adolescents mostly use, Smartphone, especially texting and also due to distraction of notification pings constantly, while driving, risk of accidents has increased to the 4 times more among Smartphone users. According to data by Ministry of Roads Traffic and Highways (MoRTH), India -2021 there is over 1 k deaths and over 5000 injured in road accidents due to use of phones while driving.[17]

There are about 73% kids use mobile phone, with its dual-effects, Personalized and Multi-functional, in India. Personalized; it is being used for individual's physical, cognitive, social and emotional needs at any time and place where the Multi- functional use is, it replace most other electronics like videogames, computers, TV, etc. and has applications for any other need.[18]

Adolescents with the problematic use of the smartphone have reported for more anxiety and depression issues. They also have problems focusing and maintaining attention at their tasks. Other psychopathologies seen in smartphone addicts are high levels of stress that is associated with videogames, and low self-esteem. Mobile phone is being overused in unchanged postures. That results the cumulative trauma disorders that affect the musculoskeletal system.[24]

Like the drug addiction or others, Smartphone addictive also show the impulsivity and a deficit in planning their behaviour. It is found that high users of smart phone have failure in self control and regulations in their behaviour choices and suffer with lower self control and cognition. Smartphone addiction develop the interest to choose an immediate reward and later penalty behaviour and irrational decision making strategies among high users compared to low users also showing characteristics of compared to low users for both dimensions of money and time .Inter temporal choice is defined as compared in loss and gain with time .[25]

Smartphone addiction results to feel depressed and isolated without their smartphones among adolescents and show the other symptoms of addiction also such as preoccupation, tolerance, lack of control, withdrawal, mood modification, conflict, lies, excessive use and loss of interest. Depression and low self-esteem have the strong correlation with the smartphone addiction [44]

To control and prevent the addiction among adolescents it is important to increase the awareness among them and their parents about these ill-effects of overuse of smartphone . The preventive strategies like meditation, exercises, digital – fasting and outdoor games, it may help the effects of Smartphone addiction to be washed out. Relaxation and postural correction should also be advocated while using the smartphone.[29]

Smartphone Addiction is defined by WHO (WHO Expert Committee - 1964) "as dependence, as the continuous use of something for the sake of relief, comfort, or stimulation, which often causes cravings when it is absent."

Smartphone addiction is considered as the lack of control to use the smartphone despite adverse effects including financial, psychological and physical, social harmful consequences on users. Like the drug addiction, there are four main components of smart phone addiction. 1, obsessive phone use, that is a behaviours such as repetitive checking for messages or updates, 2.tolerance, that is the more intense or longer use; 3, withdrawal, that is the feelings of agitation or suffering without the phone; and 4th is functional impairment means interference with other daily-life activities and face to face social relationship.[30]

Smartphone addiction is responsible for a lots of impulse-control problems, like Virtual relationships. Addiction among adolescents to social networking, dating apps, texting, and messaging can extend to the point where virtual and online friends become more important than real-life relationships. It also leads to lower productivity at work and isolation. Compulsive use of the internet and Smartphone apps, neglect other aspects of life, from real-world relations to hobbies. As a result there is a huge increase of broken family relations and homes.[65]

Smart phone users especially adolescents have also noted to suffer from low self-esteem and deficit in self control. Emotional complaints, conflicts in group affairs, college complications including learning problem and difficulty of concentration on doing assignmentsor home work. Because of the increasing prevalence of using modern technology, there is a need to focus on the impact of smartphone on health among school children, and develop proper coping methods to deal with the disorders like depression and emotions.[27, 47]

Overuse of smartphone results in Cybersex addiction and compulsive use of internet pornography. Online marketing is new trend which is again responsible for Gambling Addiction, People may wake up for a long hours at night in order to be online for the last remaining minutes of an auction. They get a challenge repeatedly for the winning bid .[41]

Problem statement

Effectiveness of a nurse led educational package regarding smart phone addiction and associated health problems among adolescents in selected schools at Patiala, Punjab.

Gaps in the Research

Adolescents and school children are dealing with technological advances so that they are most vulnerable groups for smart phone addiction. They inadequate impulse control compared with adults. The physical disorders or illness due to the overuse of smartphones can be easily diagnosed and managed, but mental health issues regarding smart phones overuse ,are not easy to diagnose or assessable. The common mental health disorders like withdrawal, preoccupation, tolerance, lack of control, mood modification; conflict, lies, and loss of interest are reported among students with smart phone addiction. Due to severe depression, adolescents look anxious, angry and hostile or sometimes commit suicide.

Researcher has found the gaps about knowledge and awareness regarding the bad effects of smart phone on health among adolescents. There is enough literature regarding smartphone addiction and various health disorders but only a few studies are there to assess the knowledge regarding smartphone addiction and associated health problems. So to impart the knowledge and to modify the behaviour regarding uses of smartphone among adolescents, researcher has selected this study.

NEED OF THE STUDY

The excessive usage of smartphones and social networking sites by students has resulted in serious stress disorders. Stress directly affects individual's daily life, such as difficulty in concentrating, making decisions, trusting others, and maintaining self-esteem and motivation. These psychological changes are also linked to various physical and behavioural disorders. Smartphone usage has been linked to depression, anxiety, poor mental health, and academic performance. [53]

It had been found that after COVID 19 an average smartphone user spends around 20 hours a week. Studies had also shown that smartphone user spends an average of 6 hours and 42 minutes a day for internet-based activities, which projects to nearly 100 days in a year.[56]

The prevalence of smartphone addiction was found 53.3% (n = 312) in the overall sample of 600 comprises, 54.5% in males (n = 109), and 52.7% (n = 203) in females. While before COVID the smartphone addiction prevalence in adolescents in the Philippines (21%), Hong Kong (18%) and England (10%). There was a higher score of prevalence of smartphone addiction than that was found in medical students in India (24.65%), Poland (37.02%), and Spain (14.9%). It was also revealed in this study that the prevalence of addiction in the categories of primary, middle and high school was respectively 63.2% (n = 115), 53.6% (n = 102) and 51.4% (n = 109).The top three reasons reported for smartphone use were social networking (77.9%), web searching (53.3%), and camera use (50.9%).From which the most of the prevalent regions of discomfort were the vision (39.7%) and neck pain. (39.1%).[65]

Use of smartphone in a wrong posture for a long time causes so many physical disorders mainly disorders of neck and spine. It may be pain in neck or back or may lead to major spinal and neural disorders. While the neck is in a neutral or normal position the cervical load acting on the neck is about 10 pounds. The cervical and it increases to around 60 pounds as the neck flexion reaches 60 degrees .It is also increased more when holding the phone close to the ear and tilting the head to the side. In the Rotation the movements put more strain in your inter-vertebral disc as well as facet joints. These repetitive and prolonged forces lead to cervical disc degeneration and long-lasting cervical and upper limb pain and discomforts.[55]

Neck pain and muscle stiffness due to overuse of smartphone and addiction, which is the major health disorder shown by various other studies. They enlisted these self-management strategies for neck pain like "Smartphone-Free Time", "Smartphone-Free Zone", "Focus Breaks", "Mobility Breaks", headphone or Bluetooth devices, regular exercises, preparing activity schedule, and inculcating health habits need to be promoted among the people.[52]

Adolescents with smartphone addiction feel depressed and isolated without their smartphones. Smartphone addiction is as the same as drug addiction and can be diagnosed by four properties: compulsion, functional impairment, tolerance, and withdrawal..Mostly, adolescents use cell phones at night, which leads to insomnia. This prolonged Insomnia ultimately results in depression and anxiety, anger, hostile isolation and some time commit suicide.[10]

Smartphone addiction is a significant public health concern with a significant impact on the mental and behavioural status of its users. Previous evidence has linked smart phone addiction to impaired behavioural attitude, low school/work performance, impaired social interaction and relationship difficulties. Physically, the overuse of smartphones was linked to higher risks of musculoskeletal pain, headache, blurred vision and hearing impairmen.[3]

Smartphone addictive tend to feel depressed and isolated without their smartphones; besides, they can experience other symptoms of addiction such as preoccupation, tolerance, lack of control, withdrawal, mood modification, conflict, lies, excessive use and loss of interest. Depression and low self-esteem are general reflections of psychological well-being, which are believed to be highly correlated with smartphone addiction. [4]

The excessive or over usage of smartphones has increased in the adolescent's population, highlighting the emergence of a serious disorder that warrants attention. Consequently, the usage of smartphones should be reduced through structured training programs, as this proves to be an effective method for enhancing undergraduates' understanding of the prevention and treatment of nomophobia.[62]

There is a huge increase in smartphone addiction and prevalence among school children during the COVID-19 pandemic compared to pre-epidemic findings.The students used the smartphone more than 6-h per day, which is a risk for their health status. The most common reasons for smartphone usage are social communication, camera, web-surfing and gaming. Although the primary aims of smartphones usage during this pandemic period was learning strategies, performing school tasks, and maintaining social interaction. But it became a burning issue nowadays as smartphone addiction and associated health problems.[65]

In brief, smart phones have become an important part of daily life. The frequency of use of smartphones is increasing day by day. The biggest problems are physical and psychological health problems that occur with

higher intensity as the addictive use of smartphones and the frequency of use increases. Additionally, the decline in the age of smartphone use indicates a significant public health risk. The whole society, especially healthcare professionals and adolescents should be aware of smartphone addiction and associated health problems.

Because of the increasing prevalence of using modern technology, there is a need to focus on the impact of smartphone on health among school children, quantify severity and develop proper coping methods to deal with the disorders like depression and emotions. It is found among adolescents that Smartphone usage is the social expectations and rewards of connecting with other people and seeking to learn from others that induce and sustain addictive relationships with smartphones.[27]

After reviewing the results of various studies regarding Smartphone addiction and issues, it is concluded that there is a relationship between smart phone addiction and adolescent's health. Researcher has proposed that awareness regarding using smart phone and about the health problems associated with excessive and overuse of smart phone must be created among the adolescents because dependency and overuse of smartphone has appeared as a public health problem nowadays.

So, the current study aimed to assess the effectiveness of a nurse led educational package regarding smart phone addiction and associated health problems among adolescents. The intervention will assist the adolescents to follow the preventive strategies and appropriate measures to control the smartphone addiction, and techniques to modifying the behaviour.

Objectives;

1. To assess the prevalence of smart phone addiction and associated health problems among adolescents of experimental and control group at selected schools of Patiala, Punjab.
2. To evaluate the effectiveness of a nurse led educational package regarding smart phone addiction and associated health problems among adolescents at selected schools at Patiala, Punjab.
3. To distinguish the relationship of smart phone addiction score and knowledge score regarding smart phone addiction and associated health problems among adolescent at selected schools of Patiala, Punjab.
4. To find the association of SAS score regarding smart phone addiction and associated health problems with the demographic variables among adolescent at selected schools of Patiala, Punjab.

OPERATIONAL DEFINITIONS-

Effectiveness: It refers to the significant difference in the post test level and pre- test level of knowledge score regarding smart phone addiction and associated health problems.

Nurse led educational package; This term refers to a package of educational activities containing, a computer assisted teaching program including, lecture cum discussion , power point presentation, and Smart phone addiction Preventive strategies and practice to modify the behaviour of smart phone users.

Smartphone; is an electronic device made of various metals, having dual function of traditional mobile phone and computer. It performs a lot of functions with various apps and need internet connection to run and is powered by battery containing lithium and gasses.

Smartphone addiction: It refers to obsessive and compulsive behaviour problem due to abuse or overuse of Smartphone which may leads to various health problems.

Health: Health is defined as physical, psychological, social and spiritual wellbeing, not merely absence of a disease.

Health Problems; The term is used for any deviation in any one or more aspects of health occurred due to smart phone use, abuse or addiction.

Adolescents: Refers to students undergoing for a basic education in a government affiliated school between the age group of 10-19 years in grade 6th to 12th.

CONCEPTUAL FRAMEWORK

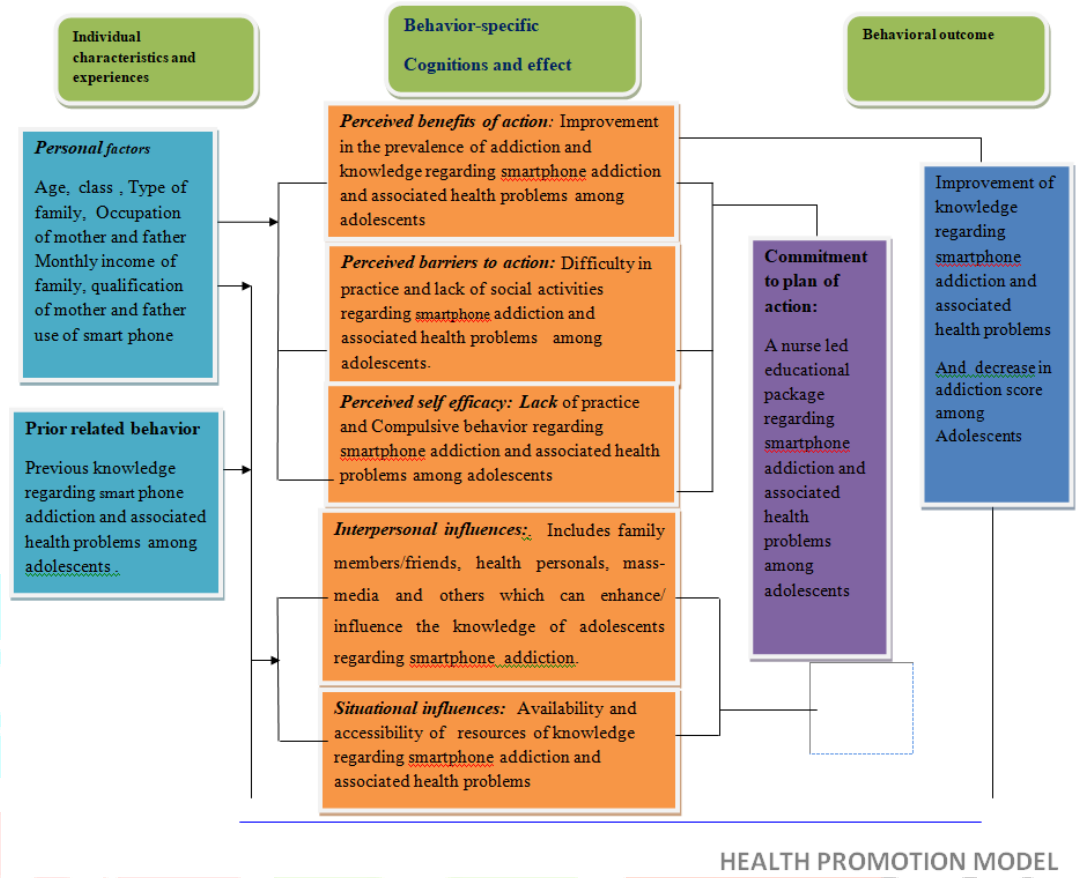
The conceptual framework for the study was developed on the bases of Health Promotion Model. Health Promotion can be defined as behaviour motivated by the desire to increase well being and actualize human health potential.

Health Promotion Model (revised 2002) proposed by Nola J.Pender, Murdagh C.L, Parsons M.A identifies factors that enhance or decrease health promotion behaviour. It explains the likelihood that healthy life style patterns or healthy behaviors will occur and it is useful to the nurse as a framework for client assessment. It

states that individuals are likely to change their behaviour to feel better physically, psychologically, socially and spiritually.

This Health Promotion Model focuses on three following areas:

1. Individual characteristics and experience,
2. Behaviour-specific cognition and effect
3. Behavioural outcome.



HEALTH PROMOTION MODEL

Scope of study

Mobile phones are one of the excellent gifts of technology in the 21st century, which is most popular among adolescents. Today's, mobile phones have infinite resources that have multiple benefits and applications. Its excessive use may impact the adolescents in the form of health problems, behavioral changes and diminish the academic performance. This study will explore the knowledge regarding smart phone addiction and its health problems among adolescents. This study will also assist the adolescents in picking out the appropriate methods to intervene effectively with students suffering with the Smartphone addiction.

Delimitations

This study was limited to adolescents of age group 10-19 years (6th to 12th grade students) only.

The study was limited to the selected schools of Patiala, Punjab.

Research Question;

What is the relative effectiveness of nurse led educational package about knowledge regarding Smartphone addiction and its health problems among adolescents at selected schools of Patiala, Punjab?

Research Hypothesis;

All hypotheses were tested at a 0.05 level of significance

H_1

1. There is a significant difference in the post-test Addiction score regarding smart phone addiction and associated health problems among adolescents of experimental and control group at selected schools of Patiala, Punjab.
2. There is a significant correlation between the addiction score and knowledge score regarding smart phone addiction and associated health problems among adolescents of experimental and control group at selected schools of Patiala, Punjab.

3. There is a significant association of pre-test Addiction score regarding smart phone addiction and its health problems among adolescents with demographic variables of experimental and control group at selected schools of Patiala, Punjab.

Research approach:
A quantitative approach was used to accomplish the objectives of present study.

Research Design;
An Experimental, pre-test, post-test, Research Design was used to accomplish the objectives of the study

Setting of the study:
The setting of research study; Study was conducted at Multipurpose Senior Secondary School Patiala and Govt. Senior Secondary school Civil lines Patiala of Patiala, Punjab, selected with the lottery system sampling technique among 12 senior secondary schools of Patiala.
Sample Adolescents in age group 10-19 years is the sample in this study .

Sample Techniques;
Two stage Randomized sampling, lottery sampling and stratified sampling techniques has been used to select the schools of Patiala and to select the sample accordingly.

Sample Size and calculation
Sample size was assessed with power analysis; $n= N/1+Ne^2$
Where; n=sample size, N = Population and e=chance of error.
N= 3250, e= 0.005
n=3250/1+ (3250x0.005)2
n=360
n= 396+10%=396
In this study the Sample size was 560, in which 280 for Experimental group and 280 for the Control group. Which was selected from the total number of students in each class divided by required sample and every k th was selected of both, girls and boys. (20 girls +20boys), 40 x 7 groups.

Research tool or instrument:.
Part. 1. The selected demographic profile of the respondents.
Part.2. Standard Addiction Scale (Kwon-SAS -33), a open access tool having 6 items likert with maximum score 198 and minimum 33 was used to assess the prevalence of smart phone addiction and associated health problems,
the data collected was tabulated, coded and analyzed by means of descriptive and inferential statistics, such as mean, mean percentage, standard deviation (SD), paired and unpaired T test. The level of significance chosen was p=0.05; bar graphs were used to depict the findings.

Ethical consideration:

An Ethical clearance and permission had been obtained before conducting the study from Ethical committee at Desh Bhagat University, and permission has been taken from appropriate authority (DEO and principles of the selected schools).
A written consent was taken for the participation from the parents of participating adolescent and the participants prior to the study.

Method of data collection:

The purpose of this study is to evaluate the effectiveness of a nurse led educational package on the smartphone addiction prevalence regarding smartphone addiction and associated health problems
In order to acquire the required information systematically questionnaire was thought to be most appropriate for the study. It was self-structured knowledge questionnaire and consisted of 30 multiple choice questions.

Data analysis & interpretation

In this study , analysis and interpretation of data collected from adolescents of experimental group =280 and of Control group =280 from the selected schools ,was organized, tabulated, analyzed and interpreted by using descriptive and inferential statistics. The analysis and interpretation was based on the data collected and the objectives of the study.

Data analysis:

Analysis of data was done in accordance with the objectives. The data analysis was done by using the descriptive statistics and inferential statistics i.e. calculating mean, median, standard difference and t-test.

Descriptive statistics:

Descriptive statistics was used to describe the basic features of data in study.
It provides simple summaries about sample and the measures.
Frequency, percentage distribution was used for describing socio demographic variables and level of knowledge.
Mean percentage and standard deviation was used to describe the knowledge.
T test was used to assess the knowledge of adolescents regarding smartphone addiction and associated health problems .

Inferential statistics:

Inferential statistics is the practice of using sampled data to draw conclusions or make predictions about a larger sample data sample or population.
Non-parametric chi-square test was used to find out the association between demographic variables and knowledge of adolescents regarding smartphone addiction and associated health problems among adolescent at selected schools of Patiala, Punjab.
Organization and presentation of the data:
The collected data were edited, tabulated, interpreted and findings obtained were presented in the form of tables and diagrams represent under following headings.
Section A: Demographic variables of the 560 adolescents' participants at selected schools at Patiala, Punjab. (Experimental and control group).
1, Frequency and percentage distribution of level of knowledge regarding smart phone addiction and associated health problems of adolescents in Pre-test & Post- test (experimental and control group)
2.Description of mean, mean percentage and standard deviation of Pre-test & Post- test SAS scores regarding smart phone addiction and associated health problems of adolescents (experimental and control group).
3. Assessment of effectiveness of a nurse led educational package, computer assisted teaching, lecture, PPT and discussion on knowledge regarding smart phone addiction and associated health problems among adolescents. (Experimental group).

Relevance of expected Results; The participants have exhibited improved knowledge regarding Smartphone addiction and associated health problems and modified their behaviour regarding Smartphone addiction.

Data analysis 3-1.1 table: 1 shows homogeneity test of both groups

demographic variables		homogeneity test						
Variables	**Opts**	**Experimental**	**Control**	**Chi Test**	**P Value**	**Df**	**Table Value**	**Result**
Age	10-11 Years	40	40	0.000	1	6	12.592	Not Significant
	11-12 Years	40	40					
	12-13 Years	40	40					
	13-14 Years	40	40					
	15-16 Years	40	40					
	15-17 Years	40	40					
	17-19 Years	40	40					
Gender	Boy	140	140	0.000	1	1	3.841	Not Significant
	Girl	140	140					
Type of family	Joint	92	81	1.407	0.495	2	5.991	Not Significant
	Nuclear	134	136					
	Extended	54	63					
Class /	6th	40	40	0.000	1	6	12.592	Not

Grade	7th	40	40					Significant
	8th	40	40					
	9th	40	40					
	10th	40	40					
	11th	40	40					
	12th	40	40					
Family income monthly	Less than Rs.15000	107	104	0.099	0.992	3	7.815	Not Significant
	15001-20000	107	108					
	20001-30000	38	40					
	More than 30000	28	28					
Residential Area	Rural	64	72	0.631	0.729	2	5.991	Not Significant
	Urban	203	195					
	Other	13	13					
Qualification of mother	Matriculation	155	142	2.121	0.548	3	7.815	Not Significant
	Under graduation	99	103					
	Post graduation	23	32					
	Informal education	3	3					
Qualification of father	Matriculation	150	135	2.600	0.457	3	7.815	Not Significant
	Under graduation	87	89					
	Post graduation	28	38					
	Informal education	15	18					
Occupation of Father	Service	95	92	0.149	0.985	3	7.815	Not Significant
	Business	106	106					
	Agriculture	43	46					
	Other	36	36					
Occupation of Mother	Service	33	29	0.317	0.957	3	7.815	Not Significant
	Business	40	42					
	At home	202	204					
	Other	5	5					
Use of smartphone duration	<1 year	51	48	0.839	0.84	3	7.815	Not Significant
	1-2 years	40	42					
	2-3 years	39	46					
	3-4 years and above	150	144					

Age: Age groups (10-11 years to 17-19 years) seem to be evenly distributed between the two groups (p-value = non-significant for all).

Gender: The distribution of boys and girls is similar across both groups (p-value = non-significant).

Type of Family: The proportion of children from joint families (92), nuclear families (134), and extended families (54) is fairly similar in both groups (p-value = non-significant).

Class/Grade: The distribution of students across grades (6th to 12th) appears similar in both groups (p-value = non-significant for all).

Family Income: Monthly income distribution (less than 15000, 15001-20000, 20001-30000, more than 30000) shows no significant difference between the groups (p-value = non-significant).

Residential Area: The distribution of children living in rural, urban, and other areas is comparable across both groups (p-value = non-significant).

Qualification of Mother and Father: The distribution across education levels (matriculation, under graduation, post graduation, other) for both mothers and fathers is similar in the two groups (p-value = non-significant for all categories).

Occupation of Father and Mother: The distribution of fathers' occupations (service, business, agriculture, other) and mothers' occupations (service, business, at home, other) is comparable across the groups (p-value = non-significant for all categories).

Smartphone Usage Duration: The distribution of smartphone usage duration (1 year, 2 years, 3 years, 4 years) shows no significant difference between the groups (p-value = non-significant for all).

Overall: Based on the Chi-square test results for all demographic variables, there's no evidence to suggest statistically significant differences in the composition of the two groups. This suggests that the two groups might be comparable in terms of these demographic characteristics

3.1.2 .table: 2; frequency distribution of socio demographic variables.

section-1 response demographic performa		experimental (%)	control (%)	experimental (f)	control (f)
age	10-11 years	14.29%	14.29%	40	40
	11-12 years	14.29%	14.29%	40	40
	12-13 years	14.29%	14.29%	40	40
	13-14 years	14.29%	14.29%	40	40
	15-16 years	14.29%	14.29%	40	40
	15-17 years	14.29%	14.29%	40	40
	17-19 years	14.29%	14.29%	40	40
gender	boy	50.00%	50.00%	140	140
	girl	50.00%	50.00%	140	140
type of family	joint	32.86%	28.93%	92	81
	nuclear	47.86%	48.57%	134	136
	extended	19.29%	22.50%	54	63
class / grade	6th	14.29%	14.29%	40	40
	7th	14.29%	14.29%	40	40
	8th	14.29%	14.29%	40	40

	9th	14.29%	14.29%	40	40
	10th	14.29%	14.29%	40	40
	11th	14.29%	14.29%	40	40
	12th	14.29%	14.29%	40	40
family income monthly	less than rs.15000	38.21%	37.14%	107	104
	15001-20000	38.21%	38.57%	107	108
	20001-30000	13.57%	14.29%	38	40
	more than 30000	10.00%	10.00%	28	28
residential area	rural	22.86%	25.71%	64	72
	urban	72.50%	69.64%	203	195
	other	4.64%	4.64%	13	13
qualification of mother	matriculation	55.36%	50.71%	155	142
	under graduation	35.36%	36.79%	99	103
	post graduation	8.21%	11.43%	23	32
	informal education	1.07%	1.07%	3	3
qualification of father	matriculation	53.57%	48.21%	150	135
	under graduation	31.07%	31.79%	87	89
	post graduation	10.00%	13.57%	28	38
	informal educatio	5.36%	6.43%	15	18
occupation of father	service	33.93%	32.86%	95	92
	business	37.86%	37.86%	106	106
	agriculture	15.36%	16.43%	43	46
	other	12.86%	12.86%	36	36
occupation of mother	service	11.79%	10.36%	33	29
	business	14.29%	15.00%	40	42
	at home	72.14%	72.86%	202	204
	other	1.79%	1.79%	5	5
use of smartphone duration	< 1 year	18.21%	17.14%	51	48
	1-2 years	14.29%	15.00%	40	42
	2-3 years	13.93%	16.43%	39	46
	3-4 years and above	53.57%	51.43%	150	144

Age: The distribution of age is identical across the experimental and control groups, with each age category from 10-11 years to 17-19 years representing 14.29% of the total participants in both groups. This uniform distribution indicates an equal representation of various age groups in both the experimental and control groups.

Gender: Both groups consist of 50% boys and 50% girls, ensuring an equal gender distribution in the experimental and control groups.

Type of Family: The types of families represented differ slightly between the groups. In the experimental group, 32.86% of participants are from joint families, 47.86% are from nuclear families, and 19.29% are from extended families. In the control group, 28.93% are from joint families, 48.57% are from nuclear families, and 22.50% are from extended families.

Class/Grade: Each grade from 6th to 12th is represented equally in both groups, with 14.29% of participants in each grade. This indicates that the participants' educational levels are uniformly distributed across both groups.

Family Income (Monthly): The distribution of family income is similar between the groups. In the experimental group, 38.21% of families earn less than Rs. 15,000, 38.21% earn between Rs. 15,001 and Rs. 20,000, 13.57% earn between Rs. 20,001 and Rs. 30,000, and 10.00% earn more than Rs. 30,000. The control group has 37.14%, 38.57%, 14.29%, and 10.00% respectively in these income brackets.

Residential Area: A slightly higher percentage of participants in the control group (25.71%) live in rural areas compared to the experimental group (22.86%). Conversely, a higher percentage of participants in the experimental group (72.50%) live in urban areas compared to the control group (69.64%). The 'Other' category has the same representation in both groups at 4.64%.

Qualification of Mother: In the experimental group, 55.36% of mothers have matriculation, 35.36% have under graduation, 8.21% have post-graduation, and 1.07% falls under the 'Other' category. The control group has a slightly lower percentage of mothers with matriculation (50.71%) and slightly higher percentages in the other categories: under graduation (36.79%), post-graduation (11.43%), and 'Other' (1.07%).

Qualification of Father: Fathers' qualifications show similar distributions in both groups. In the experimental group, 53.57% have matriculation, 31.07% have under graduation, 10.00% have post-graduation, and 5.36% fall under the 'Other' category. The control group shows 48.21%, 31.79%, 13.57%, and 6.43% respectively.

Occupation of Father: Fathers' occupations in both groups are also comparable. In the experimental group, 33.93% are in service, 37.86% in business, 15.36% in agriculture, and 12.86% in 'Other' occupations. The control group has 32.86%, 37.86%, 16.43%, and 12.86% respectively.

Occupation of Mother: Most mothers in both groups are at home, with 72.14% in the experimental group and 72.86% in the control group. The percentages of mothers in service are 11.79% (experimental) and 10.36% (control), in business are 14.29% (experimental) and 15.00% (control), and in 'Other' occupations are 1.79% in both groups

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Use of Smartphone Duration: The duration of smartphone use is similarly distributed between the groups. In the experimental group, 18.21% have used smartphones for 1 year, 14.29% for 2 years, 13.93% for 3 years, and 53.57% for 4 years. The control group shows 17.14%, 15.00%, 16.43%, and 51.43% respectively for the same durations.

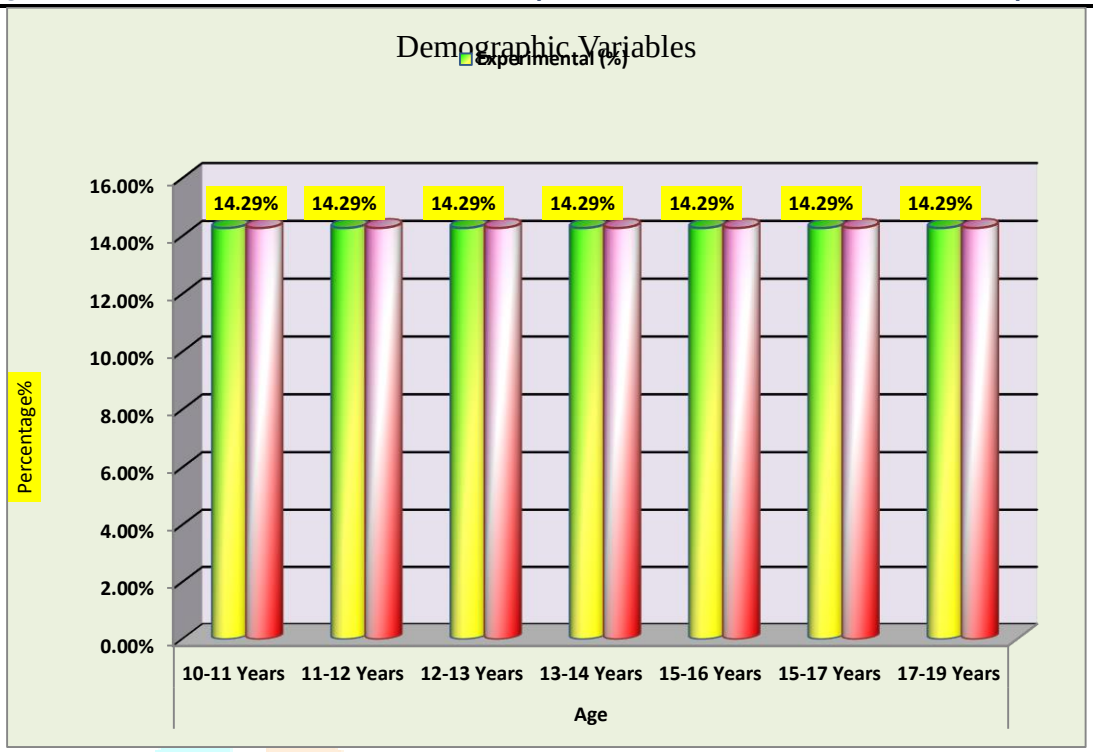

figure no. 1: diagram showing the percentage distribution according to their age

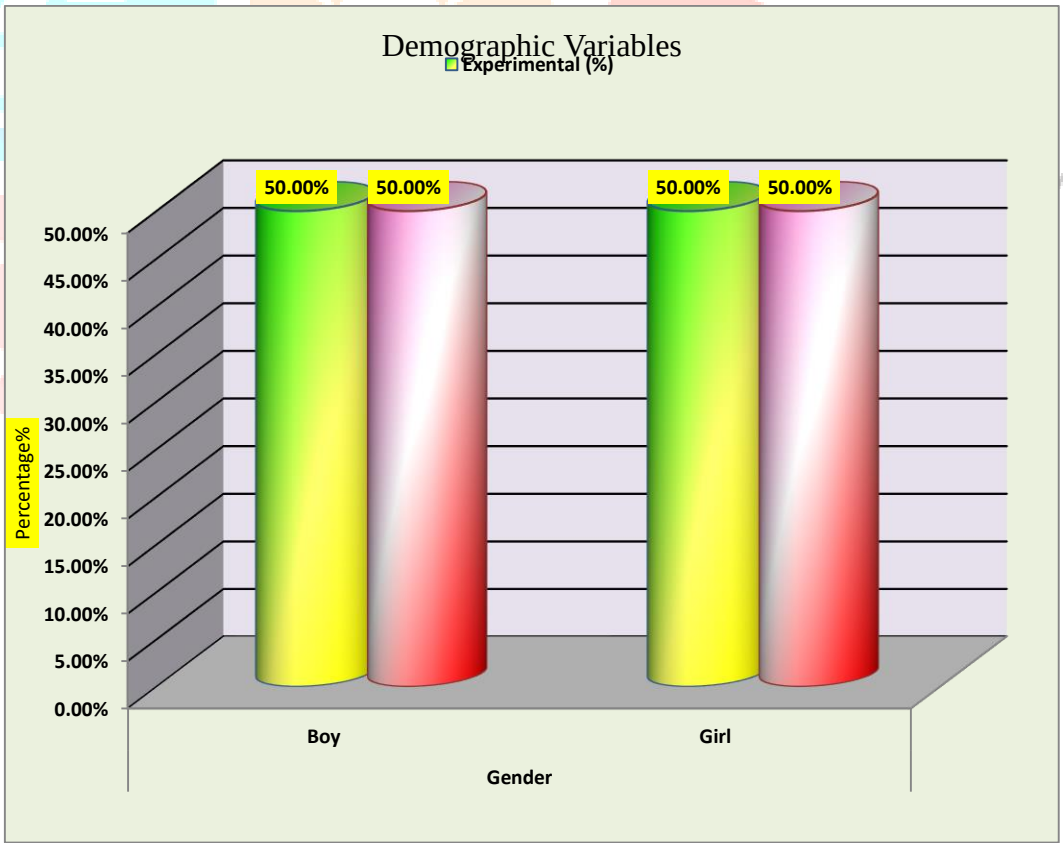

figure no.2: diagram showing the percentage distribution according to their gender

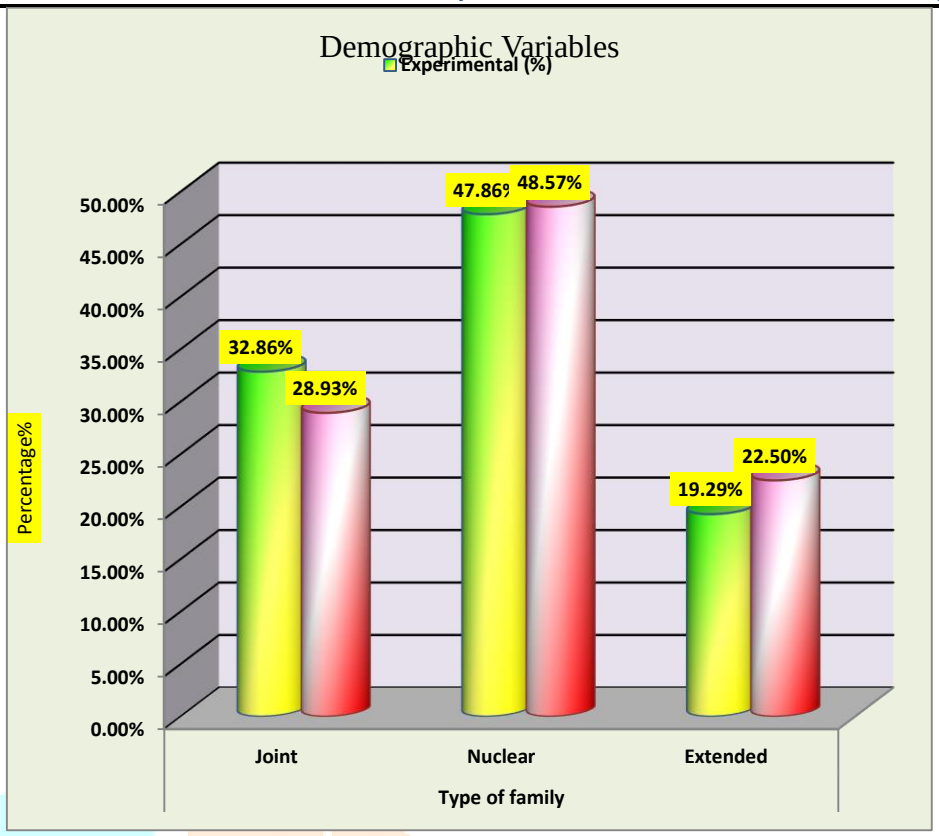

figure no.3: diagram showing the percentage distribution according to their type of family

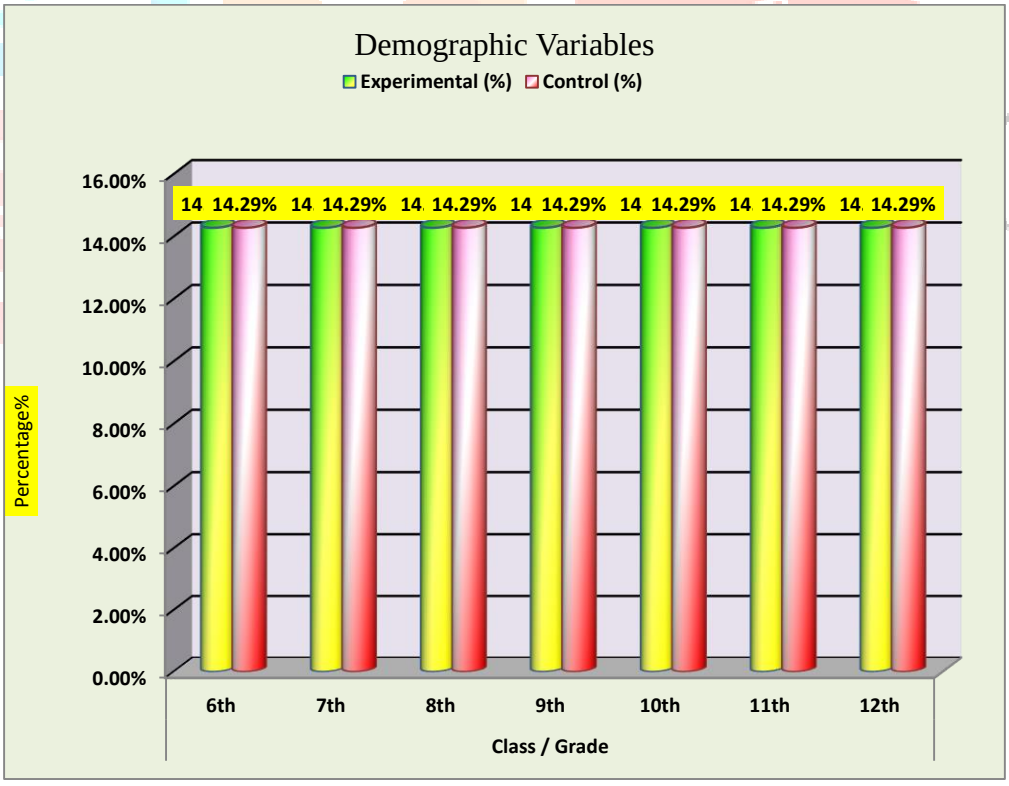

figure no.4: diagram showing the percentage distribution according to their class / gra

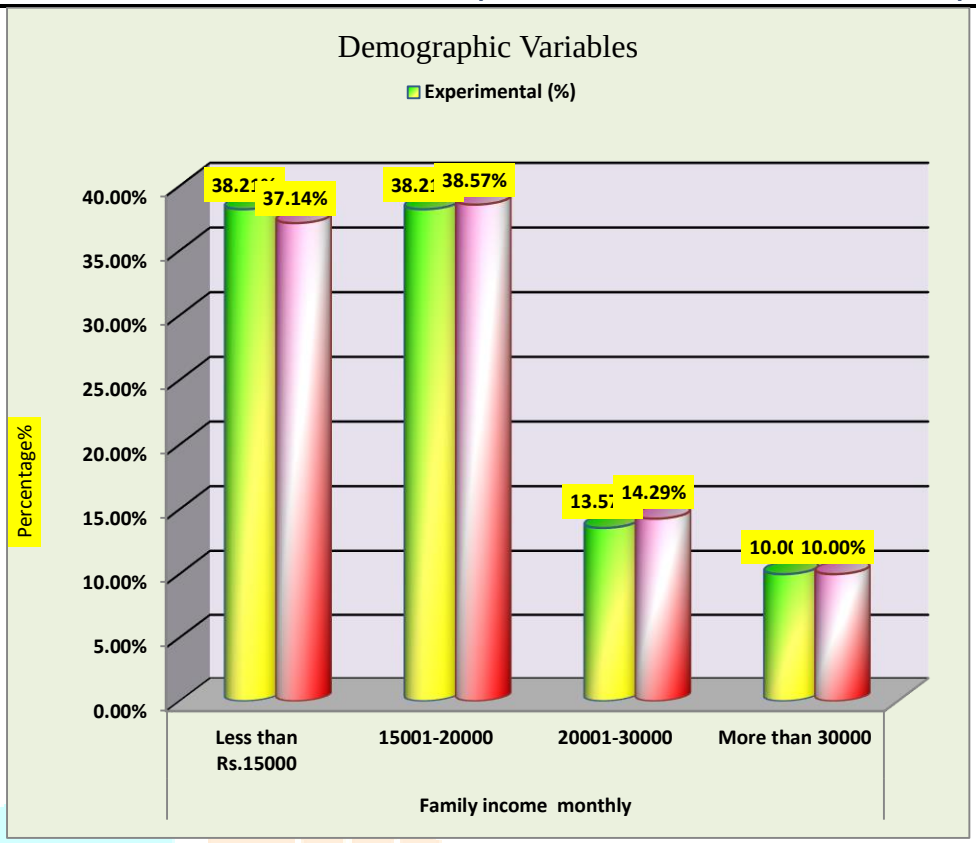

figure no.5: diagram showing the percentage distribution according to their family income monthly

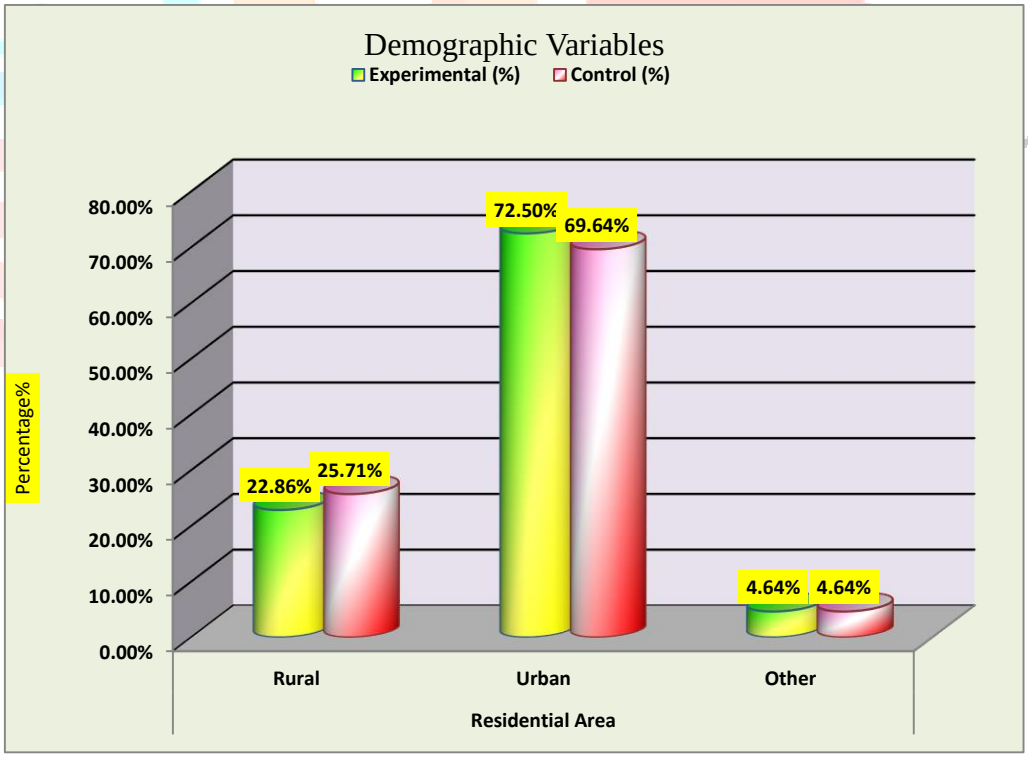

figure no.6: diagram showing the percentage distribution according to their residential ar

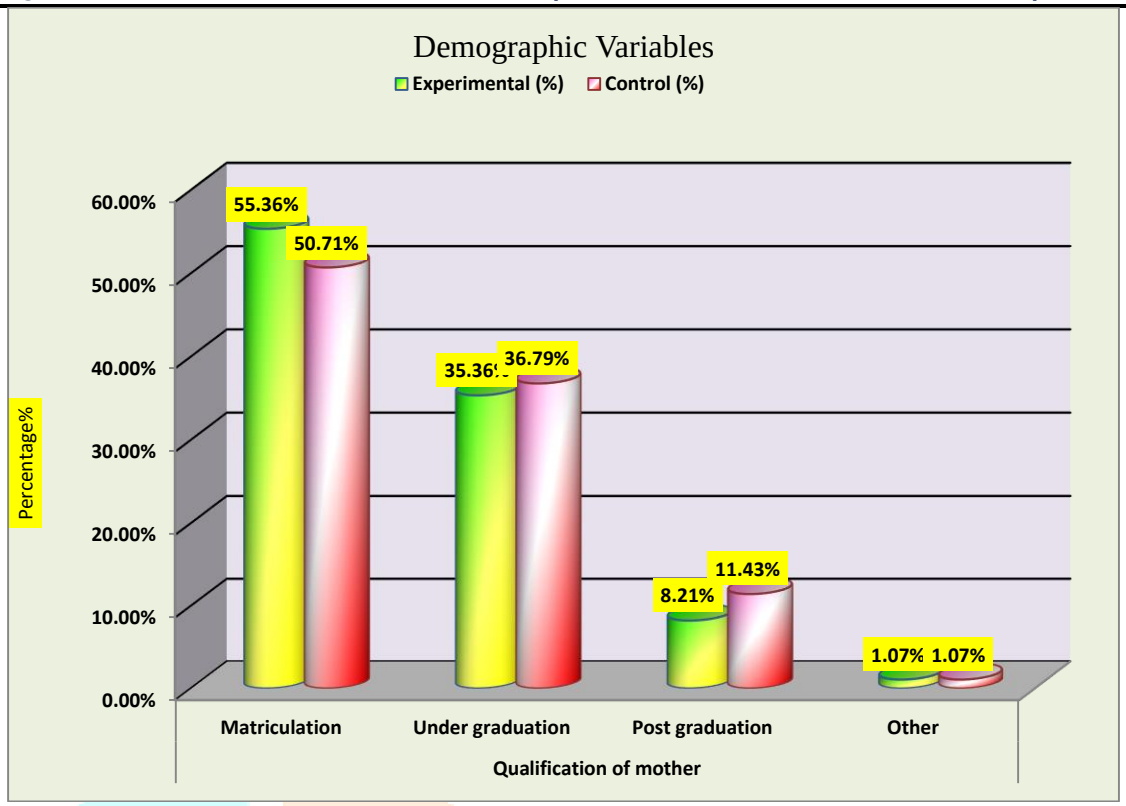

figure no.7: diagram showing the percentage distribution according to their qualification of mother

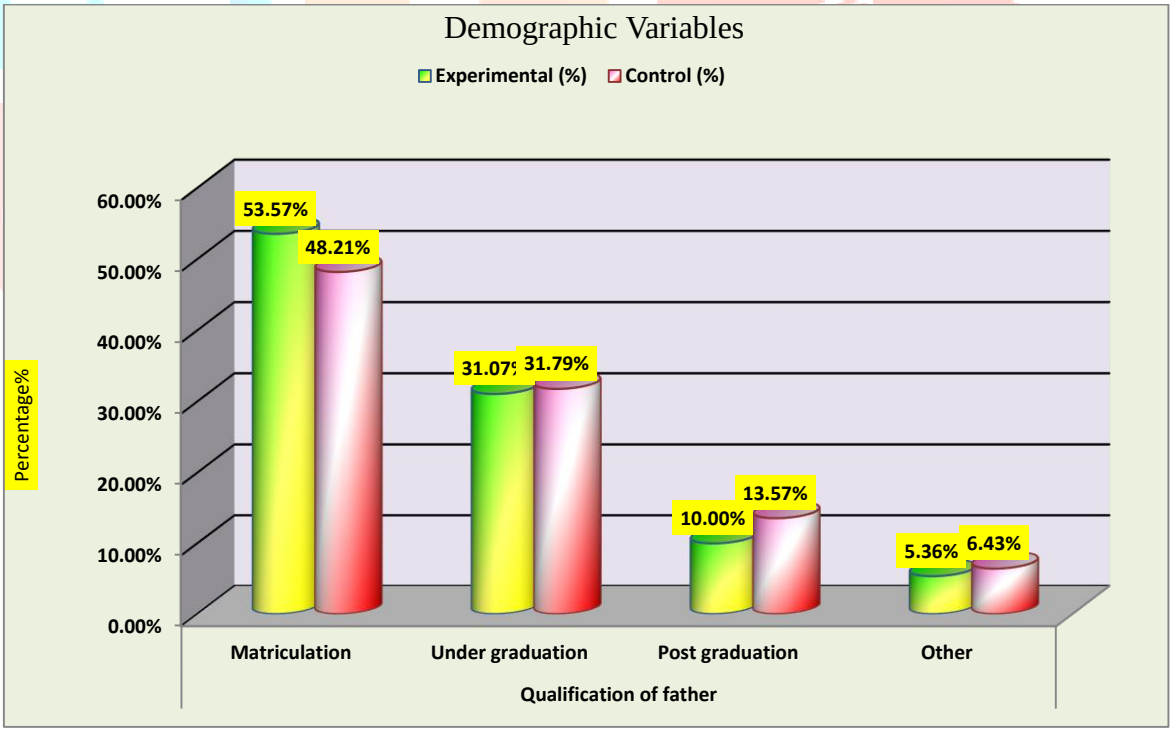

figure no.8: diagram showing the percentage distribution according to their qualification of father

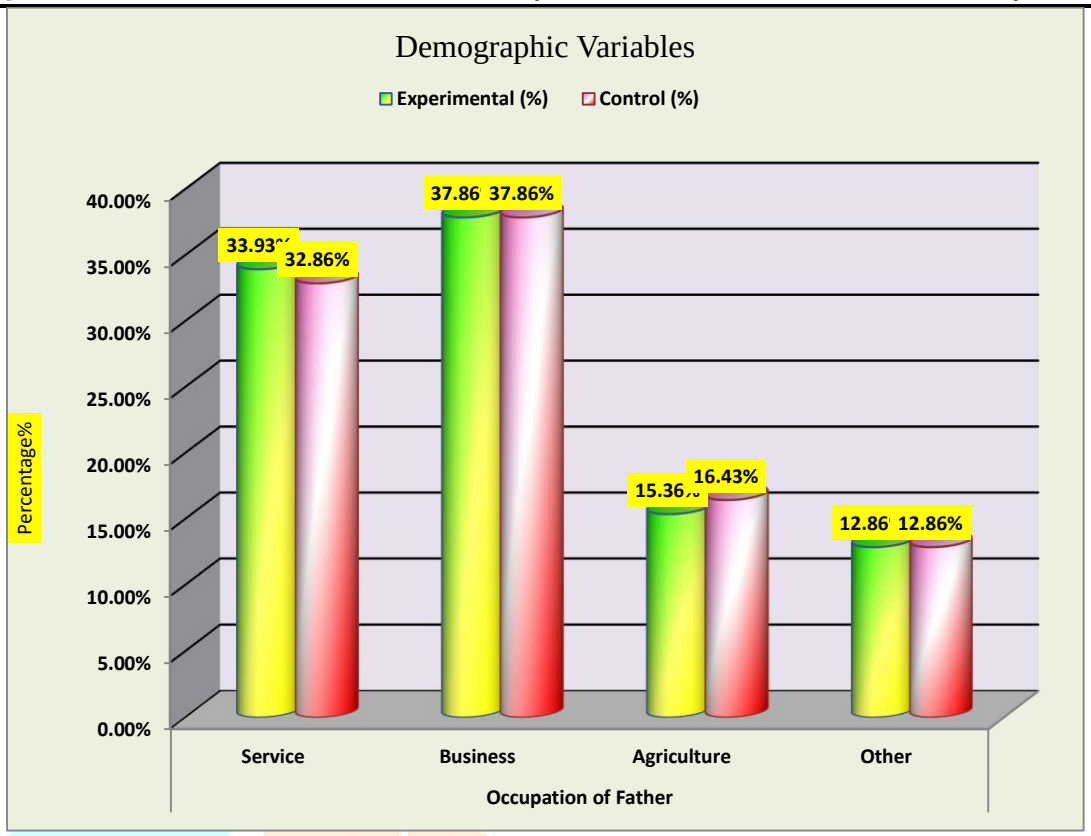

figure no.9: diagram showing the percentage distribution according to their occupation of father

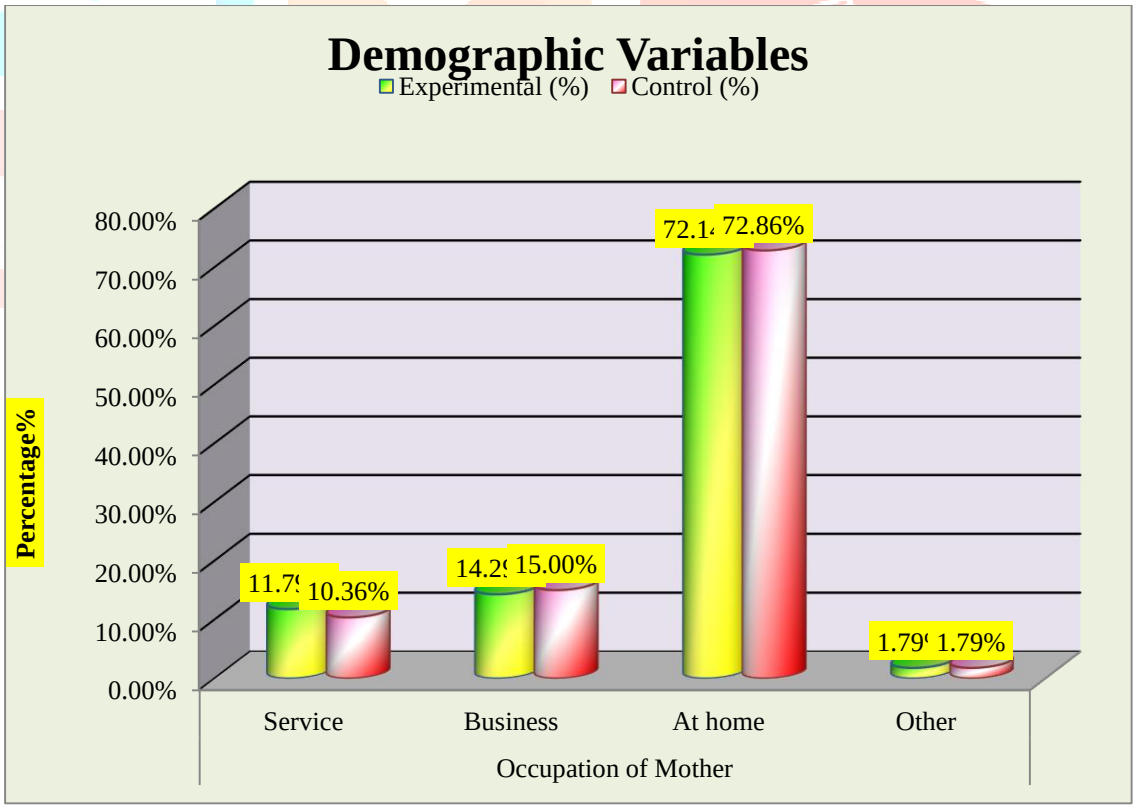

figure no.10: diagram showing the percentage distribution according to their occupation of mother

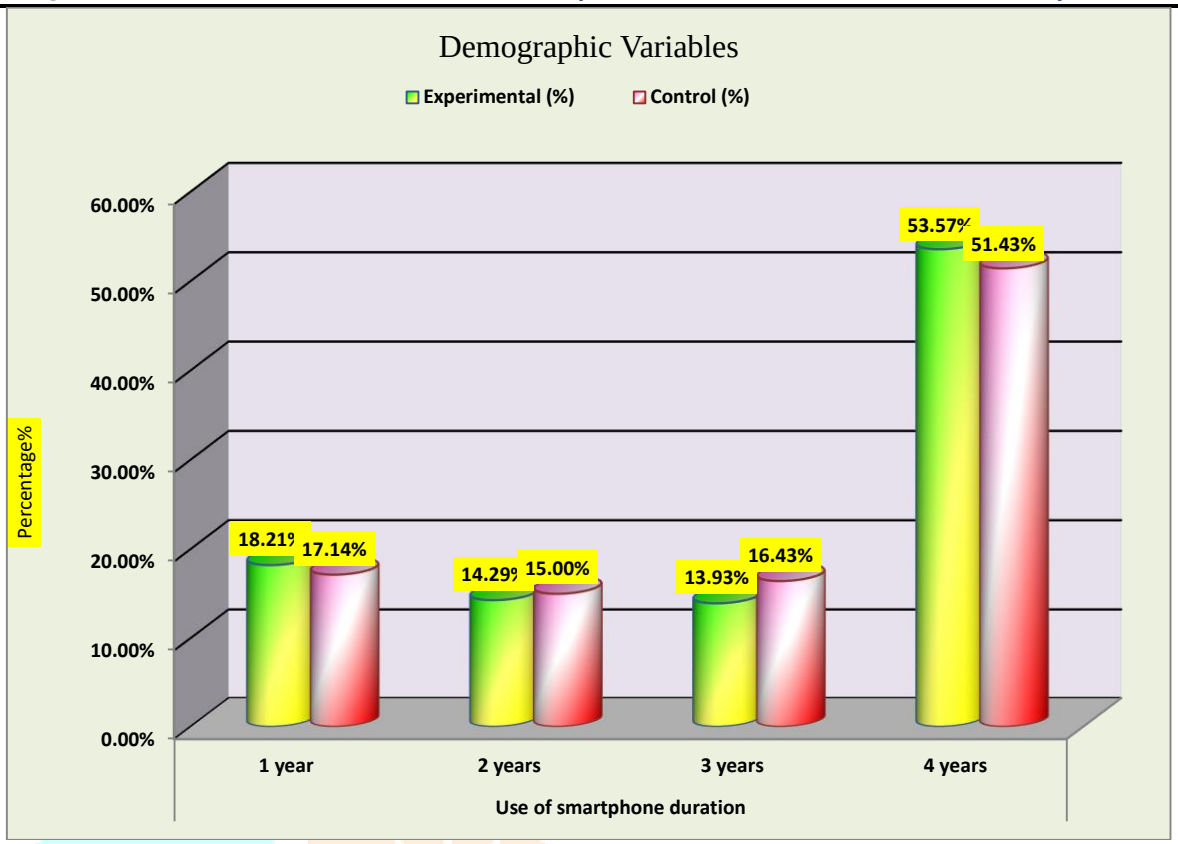

figure no.11: diagram showing the percentage distribution according to their use of smartphone duration

3.2..1 table: 1.showing frequency & percentage distribution of pre-experimental and pre-control group of addiction scores.

criteria measure of addiction score		
category score	**pre experimental**	**pre control**
severe(144-198)	92(32.9%)	91(32.5%)
moderate(89-143)	94(33.6%)	99(35.4%)
mild(33-88)	94(33.6%)	90(32.1%)

maximum=198
minimum =33

In the pre-experimental group, the distribution of addiction scores indicates that 92 participants (32.9%) fall into the severe category (scores between 144 and 198), 94 participants (33.6%) are in the moderate category (scores between 89 and 143), and another 94 participants (33.6%) are in the mild category (scores between 33 and 88). For the pre-control group, 91 participants (32.5%) are in the severe category, 99 participants (35.4%) are in the moderate category, and 90 participants (32.1%) are in the mild category. This shows a fairly even distribution of addiction severity across both groups, with a slight increase in the moderate category for the pre-control group. The maximum possible score is 198, and the minimum is 33.

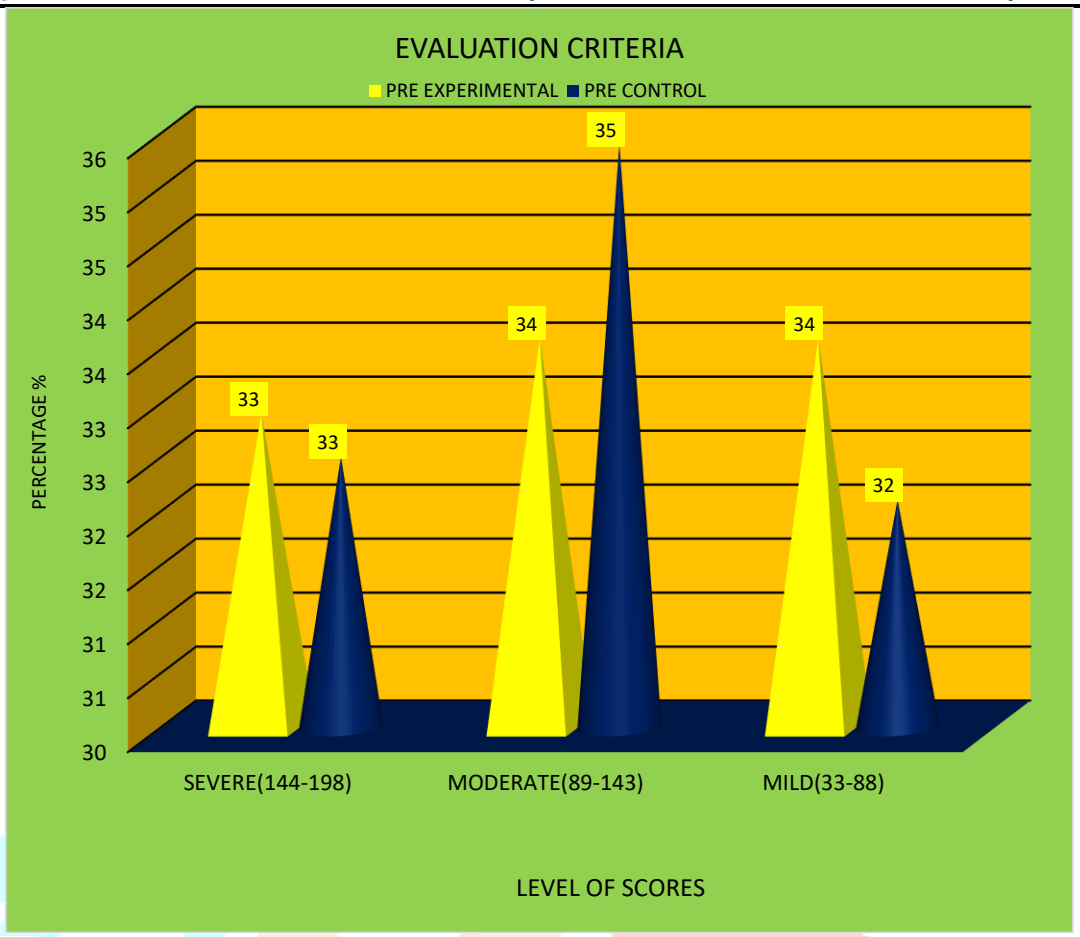

figure no. 12: showing addiction scores in pre-test experimental and pre-test control group.

3.2.2.. table no: 2. comparison of descriptive statistics b/w pre experimental &pre control group of addiction.

n= 280

.	descriptive statistics	mean score	s.d.	median score	maximum	minimum	range
pre	experimental	114.35	36.911	120	178	48	130
	control	115.78	36.068	123	178	48	130

maximum=198 minimum=33

In the pre-experimental group, the mean addiction score is 114.35 with a standard deviation of 36.911, a median score of 120, a maximum score of 178, and a minimum score of 48, giving a range of 130. For the pre-control group, the mean addiction score is slightly higher at 115.78 with a standard deviation of 36.068, a median score of 123, a maximum score of 178, and a minimum score of 48, also resulting in a range of 130. Both groups show similar central tendencies and variability in addiction scores. The overall maximum possible score is 198, and the minimum is 33.

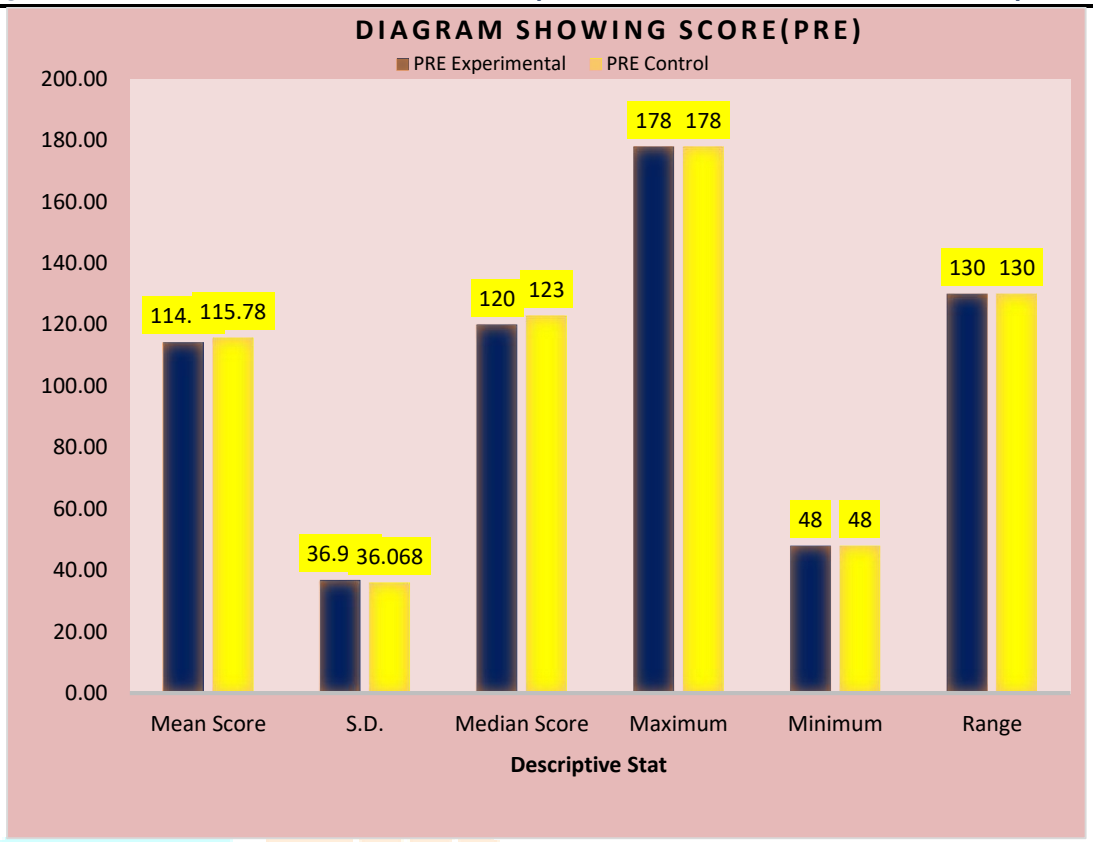

figure no 13. : bar diagram representing comparison of descriptive statistics of pre-experimental and pre-control addiction score

table: 3. showing frequency & percentage distribution of post-test experimental and post-test control group of addiction scores.

criteria measure of addiction score		
category score	**post experimental**	**post control**
severe(144-198)	4(1.4%)	85(30.4%)
moderate(89-143)	140(50%)	107(38.2%)
mild(33-88)	136(48.6%)	88(31.4%)

maximum=198
minimum=33

After the intervention, in the post-experimental group, the distribution of addiction scores shows a significant shift with only 4 participants (1.4%) in the severe category (scores between 144 and 198), 140 participants (50%) in the moderate category (scores between 89 and 143), and 136 participants (48.6%) in the mild category (scores between 33 and 88). This indicates a substantial reduction in severe addiction scores compared to the pre-experimental phase.

In the post-control group, the distribution of addiction scores shows 85 participants (30.4%) in the severe category, 107 participants (38.2%) in the moderate category, and 88 participants (31.4%) in the mild category. Compared to the pre-control phase, there is a noticeable reduction in severe scores, though not as significant as in the experimental group.

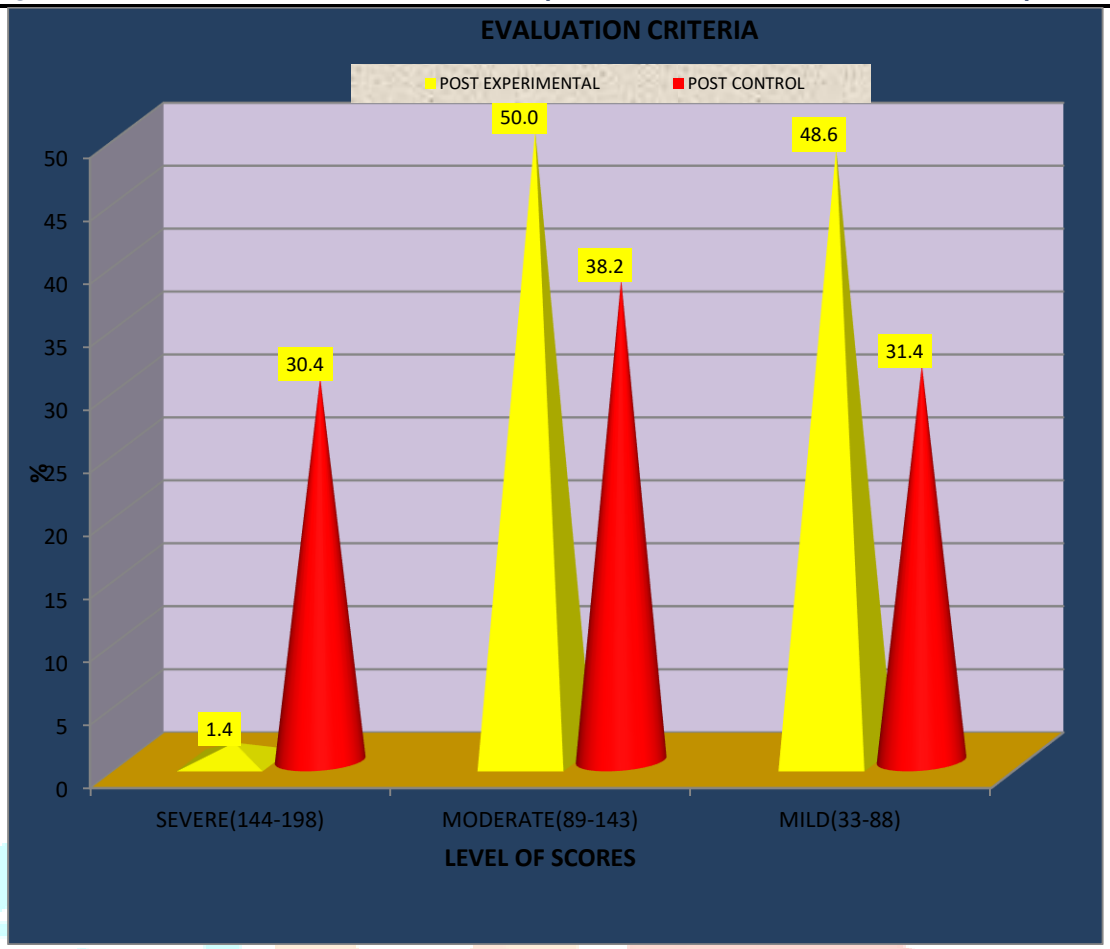

Figure no 14 .showing addiction scores in post-experimental and post-control group

Table no: 4. comparison of descriptive statistics b/w post experimental & post control group of addiction.

n=280+280

.	descriptive statistics	mean score	s.d.	median score	maximum	minimum	range
post	experimental	94.71	26.421	90.5	153	50	103
	control	115.29	34.276	122.5	178	49	129

maximum=198 minimum=33

In the post-experimental group, the mean addiction score is 94.71 with a standard deviation of 26.421, a median score of 90.5, a maximum score of 153, and a minimum score of 50, resulting in a range of 103. This indicates a reduction in both the mean score and the variability of scores compared to the pre-experimental group.

In the post-control group, the mean addiction score is 115.29 with a standard deviation of 34.276, a median score of 122.5, a maximum score of 178, and a minimum score of 49, resulting in a range of 129. These statistics are similar to the pre-control group, indicating little change in the mean score and variability.

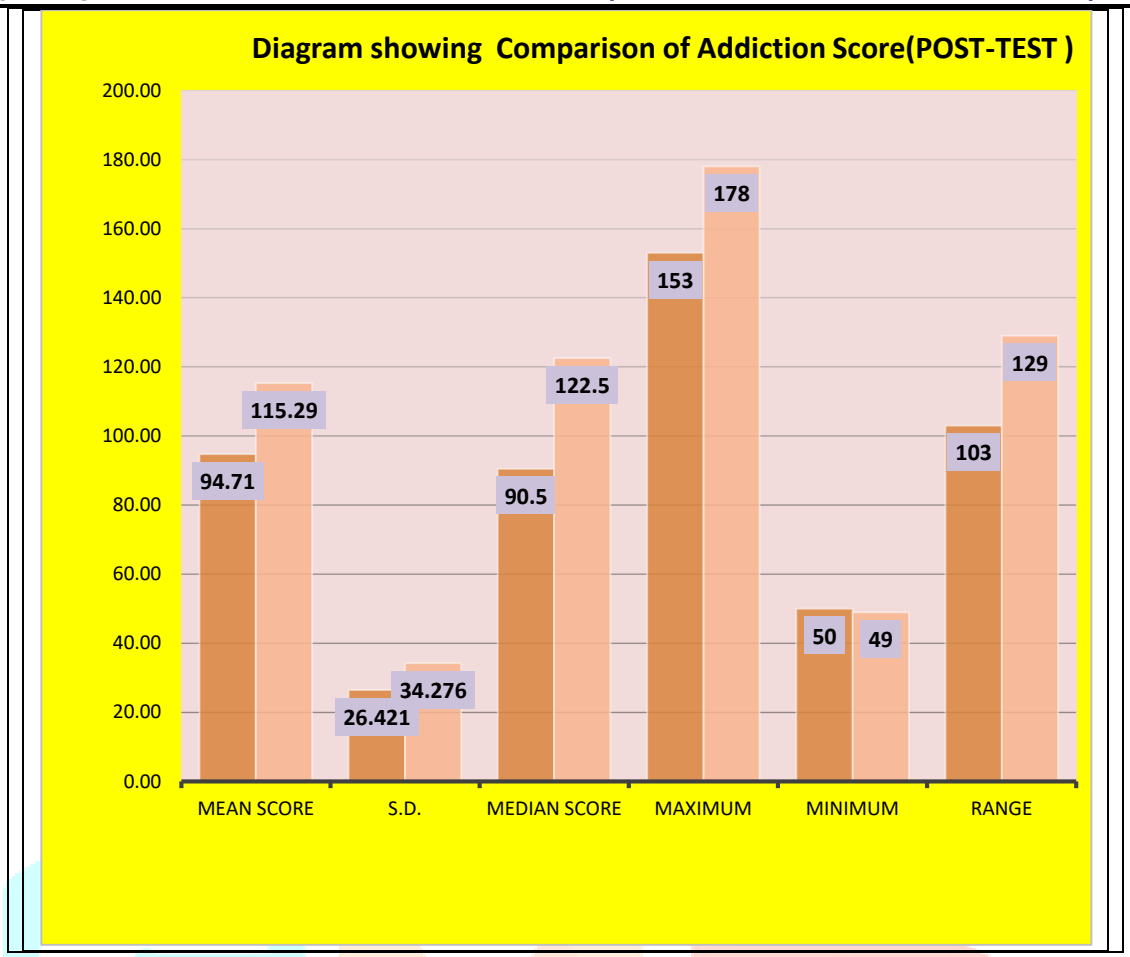

figure no. 15' bar diagram representing comparison of descriptive statistics of post-test experimental and post- test control group addiction score

3.3.1 pre -test/post-test

table: 5. comparison of frequency & percentage distribution of pre-test and post-test of both groups of addiction.

criteria measure of addiction score				
score level	**pre -test experimental**	**pre -test control**	**post-test experimental**	**post- test control**
severe(144-198)	92(32.9%)	91(32.5%)	4 (1.4%)	85(30.4%)
moderate(89-143)	94(33.6%)	99(35.4%)	140(50%)	107(38.2%)
mild(33-88)	94(33.6%)	90(32.1%)	136(48.6%)	88(31.4%)
maximum=198	minimum =33			

The result of the study shows that there was pre- experimental and pre-control group. the distribution of addiction scores reveals notable changes between the pre- and post-intervention phases for both experimental and control groups. initially, in the pre-experimental group, 92 participants (32.9%) had severe addiction scores (144-198), 94 participants (33.6%) had moderate scores (89-143), and 94 participants (33.6%) had mild scores (33-88). similarly, in the pre-control group, 91 participants (32.5%) were in the severe category, 99 participants (35.4%) were in the moderate category, and 90 participants (32.1%) were in the mild category.after the intervention, the post-experimental group showed a dramatic improvement: only 4 participants (1.4%) remained in the severe category, while the majority shifted to the moderate (140 participants, 50%) and mild (136 participants, 48.6%) categories. In contrast, the post-control group exhibited less pronounced changes: 85 participants (30.4%) were still in the severe category, 107 participants (38 %) were in the moderate category, and 88 participants 31.4% were in the mild category.

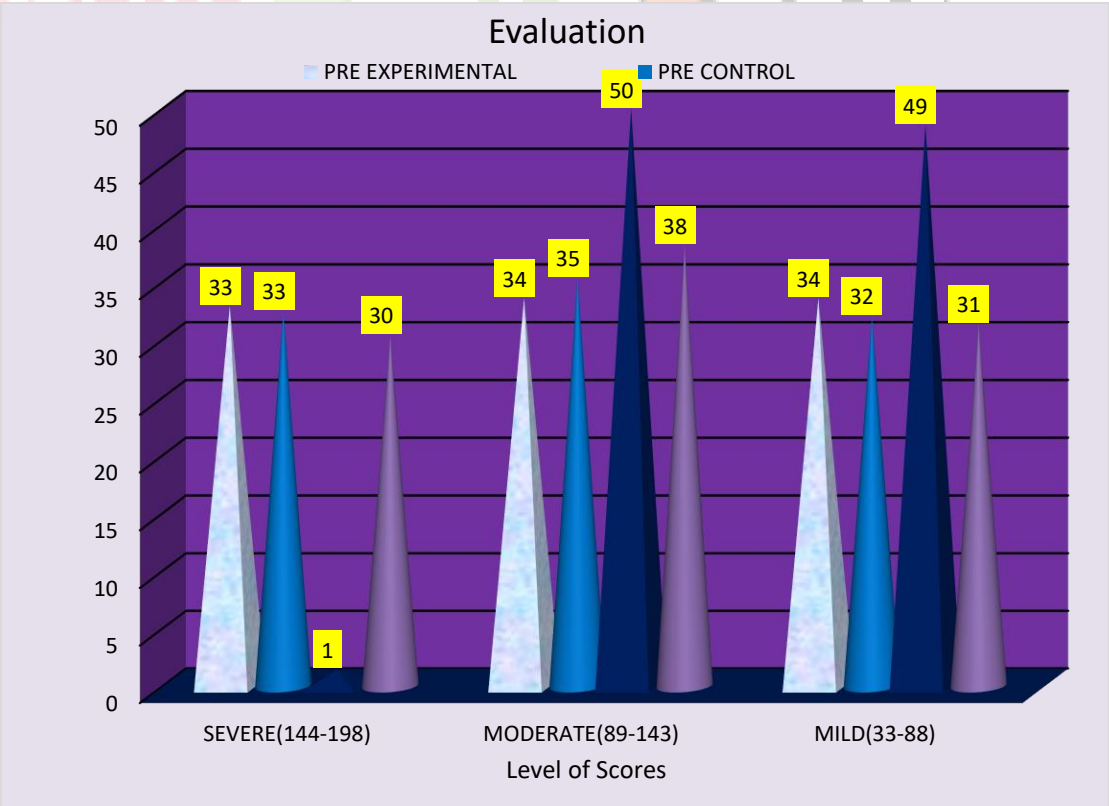

Figure no. 16: Diagrams representing comparison of percentage distribution of pre-test and post-test of both groups of Addiction

3.4.1. Effectiveness …

Table No: 6.showing comparison within the Group with Paired & Unpaired T Test regarding Addiction score.

The results of the paired t-test for the

		Addiction score				Paired T Test		
		Pre-test		Post-test				
Group	N	Mean	SD	Mean	SD	df	T	Result
Experimental Group	280	114.35	36.911	94.71	26.421	279	12.531	P Value <0.001 Significant
Control Group	280	115.775	36.068	115.29	34.276	279	1.634	P value 0.103 Non Significant
Unpaired T Test	df	558		df	558	Significant		
	T	0.463		T	7.958			
	Result	P value=0.643 Non Significant		Result	P value=<0.001			

Maximum = 198 Minimum = 33

experimental group indicate a significant reduction in addiction scores from pretest (mean = 114.35, SD = 36.911) to posttest (mean = 94.71, SD = 26.421), with a t-value of 12.531 and a p-value of 0, signifying a statistically significant difference. This suggests that the intervention had a substantial positive effect on reducing addiction scores in the experimental group.

In contrast, the paired t-test for the control group shows no significant change in addiction scores from pre-test (mean = 115.775, SD = 36.068) to post-test (mean = 115.29, SD = 34.276), with a t-value of 1.634 and a p-value of 0.103, indicating a non-significant difference. This suggests that, without the intervention, there was no meaningful change in addiction scores for the control group.

Additionally, the unpaired t-test comparing the experimental and control groups shows no significant difference in pre-test scores (t = 0.463, p = 0.643), indicating that both groups had similar addiction levels before the intervention. However, the post-test scores reveal a significant difference between the groups (t = 7.958, p = <0.001), further emphasizing the effectiveness of the intervention in the experimental group. The overall maximum possible score is 198, and the minimum is 33.

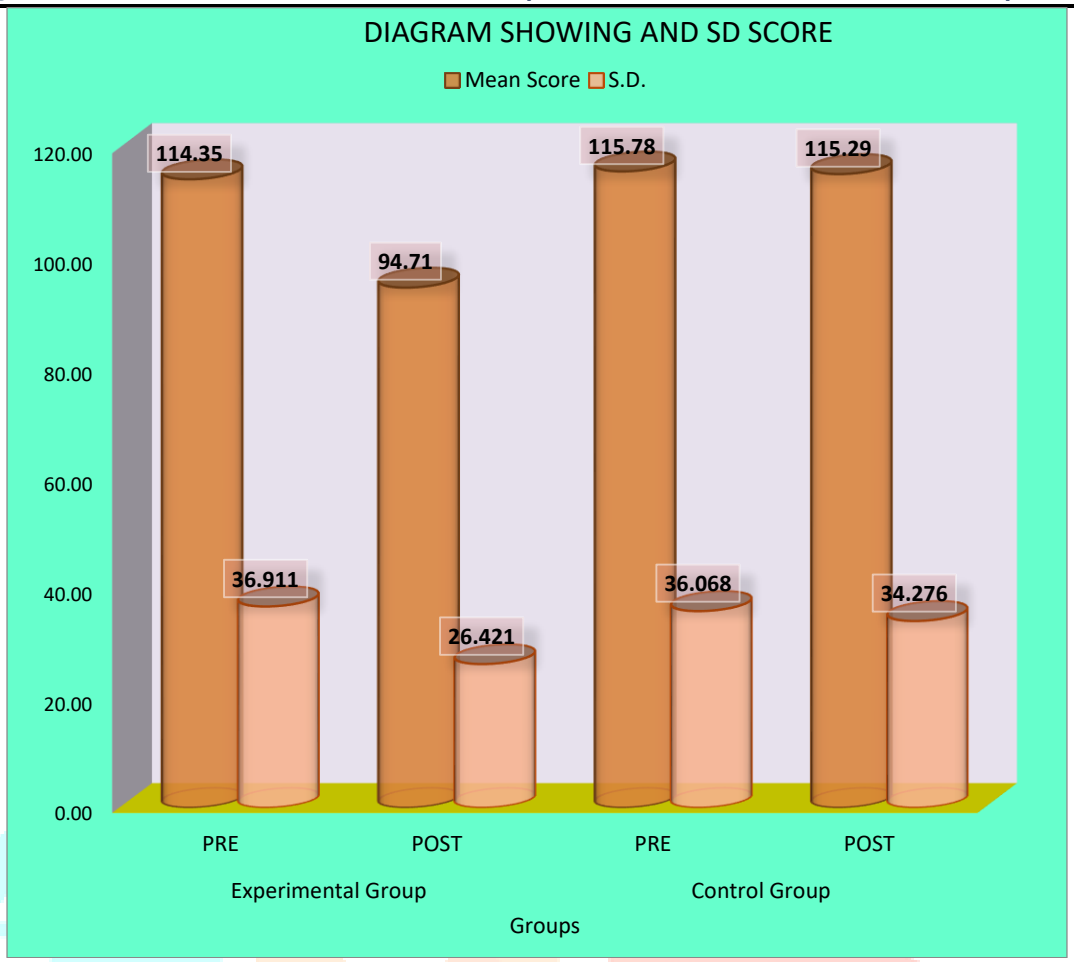

Figure no. 17: Bar diagram representing comparison Within Group level of Addiction representing effectiveness

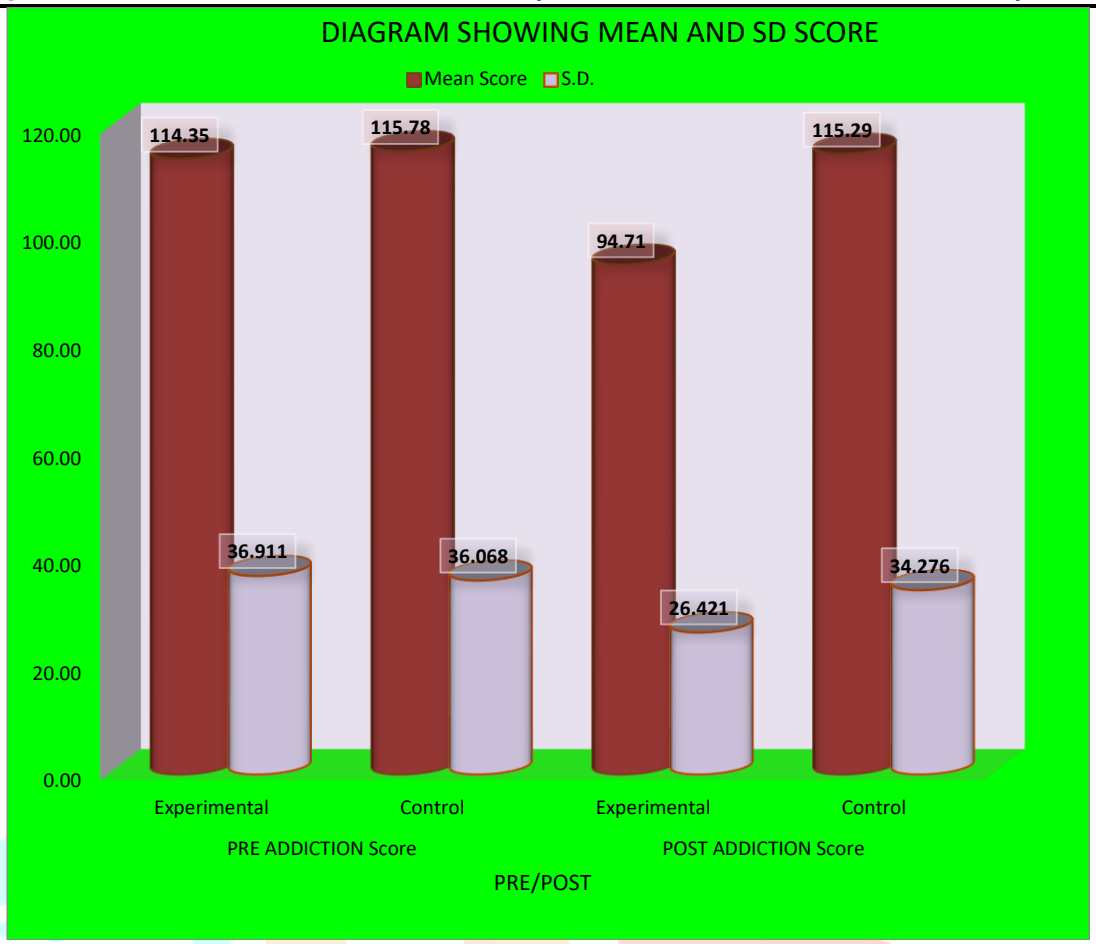

figure no.18: bar diagram representing comparison between the groups level of addiction representing the effectiveness of intervention

3.5 Association with demographic variables Pre- Test Experimental Group.

Table No: 7. Table Showing Association of Addiction Scores and Demographic Variables of Pre- Test Experimental Group.

DEMOGRAPHIC VARIABLES		ASSOCIATION OF ADDICTION SCORE WITH DEMOGRAPHIC VARIABLES (PRE ADDICTION) EXPERIMENTAL GROUP							
Variables	**Opts**	**SEVERE**	**MODERATE**	**MILD**	**Chi Test**	**P Value**	**df**	**Table Value**	**Result**
Age	10-11 Years	0	0	40	217.065	0.000	#	21.026	Significant
	11-12 Years	0	11	29					
	12-13 Years	1	18	21					
	13-14 Years	15	24	1					
	15-16 Years	24	15	1					
	15-17 Years	25	14	1					
	17-19 Years	27	12	1					
Gender	Boy	58	48	34	13.495	0.001	2	5.991	Significant
	Girl	34	46	60					
Type of family	Joint	23	21	48	29.893	0.000	4	9.488	Significant
	Nuclear	57	51	26					
	Extended	12	22	20					

Class / Grade	6th	0	0	40	217.065	0.000	#	21.026	Significant
	7th	0	11	29					
	8th	1	18	21					
	9th	15	24	1					
	10th	24	15	1					
	11th	25	14	1					
	12th	27	12	1					
Family income monthly	Less than Rs.15000	40	32	35	2.161	0.904	6	12.592	Not Significant
	15001-20000	31	40	36					
	20001-30000	12	13	13					
	More than 30000	9	9	10					
Residential Area	Rural	14	28	22	7.270	0.122	4	9.488	Not Significant
	Urban	73	64	66					
	Other	5	2	6					
Qualification of mother	Matriculation	54	53	48	4.028	0.673	6	12.592	Not Significant
	Under graduation	30	33	36					
	Post graduation	7	6	10					
	Informal education	1	2	0					
Qualification of father	Matriculation	64	49	37	22.694	0.001	6	12.592	Significant

	Under graduation	15	33	39					
	Post graduation	11	7	10					
	Informal education	2	5	8					
Occupation of Father	Service	45	25	25	18.037	0.006	6	12.592	Significant
	Business	27	36	43					
	Agriculture	8	21	14					
	Other	12	12	12					
Occupation of Mother	Service	9	5	19	16.761	0.010	6	12.592	Significant
	Business	13	9	18					
	At home	69	78	55					
	Other	1	2	2					
Use of smartphone duration	<1 year	10	18	23	11.420	0.076	6	12.592	Not Significant
	1-2 years	9	17	14					
	2-3 years	12	13	14					
	3-4 years and above	61	46	43					

Age; Age shows a significant association with addiction severity (Chi-square = 217.065, $p < 0.001$). As age increases, the severity tends to decrease, indicating older participants are less likely to have severe addiction.

Gender; Gender is significantly associated with addiction severity (Chi-square = 13.495, $p = 0.001$). Boys tend to exhibit more severe addiction compared to girls in the experimental group.

Type of Family; Type of family is significantly associated with addiction severity (Chi-square = 29.893, $p < 0.001$). Participants from joint families show higher addiction severity compared to those from nuclear or extended families

.

Class / Grade; Class or grade level is significantly associated with addiction severity (Chi-square = 217.065, $p < 0.001$). Higher grade levels tend to have lower addiction severity.

Family Income Monthly; Family income monthly does not show a significant association with addiction Severity (Chi-square = 2.161, $p = 0.904$). There is no clear trend suggesting income affects addiction severity in this group.

Residential Area; Residential area does not show a significant association with addiction severity (Chi-square = 7.270, $p = 0.122$). Both rural and urban areas exhibit similar patterns of addiction severity.

Qualification of Mother; Qualification of the mother does not show a significant association with addiction severity (Chi-square = 4.028, p = 0.673). There is no clear relationship between maternal education level and addiction severity in this context

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Qualification of Father; Qualification of the father shows a significant association with addiction severity (Chi-square = 22.694, p = 0.001). Higher education levels of fathers are associated with lower addiction severity

Occupation of Father; Occupation of the father shows a significant association with addiction severity (Chi-square = 18.037, p = 0.006). Participants whose fathers are in service occupations tend to have lower addiction severity compared to other occupations.

Occupation of Mother; Occupation of the mother shows a significant association with addiction severity (Chi-square = 16.761, p = 0.010). Participants whose mothers are at home exhibit lower addiction severity compared to those in other occupations.

Use of Smartphone Duration; Use of smartphone duration does not show a significant association with addiction severity (Chi-square = 11.420, p = 0.076). The duration of smartphone use does not strongly correlate with addiction severity in this group.

3.5.2 Association of Scores and Demographic Variables Table No: 8. Showing Association of Scores and Demographic Variables of Post-Test, Experimental Group

Demographic variables		Association of addiction score with demographic variables (post-test addiction)experimental group							
Variable	Opts	Severe	Moderate	Mild	Chi Test	P Value	df	Table Value	Result
Age	10-11 Years	0	3	37	159.979	0.000	12	21.026	Significant
	11-12 Years	0	5	35					
	12-13 Years	0	6	34					
	13-14 Years	0	24	16					
	14-15 Years	2	24	14					
	15-17 Years	1	39	0					
	17-19 Years	1	39	0					
Gender	Boy	4	80	56	11.092	0.004	2	5.991	Significant
	Girl	0	60	80					
Type of family	Joint	1	32	59	19.056	0.001	4	9.488	Significant
	Nuclear	3	83	48					
	Extended	0	25	29					
Class / Grade	6th	0	3	37	159.979	0.000	12	21.026	Significant
	7th	0	5	35					
	8th	0	6	34					
	9th	0	24	16					
	10th	2	24	14					
	11th	1	39	0					
	12th	1	39	0					
Family income monthly	Less than Rs.15000	1	56	50	3.007	0.808	6	12.592	Not Significant
	15001-20000	3	52	52					
	20001-30000	0	19	19					
	More than 30000	0	13	15					
Residential Area	Rural	2	30	32	1.986	0.738	4	9.488	Not Significant
	Urban	2	##	98					
	Other	0	7	6					
Qualification of mother	Matriculation	3	73	79	2.366	0.883	6	12.592	Not Significant
	Under graduation	1	54	44					
	Post graduation	0	11	12					
	Informal education	0	2	1					
Qualification of father	Matriculation	2	86	62	8.248	0.221	6	12.592	Not Significant
	Under graduation	1	36	50					
	Post graduation	1	12	15					
	Informal	0	6	9					

	education								
Occupation of Father	Service	0	59	36	11.050	0.087	6	12.592	Not Significant
	Business	2	43	61					
	Agriculture	1	20	22					
	Other	1	18	17					
Occupation of Mother	Service	0	12	21	9.753	0.135	6	12.592	Not Significant
	Business	1	21	18					
	At home	3	##	92					
	Other	0	0	5					
Use of smartphone duration	<1 year	0	13	38	31.373	0.000	6	12.592	Significant
	1-2 years	0	13	27					
	2-3 years	0	26	13					
	3-4 years and above	4	88	58					

Age; Age shows a significant association with addiction severity (Chi-square = 159.979, $p < 0.001$). Younger participants (10-11 years) tend to have milder addiction scores compared to older age groups, where moderate to severe addiction scores increase.

Gender; Gender is significantly associated with addiction severity (Chi-square = 11.092, $p = 0.004$). Boys exhibit more severe addiction scores compared to girls in the experimental group.

Type of Family; Type of family is significantly associated with addiction severity (Chi-square = 19.056, $p = 0.001$). Participants from joint families show higher addiction severity compared to those from nuclear or extended families.

Class / Grade; Class or grade level is significantly associated with addiction severity (Chi-square = 159.979, $p < 0.001$). Higher grade levels tend to have higher moderate to severe addiction scores compared to lower grades.

Family Income Monthly; Family income monthly does not show a significant association with addiction severity (Chi-square = 3.007, $p = 0.808$). There is no clear relationship between income levels and addiction severity in this context

.

Residential Area; Residential area does not show a significant association with addiction severity (Chi-square = 1.986, $p = 0.738$). Both rural and urban areas exhibit similar patterns of addiction severity.

Qualification of Mother; Qualification of the mother does not show a significant association with addiction severity (Chi-square = 2.366, $p = 0.883$). Maternal education level does not seem to influence addiction severity in this grou

Qualification of Father; Qualification of the father does not show a significant association with addiction severity (Chi-square = 8.248, $p = 0.221$). Paternal education level does not strongly correlate with addiction severity in this context.

Occupation of Father; Occupation of the father does not show a significant association with addiction severity (Chi-square = 11.050, $p = 0.087$). There is no clear relationship between paternal occupation and addiction severity in this group.

Occupation of Mother; Occupation of the mother does not show a significant association with addiction severity (Chi-square = 9.753, $p = 0.135$). Maternal occupation does not strongly correlate with addiction severity in this context.

Use of Smartphone Duration;Use of smartphone duration shows a significant association with addiction severity (Chi-square = 31.373, $p < 0.001$). Participants using smartphones for longer durations tend to have higher addiction severity scores.

3.5.3 Table No: 9. Table Showing Association of Scores and Demographic Variables of Pre- Test Control Group

Demographic variables		Association of addiction score with demographic variables (pre-test addiction) control group							
Variables	**Opts**	**Severe**	**Moderate**	**Mild**	**Chi Test**	**P Value**	**df**	**Table Value**	**Result**
Age	10-11 Years	0	0	40	224.798	0.000	12	21.026	Significant
	11-12 Years	0	11	29					
	12-13 Years	1	20	19					
	13-14 Years	15	25	0					
	14-15 Years	24	16	0					
	15-17 Years	25	14	1					
	17-19 Years	26	13	1					
Gender	Boy	57	50	33	12.223	0.002	2	5.991	Significant
	Girl	34	49	57					
Type of family	Joint	23	15	43	36.666	0.000	4	9.488	Significant
	Nuclear	56	56	24					
	Extended	12	28	23					
Class / Grade	6th	0	0	40	224.798	0.000	12	21.026	Significant
	7th	0	11	29					
	8th	1	20	19					
	9th	15	25	0					
	10th	24	16	0					
	11th	25	14	1					
	12th	26	13	1					
Significant Family income monthly	Less than Rs.15000	39	34	31	3.625	0.727	6	12.592	significant
	15001-20000	31	43	34					
	20001-30000	11	13	16					
	More than 30000	10	9	9					

Residential Area	Rural	19	30	23	2.838	0.585	4	9.488	
	Urban	67	66	62					
	Other	5	3	5					
Qualification of mother	Matriculation	50	47	45	3.080	0.799	6	12.592	significant
	Under graduation	31	37	35					
	Post graduation	9	13	10					
	Informal education	1	2	0					
Qualification of father	Matriculation	54	49	32	18.947	0.004	6	12.592	significant
	Under graduation	15	36	38					
	Post graduation	16	9	13					
	Informal education	6	5	7					
Occupation of Father	Service	43	28	21	18.128	0.006	6	12.592	Significant
	Business	27	36	43					
	Agriculture	9	23	14					
	Other	12	12	12					
Occupation of Mother	Service	9	6	14	15.041	0.020	6	12.592	Significant
	Business	12	9	21					
	At home	69	82	53					
	Other	1	2	2					
Use of smartphone duration	<1 year	10	16	22	16.641	0.011	6	12.592	Significant
	1-2 years	9	17	16					
	2-3 years	12	15	19					
	3-4 years and other	60	51	33					

Age; Age shows a significant association with addiction severity (Chi-square = 224.798, $p < 0.001$). Younger participants (10-11 years) tend to have milder addiction scores compared to older age groups, where moderate to severe addiction scores increase significantly.

Gender; Gender is significantly associated with addiction severity (Chi-square = 12.223, $p = 0.002$). Boys exhibit more severe addiction scores compared to girls in the control group.

Type of Family; Type of family is significantly associated with addiction severity (Chi-square = 36.666, $p < 0.001$). Participants from joint families show higher addiction severity compared to those from nuclear or extended families.

Class / Grade; Class or grade level is significantly associated with addiction severity (Chi-square = 224.798, $p < 0.001$). Higher grade levels tend to have higher moderate to severe addiction scores compared to lower grades.

Family Income Monthly; Family income monthly does not show a significant association with addiction severity (Chi-square = 3.625, $p = 0.727$). There is no clear relationship between income levels and addiction severity in this context.

Residential Area; Residential area does not show a significant association with addiction severity (Chi-square = 2.838, $p = 0.585$). Both rural and urban areas exhibit similar patterns of addiction severity.

Qualification of Mother; Qualification of the mother does not show a significant association with addiction severity (Chi-square = 3.080, $p = 0.799$). Maternal education level does not seem to influence addiction severity in this group.

Qualification of Father; Qualification of the father shows a significant association with addiction severity (Chi-square = 18.947, p = 0.004). Paternal education level influences addiction severity, with higher levels correlating with more severe addiction scores.

Occupation of Father; Occupation of the father shows a significant association with addiction severity (Chi-square = 18.128, p = 0.006). Father's occupation influences addiction severity, with service and business occupations showing higher severity scores.

Occupation of Mother; Occupation of the mother shows a significant association with addiction severity (Chi-square = 15.041, p = 0.020). Maternal occupation influences addiction severity, with those at home or in business having varying levels of severity.

Use of Smartphone Duration; Use of smartphone duration shows a significant association with addiction severity (Chi-square = 16.641, p = 0.011). Participants using smartphones for longer durations tend to have higher addiction severity scores.

3.5.4 Table No: 10. Table Showing Association of Scores and Demographic Variables of Post –Test Control Group

Demographic variables		**Association of addiction score with demographic variables (post addiction) control group**							
Variables	**Opts**	**Severe**	**Moderate**	**Mild**	**Chi Test**	**P Value**	**df**	**Table Value**	**Result**
Age	10-11 Years	0	0	40	214.121	0.000	12	21.026	Significant
	11-12 Years	0	13	27					
	12-13 Years	1	20	19					
	13-14 Years	15	25	0					
	14-15 Years	24	16	0					
	15-17 Years	23	16	1					
	17-19 Years	22	17	1					
Gender	Boy	53	54	33	10.698	0.005	2	5.991	Significant
	Girl	32	53	55					
Type of family	Joint	23	15	43	38.915	0.000	4	9.488	Significant
	Nuclear	50	64	22					
	Extended	12	28	23					

Class / Grade	6th	0	0	40	214.121	0.000	12	21.026	Significant
	7th	0	13	27					
	8th	1	20	19					
	9th	15	25	0					
	10th	24	16	0					
	11th	23	16	1					
	12th	22	17	1					
Family income monthly	Less than Rs.15000	36	39	29	3.289	0.772	6	12.592	Not Significant
	15001-20000	29	45	34					
	20001-30000	11	13	16					
	More than 30000	9	10	9					
Residential Area	Rural	17	32	23	2.793	0.593	4	9.488	Not Significant
	Urban	64	71	60					
	Other	4	4	5					
Qualification of mother	Matriculation	47	52	43	3.033	0.805	6	12.592	Not Significant
	Under graduation	29	39	35					
	Post graduation	8	14	10					
	Informal education	1	2	0					
Qualification of father	Matriculation	52	52	31	19.321	0.004	6	12.592	Significant
	Under graduation	13	39	37					
	Post graduation	14	11	13					
	Informal education	6	5	7					
Occupation of Father	Service	39	33	20	15.803	0.015	6	12.592	Significant
	Business	27	36	43					
	Agriculture	9	24	13					
	Other	10	14	12					
Occupation of Mother	Service	9	6	14	16.171	0.013	6	12.592	Significant
	Business	10	11	21					
	At home	65	88	51					
	Other	1	2	2					
Use of smartphone duration	<1 year	10	16	22	17.242	0.008	6	12.592	Significant
	1-2 years	9	17	16					
	2-3 years	10	17	19					
	3-4 years and above	56	57	31					

Age; Age shows a significant association with addiction severity (Chi-square = 214.121, $p < 0.001$). Younger participants (10-11 years) tend to have milder addiction scores compared to older age groups, where moderate to severe addiction scores increase significantly.

Gender; Gender is significantly associated with addiction severity (Chi-square = 10.698, $p = 0.005$). Boys exhibit more severe addiction scores compared to girls in the control group.

Type of Family; Type of family is significantly associated with addiction severity (Chi-square = 38.915, p < 0.001). Participants from joint families show higher addiction severity compared to those from nuclear or extended families.

Class / Grade; Class or grade level is significantly associated with addiction severity (Chi-square = 214.121, p < 0.001). Higher grade levels tend to have higher moderate to severe addiction scores compared to lower grades.

Family Income Monthly; Family income monthly does not show a significant association with addiction severity (Chi-square = 3.289, p = 0.772). There is no clear relationship between income levels and addiction severity in this context.

Residential Area; Residential area does not show a significant association with addiction severity (Chi-square = 2.793, p = 0.593). Both rural and urban areas exhibit similar patterns of addiction severity.

Qualification of Mother; Qualification of the mother does not show a significant association with addiction severity (Chi-square = 3.033, p = 0.805). Maternal education level does not seem to influence addiction severity in this group

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Qualification of Father; Qualification of the father shows a significant association with addiction severity (Chi-square = 19.321, p = 0.004). Paternal education level influences addiction severity, with higher levels correlating with more severe addiction scores.

Occupation of Father; Occupation of the father shows a significant association with addiction severity (Chi-square = 15.803, p = 0.015). Father's occupation influences addiction severity, with service and business occupations showing higher severity scores.

Occupation of Mother; Occupation of the mother shows a significant association with addiction severity (Chi-square = 16.171, p = 0.013). Maternal occupation influences addiction severity, with those at home or in business having varying levels of severity

.

Use of Smartphone Duration; Use of smartphone duration shows a significant association with addiction severity (Chi-square = 17.242, p = 0.008). Participants using smartphones for longer durations tend to have higher addiction severity scores.

3.5.5 Table No: 11. Table Showing Association Group Wise, Item Wise Analysis of Addiction Scores.

Area Addiction	Addiction Question	Pre Experimental Mean	Pr Control Mean	**Post Experimental** Mean	Post Control Mean
	Qno.1	3.214	3.214	2.900	3.200
	Qno.2	3.068	3.150	2.929	3.139
	Qno.3	3.229	3.243	2.729	3.232
	Qno.4	3.375	3.414	2.668	3.429
	Qno.5	3.371	3.401	2.721	3.382

	Qno.6	3.414	3.432	2.707	3.418
	Qno.7	3.396	3.464	2.664	3.432
	Qno.8	3.414	3.521	2.711	3.479
	Qno.9	3.525	3.611	2.829	3.582
	Qno.10	3.446	3.579	2.793	3.489
	Qno.11	3.464	3.568	2.732	3.521
	Qno.12	3.414	3.504	2.811	3.432
	Qno.13	3.496	3.750	2.729	3.704
	Qno.14	3.411	3.493	2.754	3.468
	Qno.15	3.421	3.496	2.782	3.496
	Qno.16	3.307	3.361	2.739	3.368
	Qno.17	3.364	3.421	2.764	3.425
	Qno.18	3.296	3.346	2.864	3.368
	Qno.19	3.439	3.482	2.771	3.504
	Qno.20	3.432	3.468	2.761	3.479
	Qno.21	3.507	3.529	2.711	3.521
	Qno.22	3.496	3.496	2.768	3.471
	Qno.23	3.361	3.361	2.921	3.371
	Qno.24	3.554	3.554	2.954	3.550
	Qno.25	3.614	3.614	2.911	3.611
	Qno.26	3.632	3.632	2.982	3.639
	Qno.27	3.604	3.604	3.018	3.611
	Qno.28	3.693	3.693	2.996	3.668
	Qno.29	3.554	3.554	3.132	3.511
	Qno.30	3.607	3.607	3.189	3.604
	Qno.31	3.543	3.543	3.196	3.550
	Qno.32	3.625	3.625	3.143	3.607
	Qno.33	4.057	4.057	3.432	4.032

Daily Life Disturbance: There was no significant difference between the experimental group (M = 16.26, SD = 5.936) and the control group (M = 16.41, SD = 5.869) in terms of daily life disturbance (t(98) = 0.308, p = 0.7583).

Positive Anticipation: Both groups did not differ significantly in positive anticipation, with the experimental group (M = 13.75, SD = 5.288) and control group (M = 14.03, SD = 5.062) having similar scores (t(98) = 0.637, p = 0.5246).

Withdrawal: There was no significant difference in withdrawal symptoms between the experimental group (M = 34.06, SD = 12.530) and the control group (M = 35.00, SD = 12.082) (t(98) = 0.903, p = 0.3669).

Cyberspace Oriented Relationship: The scores for cyberspace oriented relationships were similar between the experimental group (M = 17.35, SD = 6.508) and the control group (M = 17.41, SD = 6.484), with no significant difference found (t(98) = 0.104, p = 0.9171).

Overuse: Both groups reported identical scores for overuse behaviors (experimental: M = 14.54, SD = 5.206; control: M = 14.54, SD = 5.206), resulting in a non-significant comparison (t(98) = 0.000, p = 1.0000).

Tolerance: Similarly, there was no significant difference in tolerance levels between the experimental group (M = 18.39, SD = 6.229) and the control group (M = 18.39, SD = 6.229) (t(98) = 0.000, p = 1.0000).

Overall Psychological Score: The overall psychological scores did not differ significantly between the experimental group (M = 114.35, SD = 36.911) and the control group (M = 115.78, SD = 36.068) (t(98) = 0.463, p = 0.6434).

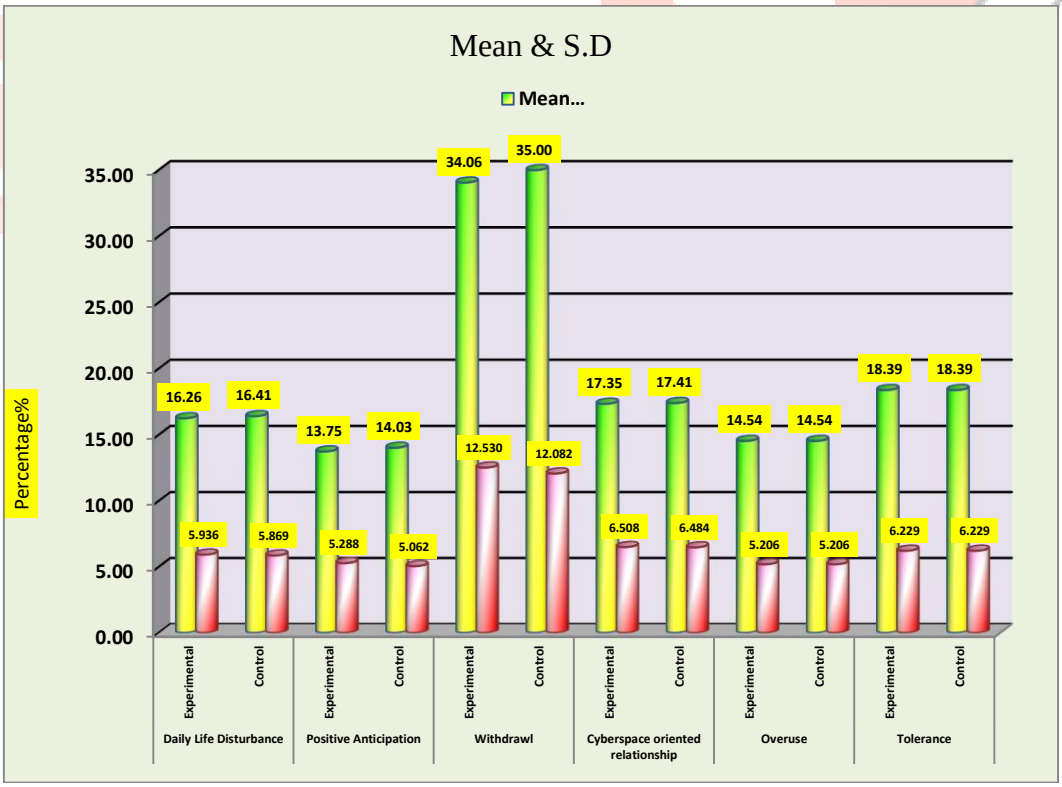

Figure No. 19. Diagram showing Area wise addiction score of pre experimental and pre control group

3.6.1 Effectiveness difference Table no. 13. Showing the comparison of addiction sub scale score of post experimental and post control group

Unpaired T Test		Mean Score	S.D.	Median Score	Range of Obtained Score	Unpaired Test	P value	Table Value	Result
Daily Life Disturbance	Experimental	13.95	5.309	13	22	5.227	<0.001	1.96	Significant
	Control	16.38	5.712	17	23				
Positive Anticipation	Experimental	10.91	4.037	10.5	18	8.040	<0.001	1.96	Significant
	Control	13.91	4.763	14	19				
Withdrawal	Experimental	27.74	9.040	26	40	8.087	<0.001	1.96	Significant
	Control	34.78	11.410	36.5	48				
Cyberspace oriented relationship	Experimental	14.11	4.983	13	22	6.850	<0.001	1.96	Significant
	Control	17.39	6.270	18	22				
Overuse	Experimental	11.91	4.258	11	19	14.378	<0.001	1.96	Significant
	Control	18.30	6.106	18	23				
Tolerance	Experimental	16.09	5.652	15	23	4.446	<0.001	1.96	Significant
	Control	18.30	6.106	18	23				
Overall	Experimental	94.71	26.421	90.5	103	9.253	<0.001	1.96	Significant
	Control	119.07	35.242	124	136				

Daily Life Disturbance: The experimental group (M = 13.95, SD = 5.309) reported significantly lower levels of daily life disturbance compared to the control group (M = 16.38, SD = 5.712) ($t(98) = 5.227$, $p < 0.001$).

Positive Anticipation: The experimental group (M = 10.91, SD = 4.037) had significantly higher levels of positive anticipation compared to the control group (M = 13.91, SD = 4.763) ($t(98) = 8.040$, $p < 0.001$).

Withdrawal: The experimental group (M = 27.74, SD = 9.040) reported significantly lower withdrawal symptoms compared to the control group (M = 34.78, SD = 11.410) ($t(98) = 8.087$, $p < 0.001$).

Cyberspace Oriented Relationship: The experimental group (M = 14.11, SD = 4.983) showed significantly lower beha
viors related to cyberspace relationships compared to the control group (M = 17.39, SD = 6.270) ($t(98) = 6.850$, $p < 0.001$).

Overuse: The experimental group (M = 11.91, SD = 4.258) reported significantly lower levels of overuse behaviors compared to the control group (M = 18.30, SD = 6.106) ($t(98) = 14.378$, $p < 0.001$).

Tolerance: The experimental group (M = 16.09, SD = 5.652) showed significantly lower tolerance levels compared to the control group (M = 18.30, SD = 6.106) ($t(98) = 4.446$, $p < 0.001$).

Overall Psychological Score: The experimental group (M = 94.71, SD = 26.421) had significantly lower overall psychological scores compared to the control group (M = 119.07, SD = 35.242) ($t(98) = 9.253$, $p < 0.001$)

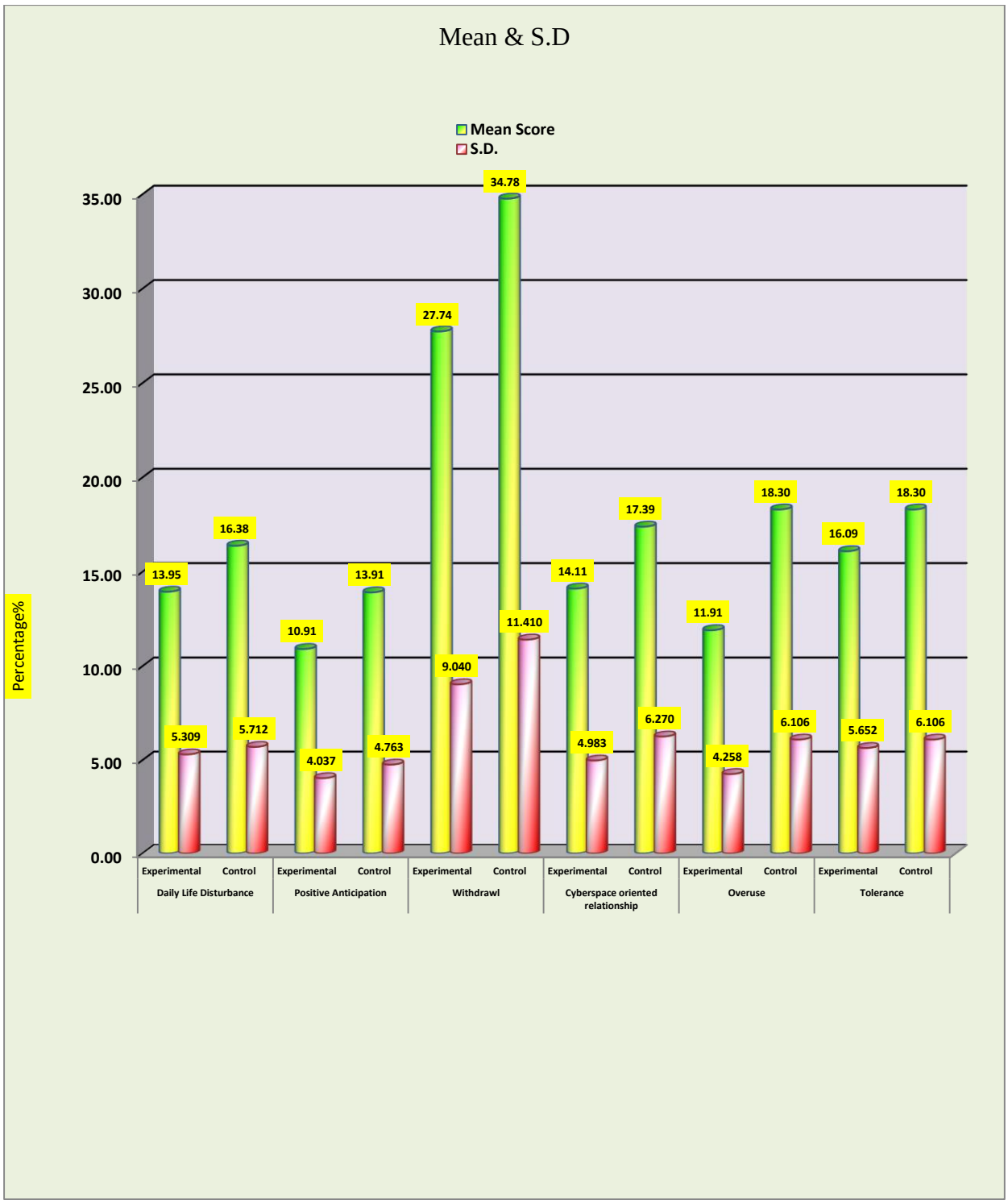

Figure No .20. Area wise comparison of addiction score of post experimental and post control group

3.6.2 Table no. 14. Showing the comparison of subscale of addiction score of pre and Post- intervention experimental group

Paired T Test		Mean Score	S.D.	Median Score	Range	Paired T Test	P value	Table Value	Result
Daily Life Disturbance	Pre	16.26	5.94	17	25	6.844	<0.001	1.97	Significant
	Post	13.95	5.31	13	25				
Positive Anticipation	Pre	13.75	5.29	13	20	9.594	<0.001	1.97	Significant
	Post	10.91	4.04	10.5	20				
Withdrawal	Pre	34.06	12.53	36	50	9.981	<0.001	1.97	Significant
	Post	27.74	9.04	26	50				
Cyberspace oriented relationship	Pre	17.35	6.51	18	25	8.974	<0.001	1.97	Significant
	Post	14.11	4.98	13	25				
Overuse	Pre	14.54	5.21	15	20	8.547	<0.001	1.97	Significant
	Post	11.91	4.26	11	20				
Tolerance	Pre	18.39	6.23	18	25	6.635	<0.001	1.97	Significant
	Post	16.09	5.65	15	25				
Overall	Pre	114.35	36.91	120	165	12.531	<0.001	1.97	Significant
	Post	94.71	26.42	90.5	165				

Daily Life Disturbance: There was a significant decrease in scores from pre-intervention (M = 16.26, SD = 5.94) to post-intervention (M = 13.95, SD = 5.31) (t (49) = 6.844, p < 0.001), indicating reduced disturbance in daily life activities following the intervention.

Positive Anticipation: Scores significantly decreased from pre-intervention (M = 13.75, SD = 5.29) to post-intervention (M = 10.91, SD = 4.04) (t (49) = 9.594, p < 0.001), suggesting improved positive anticipation after the intervention

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Withdrawal: There was a significant decrease in withdrawal symptoms from pre-intervention (M = 34.06, SD = 12.53) to post-intervention (M = 27.74, SD = 9.04) (t (49) = 9.981, p < 0.001), indicating reduced withdrawal tendencies after the intervention.

Cyberspace Oriented Relationship: Scores significantly decreased from pre-intervention (M = 17.35, SD = 6.51) to post-intervention (M = 14.11, SD = 4.98) (t (49) = 8.974, p < 0.001), suggesting a decrease in problematic behaviors related to cyberspace relationships.

Overuse: Scores significantly decreased from pre-intervention (M = 14.54, SD = 5.21) to post-intervention (M = 11.91, SD = 4.26) (t(49) = 8.547, p < 0.001), indicating reduced overuse behaviours following the intervention.

Tolerance: There was a significant decrease in scores from pre-intervention (M = 18.39, SD = 6.23) to post-intervention (M = 16.09, SD = 5.65) (t(49) = 6.635, p < 0.001), suggesting improved tolerance levels after the intervention.

Overall Psychological Score: Scores significantly decreased from pre-intervention (M = 114.35, SD = 36.91) to post-intervention (M = 94.71, SD = 26.42) (t(49) = 12.531, p < 0.001), indicating an overall improvement in psychological well-being following the intervention.

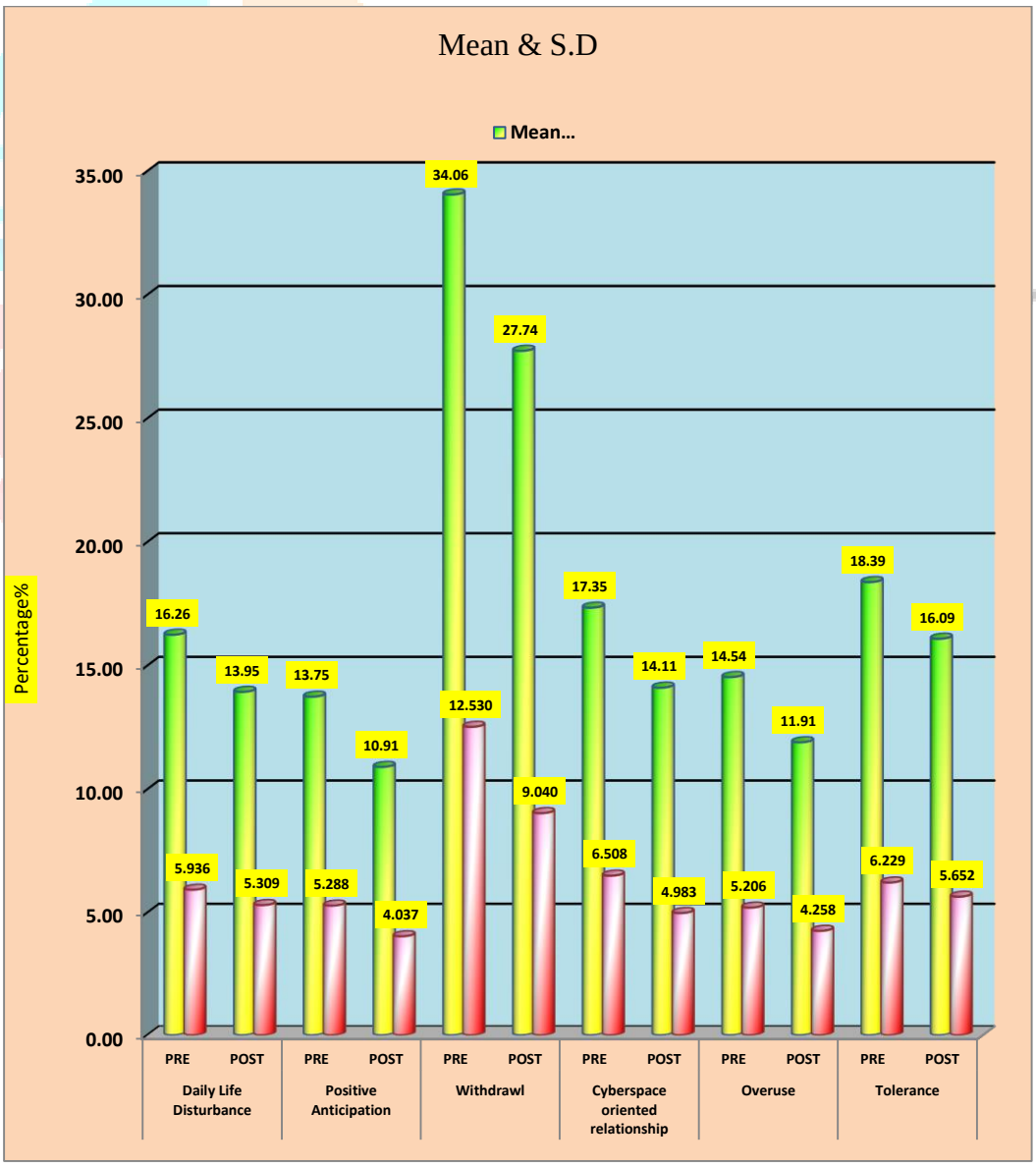

Figure No.21. Comparison of subscale of addiction score of pre and Post experimental group

3.6.3 Table no. 15. Comparison of subscale of addiction score of pre and Post Control group.

Paired T Test		Mean Score	S.D.	Median	Range	Paired T Test	P value	Table Value	Result
Daily Life Disturbance	Pre	16.41	5.87	17	25	0.476	0.6346	1.97	NonSignificant
	Post	16.38	5.71	17	25				
Positive Anticipation	Pre	14.03	5.06	14	20	1.753	0.0807	1.97	NonSignificant
	Post	13.91	4.76	14	20				
Withdrawal	Pre	35.00	12.08	37	50	2.112	0.0356	1.97	Significant
	Post	34.78	11.41	36.5	50				
Cyberspace oriented relationship	Pre	17.41	6.48	18	25	0.223	0.8235	1.97	Non Significant
	Post	17.39	6.27	18	25				
Overuse	Pre	14.54	5.21	15	20	0.272	0.7860	1.97	NonSignificant
	Post	14.53	5.07	15	20				
Tolerance	Pre	18.39	6.23	18	25	1.588	0.1135	1.97	NonSigniicant
	Post	18.30	6.11	18	25				
Overall	Pre	115.78	36.07	123	165	1.634	0.1033	1.97	NonSignificant
	Post	115.2	34.	122.5	16				

		9	28		5				

Daily Life Disturbance: There was no statistically significant difference in scores from pre-I test (M = 16.41, SD = 5.87) to post- test (M = 16.38, SD = 5.71) (t(49) = 0.476, p = 0.6346).

Positive Anticipation: Similarly, there was no significant difference in scores from pre-test (M = 14.03, SD = 5.06) to post- test (M = 13.91, SD = 4.76) (t(49) = 1.753, p = 0.0807), indicating that positive anticipation levels did not significantly changed.

Withdrawal: Scores significantly decreased from pre- test (M = 35.00, SD = 12.08) to post-test (M = 34.78, SD = 11.41) (t(49) = 2.112, p = 0.0356), indicating a significant reduction in withdrawal symptoms

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Cyberspace Oriented Relationship: There was no significant difference in scores from pre-test (M = 17.41, SD = 6.48) to post-test (M = 17.39, SD = 6.27) (t(49) = 0.223, p = 0.8235), suggesting that behaviors related to cyberspace relationships did not change.

Overuse: Similarly, there was no significant difference in scores from pre-test (M = 14.54, SD = 5.21) to post-test (M = 14.53, SD = 5.07) (t(49) = 0.272, p = 0.7860), indicating that overuse behaviors did not significantly change.

Tolerance: Scores did not significantly change from pre-intervention (M = 18.39, SD = 6.23) to post-intervention (M = 18.30, SD = 6.11) (t(49) = 1.588, p = 0.1135), suggesting that tolerance levels did not significantly improve.

Overall Psychological Score: There was no significant difference in overall psychological scores from pre-test (M = 115.78, SD = 36.07) to post-test (M = 115.29, SD = 34.28) (t(49) = 1.634, p = 0.1033), indicating that the intervention did not lead to significant changes in overall psychological well-being.

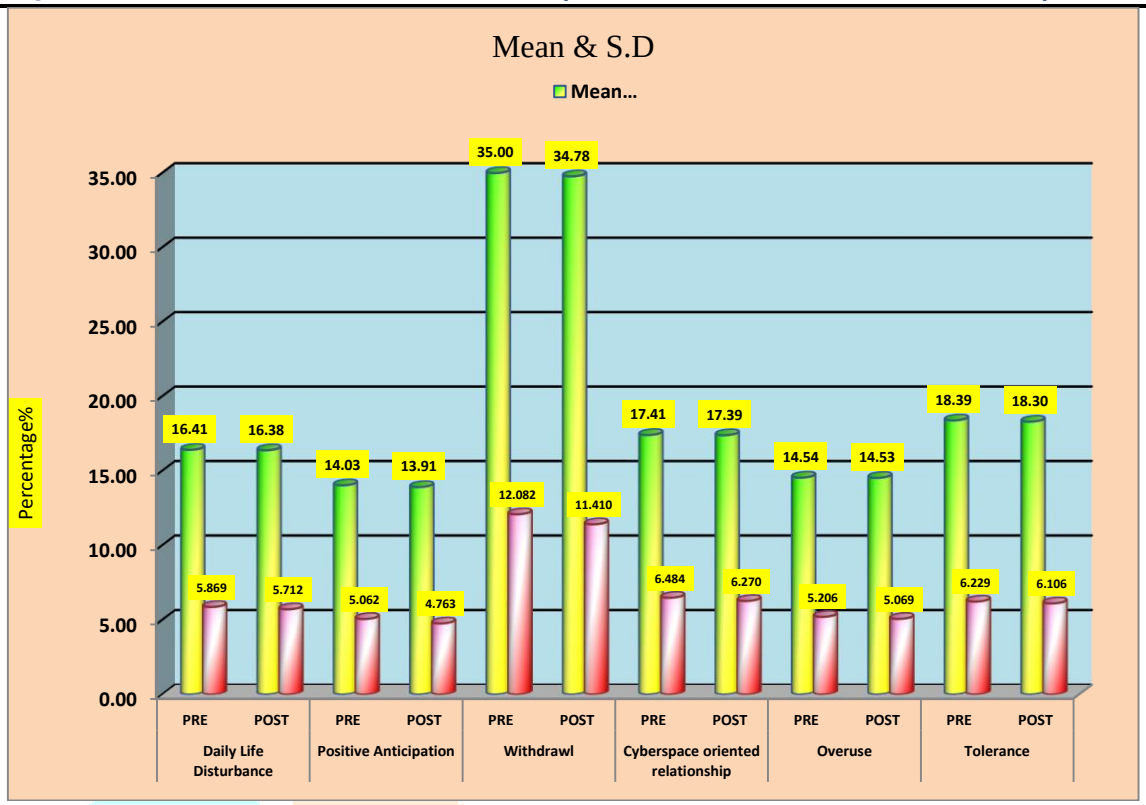

Figure No.22. Comparison of subscale of addiction score of pre and Post-test Control group.

3.7.1 Table No: 16. Descriptive score according to demographic variables. (Pre-test score) of Experimental group

Demographic variables	addiction score with demographic variables (pre-test addiction) experimental group

Variables	Opts	Mean	SD	N
Age	10-11 Years	63.63	8.42	40
	11-12 Years	81.95	16.27	40
	12-13 Years	89.70	21.43	40
	13-14 Years	130.33	23.65	40
	14-15 Years	143.33	17.49	40
	15-17 Years	144.08	16.65	40
	17-19 Years	147.43	17.86	40
Gender	Boy	122.04	35.87	140
	Girl	106.65	36.45	140
Type of family	Joint	99.61	38.17	92
	Nuclear	127.93	31.67	134
	Extended	105.76	35.14	54
Class / Grade	6th	63.63	8.42	40
	7th	81.95	16.27	40
	8th	89.70	21.43	40
	9th	130.33	23.65	40
	10th	143.33	17.49	40
	11th	144.08	16.65	40
	12th	147.43	17.86	40
Family income monthly	Less than Rs.15000	116.23	36.13	107
	15001-20000	115.11	36.60	107
	20001-30000	111.68	38.85	38
	More than 30000	107.82	39.45	28
Residential Area	Rural	106.72	35.21	64
	Urban	117.10	36.91	203
	Other	108.85	41.97	13
Qualification of mother	Matriculation	115.40	35.85	155
	Under graduation	113.83	38.31	99
	Post graduation	106.30	39.69	23
	Informal education	138.67	9.29	3
Qualification of father	Matriculation	121.79	35.00	150
	Under graduation	103.56	35.98	87
	Post graduation	116.32	40.13	28
	Informal education	98.73	38.36	15
Occupation of Father	Service	125.01	35.45	95
	Business	106.65	36.99	106
	Agriculture	107.16	34.44	43
	Other	117.44	37.36	36
Occupation of Mother	Service	97.61	43.54	33
	Business	112.55	41.47	40
	At home	117.70	34.19	202
	Other	103.60	35.87	5
Use of smartphone duration	<1 year	98.65	35.19	51
	1-2 years	109.03	33.61	40
	2-3 years	113.54	37.20	39

	3-4 years and above	121.31	36.69	150

Age: Addiction scores increase with age, from 63.63 (SD = 8.42) for 10-11 years to 147.43 (SD = 17.86) for 17-19 years, showing a clear upward trend as age increases.

Gender: Boys (Mean = 122.04, SD = 35.87) exhibit higher addiction scores compared to girls (Mean = 106.65, SD = 36.45)

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Type of Family: Nuclear families (Mean = 127.93, SD = 31.67) show higher addiction scores than joint (Mean = 99.61, SD = 38.17) and extended families (Mean = 105.76, SD = 35.14).

Class/Grade: Addiction scores increase with higher grades, ranging from 63.63 (SD = 8.42) for 6th grade to 147.43 (SD = 17.86) for 12th grade.

Family Income Monthly: No significant trend observed across income brackets (Less than Rs.15000: Mean = 116.23, SD = 36.13; 15001-20000: Mean = 115.11, SD = 36.60; 20001-30000: Mean = 111.68, SD = 38.85; More than 30000: Mean = 107.82, SD = 39.45).

Residential Area: Urban areas (Mean = 117.10, SD = 36.91) show slightly higher addiction scores compared to rural (Mean = 106.72, SD = 35.21) and other areas (Mean = 108.85, SD = 41.97).

Qualification of Mother: Mothers with "Other" qualifications (Mean = 138.67, SD = 9.29) have notably higher addiction scores compared to Matriculation (Mean = 115.40, SD = 35.85), under graduation (Mean = 113.83, SD = 38.31), and Post graduation (Mean = 106.30, SD = 39.69)

Qualification of Father: Fathers with Matriculation (Mean = 121.79, SD = 35.00) and Post graduation (Mean = 116.32, SD = 40.13) qualifications show higher addiction scores compared to under -graduation (Mean = 103.56, SD = 35.98) and other qualifications (Mean = 98.73, SD = 38.36)

.

Occupation of Father: Fathers in Service (Mean = 125.01, SD = 35.45) and Business (Mean = 117.44, SD = 37.36) have higher addiction scores compared to Agriculture (Mean = 107.16, SD = 34.44) and other occupations (Mean = 106.65, SD = 36.99)

.

Occupation of Mother: Mothers at home (Mean = 117.70, SD = 34.19) show higher addiction scores compared to those in Service (Mean = 97.61, SD = 43.54), Business (Mean = 112.55, SD = 41.47), and other occupations (Mean = 103.60, SD = 35.87).

Use of Smartphone Duration: No significant trend is observed across different durations (1 year: Mean = 98.65, SD = 35.19; 2 years: Mean = 109.03, SD = 33.61; 3 years: Mean = 113.54, SD = 37.20; 4 years: Mean = 121.31, SD = 36.69

3.7.2 Table No: 17. Descriptive score according to Demographic variables. (Pre-test score) of Control group

Demographic variables		addiction score with demographic variables pre test addiction) control group		
Variables	**Opts**	**Mean**	**SD**	**N**
Age	10-11 Years	67.03	8.75	40
	11-12 Years	81.95	16.27	40
	12-13 Years	91.90	21.66	40
	13-14 Years	133.78	20.75	40
	14-15 Years	144.33	16.15	40
	15-17 Years	144.13	16.61	40
	17-19 Years	147.33	17.87	40
Gender	Boy	123.11	34.39	140
	Girl	108.44	36.34	140
Type of family	Joint	102.30	39.21	81
	Nuclear	128.53	31.15	136
	Extended	105.57	32.53	63
Class / Grade	6th	67.03	8.75	40
	7th	81.95	16.27	40
	8th	91.90	21.66	40
	9th	133.78	20.75	40
	10th	144.33	16.15	40
	11th	144.13	16.61	40
	12th	147.33	17.87	40
Family income monthly	Less than Rs.15000	117.90	35.19	104
	15001-20000	116.52	35.56	108
	20001-30000	110.88	37.70	40
	More than 30000	112.00	39.80	28
Residential Area	Rural	111.06	35.54	72
	Urban	117.67	36.09	195
	Other	113.46	38.92	13
Qualification of mother	Matriculation	116.51	35.86	142
	Under graduation	115.80	37.04	103
	Post graduation	110.31	35.46	32
	Informal education	138.67	9.29	3
Qualification of father	Matriculation	121.22	34.85	135
	Under graduation	106.19	34.28	89
	Post graduation	119.97	39.06	38
	Informal education	113.44	40.15	18
Occupation of Father	Service	126.22	33.86	92
	Business	107.87	36.49	106
	Agriculture	111.00	34.38	46
	Other	118.47	36.92	36
Occupation of Mother	Service	105.59	41.38	29
	Business	109.05	41.80	42
	At home	118.91	33.70	204

	Other	103.60	35.87	5
Use of smartphone duration	<1 year	101.15	35.26	48
	1-2 years	108.00	34.55	42
	2-3 years	109.70	37.39	46
	3-4 years and above	124.86	34.10	144

Age: Addiction scores increase with age, ranging from 67.03 (SD = 8.75) for 10-11 years to 147.33 (SD = 17.87) for 17-19 years, showing a consistent rise with older age groups.

Gender: Boys (Mean = 123.11, SD = 34.39) tend to have higher addiction scores compared to girls (Mean = 108.44, SD = 36.34).

Type of Family: Nuclear families (Mean = 128.53, SD = 31.15) exhibit higher addiction scores compared to joint (Mean = 102.30, SD = 39.21) and extended families (Mean = 105.57, SD = 32.53).

Class/Grade: Addiction scores increase across higher grades, ranging from 67.03 (SD = 8.75) for 6th grade to 147.33 (SD = 17.87) for 12th grade.

Family Income Monthly: No significant trend observed across income brackets (Less than Rs.15000: Mean = 117.90, SD = 35.19; 15001-20000: Mean = 116.52, SD = 35.56; 20001-30000: Mean = 110.88, SD = 37.70; More than 30000: Mean = 112.00, SD = 39.80).

Residential Area: Urban areas (Mean = 117.67, SD = 36.09) show slightly higher addiction scores compared to rural (Mean = 111.06, SD = 35.54) and other areas (Mean = 113.46, SD = 38.92).

Qualification of Mother: Mothers with "Other" qualifications (Mean = 138.67, SD = 9.29) have higher addiction scores compared to Matriculation (Mean = 116.51, SD = 35.86), Under graduation (Mean = 115.80, SD = 37.04), and Post graduation (Mean = 110.31, SD = 35.46).

Qualification of Father: Fathers with Matriculation (Mean = 121.22, SD = 34.85) and Post graduation (Mean = 119.97, SD = 39.06) qualifications show higher addiction scores compared to under -graduation (Mean = 106.19, SD = 34.28) and other qualifications (Mean = 113.44, SD = 40.15).

Occupation of Father: Fathers in Service (Mean = 126.22, SD = 33.86) and those in Business (Mean = 118.47, SD = 36.92) exhibit higher addiction scores compared to Agriculture (Mean = 111.00, SD = 34.38) and Other occupations (Mean = 107.87, SD = 36.49).

Occupation of Mother: Mothers at home (Mean = 118.91, SD = 33.70) show higher addiction scores compared to those in Service (Mean = 105.59, SD = 41.38), Business (Mean = 109.05, SD = 41.80), and Other occupations (Mean = 103.60, SD = 35.87).

Use of Smartphone Duration: No significant trend is observed across different durations (1 year: Mean = 101.15, SD = 35.26; 2 years: Mean = 108.00, SD = 34.55; 3 years: Mean = 109.70, SD = 37.39; 4 years: Mean = 124.86, SD = 34.10)

3.7.3 Table No: 18. Descriptive score according to Demographic variables.(post-test score) of Experimental group

Demographic variables		Addiction score with demographic variables (post- test addiction)experimental group		
Variables	**Opts**	**Mean**	**SD**	**N**
Age	10-11 Years	69.38	11.17	40
	11-12 Years	71.28	12.11	40
	12-13 Years	76.40	10.94	40
	13-14 Years	92.58	14.07	40
	14-15 Years	102.30	25.14	40
	15-17 Years	124.35	10.79	40
	17-19 Years	126.70	8.72	40
Gender	Boy	99.91	26.48	140
	Girl	89.51	25.41	140
Type of family	Joint	86.17	26.19	92
	Nuclear	102.74	25.19	134
	Extended	89.33	24.18	54
Class / Grade	6th	69.38	11.17	40
	7th	71.28	12.11	40
	8th	76.40	10.94	40
	9th	92.58	14.07	40
	10th	102.30	25.14	40
	11th	124.35	10.79	40
	12th	126.70	8.72	40
Family income monthly	Less than Rs.15000	93.38	25.70	107
	15001-20000	96.12	27.47	107
	20001-30000	96.13	27.04	38

	More than 30000	92.46	25.16	28
Residential Area	Rural	94.02	25.97	64
	Urban	94.91	26.45	203
	Other	95.00	30.10	13
Qualification of mother	Matriculation	94.21	26.09	155
	Under graduation	96.04	27.43	99
	Post graduation	91.30	25.46	23
	Informal education	102.67	25.32	3
Qualification of father	Matriculation	99.30	26.51	150
	Under graduation	88.79	25.16	87
	Post graduation	93.89	27.31	28
	Informal education	84.67	23.55	15
Occupation of Father	Service	100.96	25.88	95
	Business	91.24	27.29	106
	Agriculture	89.86	25.18	43
	Other	94.25	24.49	36
Occupation of Mother	Service	85.73	24.89	33
	Business	96.38	29.06	40
	At home	96.39	26.02	202
	Other	72.80	6.53	5
Use of smartphone duration	<1 year	79.51	18.73	51
	1-2 years	82.23	18.54	40
	2-3 years	101.62	23.75	39
	3-4 years and above	101.41	27.87	150

Age: Addiction scores show variability across age groups, with scores ranging from 69.38 (SD = 11.17) for 10-11 years to 126.70 (SD = 8.72) for 17-19 years. The highest scores are observed in the oldest age category.

Gender: Boys (Mean = 99.91, SD = 26.48) tend to have higher addiction scores compared to girls (Mean = 89.51, SD = 25.41).

Type of Family: Nuclear families (Mean = 102.74, SD = 25.19) show higher addiction scores compared to joint (Mean = 86.17, SD = 26.19) and extended families (Mean = 89.33, SD = 24.18).

Class/Grade: Addiction scores increase across higher grades, ranging from 69.38 (SD = 11.17) for 6th grade to 126.70 (SD = 8.72) for 12th grade.

Family Income Monthly: No significant trend is observed across income brackets (Less than Rs.15000: Mean = 93.38, SD = 25.70; 15001-20000: Mean = 96.12, SD = 27.47; 20001-30000: Mean = 96.13, SD = 27.04; More than 30000: Mean = 92.46, SD = 25.16).

Residential Area: No significant difference is found between addiction scores across different residential areas (Rural: Mean = 94.02, SD = 25.97; Urban: Mean = 94.91, SD = 26.45; other: Mean = 95.00, SD = 30.10).

Qualification of Mother: Mothers with "Other" qualifications (Mean = 102.67, SD = 25.32) have higher addiction scores compared to Matriculation (Mean = 94.21, SD = 26.09), under graduation (Mean = 96.04, SD = 27.43), and Post graduation (Mean = 91.30, SD = 25.46).

Qualification of Father: Fathers with Matriculation (Mean = 99.30, SD = 26.51) qualifications show higher addiction scores compared to Under graduation (Mean = 88.79, SD = 25.16), Post graduation (Mean = 93.89, SD = 27.31), and Other qualifications (Mean = 84.67, SD = 23.55).

Occupation of Father: Fathers in Service (Mean = 100.96, SD = 25.88) have slightly higher addiction scores compared to those in Business (Mean = 91.24, SD = 27.29), Agriculture (Mean = 89.86, SD = 25.18), and other occupations (Mean = 94.25, SD = 24.49).

Occupation of Mother: Mothers at home (Mean = 96.39, SD = 26.02) and those in Business (Mean = 96.38, SD = 29.06) show similar addiction scores, while mothers in Service (Mean = 85.73, SD = 24.89) and "Other" occupations (Mean = 72.80, SD = 6.53) have lower scores.

Use of Smartphone Duration: Addiction scores vary across different smartphone usage durations (1 year: Mean = 79.51, SD = 18.73; 2 years: Mean = 82.23, SD = 18.54; 3 years: Mean = 101.62, SD = 23.75; 4 years: Mean = 101.41, SD = 27.87), with higher scores observed in the longer usage durations.

3.7.4 Table No: 19 .Descriptive score according to Demographic variables (Post-test score)

Control group

Demographic variables		addiction score with demographic variables (post - testaddiction) control group		
Variables	**Opts**	**Mean**	**SD**	**N**
Age	**10-11 Years**	**69.20**	**8.84**	**40**
	11-12 Years	**84.20**	**15.57**	**40**
	12-13 Years	**91.30**	**21.21**	**40**
	13-14 Years	**132.90**	**20.09**	**40**
	14-15 Years	**143.88**	**16.02**	**40**
	15-17 Years	**143.03**	**16.19**	**40**
	17-19 Years	**142.55**	**15.64**	**40**
Gender	**Boy**	**121.92**	**32.29**	**140**
	Girl	**108.66**	**35.03**	**140**
Type of family	**Joint**	**103.09**	**37.80**	**81**
	Nuclear	**126.83**	**29.45**	**136**
	Extended	**106.08**	**31.33**	**63**
Class / Grade	**6th**	**69.20**	**8.84**	**40**
	7th	**84.20**	**15.57**	**40**

	8th	91.30	21.21	40
	9th	132.90	20.09	40
	10th	143.88	16.02	40
	11th	143.03	16.19	40
	12th	142.55	15.64	40
Family income monthly	Less than Rs.15000	117.16	33.19	104
	15001-20000	116.01	33.88	108
	20001-30000	111.20	36.46	40
	More than 30000	111.43	37.59	28
Residential Area	Rural	109.99	33.16	72
	Urban	117.51	34.51	195
	Other	111.38	35.86	13
Qualification of mother	Matriculation	116.23	34.36	142
	Under graduation	115.07	34.90	103
	Post graduation	109.69	33.18	32
	Informal education	138.67	9.29	3
Qualification of father	Matriculation	120.49	33.55	135
	Under graduation	106.10	32.04	89
	Post graduation	119.00	36.37	38
	Informal education	113.94	39.09	18
Occupation of Father	Service	124.80	32.04	92
	Business	108.43	35.17	106
	Agriculture	110.67	32.62	46
	Other	117.08	34.72	36
Occupation of Mother	Service	105.17	40.09	29
	Business	108.14	38.48	42
	At home	118.48	32.13	204
	Other	104.00	34.18	5
Use of smartphone duration	<1 year	101.56	34.31	48
	1-2 years	108.19	33.52	42
	2-3 years	109.26	35.62	46

	3-4 years and above	**123.87**	**31.94**	**144**

Age: Addiction scores vary with age, ranging from 69.20 (SD = 8.84) for 10-11 years to 43.88 (SD = 16.02) for 15-16 years. Older age groups tend to have higher scores.

Gender: Boys (Mean = 121.92, SD = 32.29) generally exhibit higher addiction scores compared to girls (Mean = 108.66, SD = 35.03).

Type of Family: Nuclear families (Mean = 126.83, SD = 29.45) show higher addiction scores compared to joint (Mean = 103.09, SD = 37.80) and extended families (Mean = 106.08, SD = 31.33).

Class/Grade: Addiction scores increase with higher grades, ranging from 69.20 (SD = 8.84) for 6th grade to 143.88 (SD = 16.02) for 10th grade.

Family Income Monthly: No significant trend is observed across income brackets (Less than Rs.15000: Mean = 117.16, SD = 33.19; 15001-20000: Mean = 116.01, SD = 33.88; 20001-30000: Mean = 111.20, SD = 36.46; More than 30000: Mean = 111.43, SD = 37.59).
Residential Area: No substantial difference is found in addiction scores across different residential areas (Rural: Mean = 109.99, SD = 33.16; Urban: Mean = 117.51, SD = 34.51; other: Mean = 111.38, SD = 35.86).

Qualification of Mother: Mothers with "Other" qualifications (Mean = 138.67, SD = 9.29) have higher addiction scores compared to Matriculation (Mean = 116.23, SD = 34.36), Under graduation (Mean = 115.07, SD = 34.90), and Post graduation (Mean = 109.69, SD = 33.18).

Qualification of Father: Fathers with Matriculation (Mean = 120.49, SD = 33.55) qualifications show higher addiction scores compared to Under graduation (Mean = 106.10, SD = 32.04), Post graduation (Mean = 119.00, SD = 36.37), and Other qualifications (Mean = 113.94, SD = 39.09).

Occupation of Father: Fathers in Service (Mean = 124.80, SD = 32.04) have slightly higher addiction scores compared to those in Business (Mean = 108.43, SD = 35.17), Agriculture (Mean = 110.67, SD = 32.62), and Other occupations (Mean = 117.08, SD = 34.72).

Occupation of Mother: Mothers at home (Mean = 118.48, SD = 32.13) show higher addiction scores compared to those in Service (Mean = 105.17, SD = 40.09), Business (Mean = 108.14, SD = 38.48), and other occupations (Mean = 104.00, SD = 34.18).

Use of Smartphone Duration: Addiction scores vary across different smartphone usage durations (1 year: Mean = 101.56, SD = 34.31; 2 years: Mean = 108.19, SD = 33.52; 3 years: Mean = 109.26, SD = 35.62; 4 years: Mean = 123.87, SD = 31.94), with higher scores observed in the longer usage durations.

3.8.1 Correlation .. Table No.20; Showing the co-relation of addiction score with Knowledge score Of the Experimental group

Experimental group						
	Variable 1	**vs**	**Variable 2**	**r value**	**P value**	**Result**
Pair 1	Pre-test addiction	vs	Post- test addiction	.704**	<0.001	Significant
Pair 2	Pre-test addiction	vs	Pre -test Knowledge	.706**	<0.001	Significant
Pair 3	Pre-test addiction	vs	Post-test knowledge	.743**	<0.001	Significant
Pair 4	Post-test addiction	vs	Pre-test knowledge	.680**	<0.001	Significant
Pair 5	Post-test addiction	vs	Post-test knowledge	.662**	<0.001	Significant
Pair 6	Pre-test knowledge	vs	Post-test knowledge	.639**	<0.001	Significant

Firstly, there is a significant correlation between addiction scores before and after the intervention ($r = 0.704$, $p < 0.001$), indicating that individuals tended to maintain their addiction levels over time.

Secondly, addiction scores before intervention showed a strong correlation with pre-test knowledge scores ($r = 0.706$, $p < 0.001$), suggesting that higher addiction tendencies were associated with certain levels of pre-existing knowledge.

Thirdly, addiction scores before intervention also correlated strongly with post-test knowledge scores ($r = 0.743$, $p < 0.001$), indicating that initial addiction tendencies might have influenced how much knowledge participants gained after the intervention.

Moreover, post-intervention addiction scores correlated significantly with both pre-test knowledge ($r = 0.680$, $p < 0.001$) and post-test knowledge ($r = 0.662$, $p < 0.001$), reinforcing the connection between addiction tendencies and knowledge acquisition across the study phases.

Finally, there was a robust correlation between pre-test and post-test knowledge scores ($r = 0.639$, $p < 0.001$), indicating that initial knowledge levels strongly predicted subsequent knowledge gains after the intervention.

3.8.2 Table No. 21. Showing the co-relation of addiction score with Knowledge score of the Control group.

Control group	Variable 1	vs	Variable 2	r value	P value	Result
Pair 1	Pre -test addiction	vs	Post-test addiction	.991**	<0.001	Significant
Pair 2	Pre -test addiction	vs	Pre-test knowledge	.699**	<0.001	Significant
Pair 3	Pre-test addiction	vs	Post –test Knowledge	.670**	<0.001	Significant
Pair 4	Post-test addiction	vs	Pre –test Knowledge	.686**	<0.001	Significant
Pair 5	Post –test Addiction	vs	Post –test Knowledge	.660**	<0.001	Significant

Pair 6	Pre-test knowledge	vs	Post –test Knowledge	.931**	<0.001	Significant

Firstly, there is an extremely strong positive correlation between addiction scores before and after the intervention ($r = 0.991$, $p < 0.001$), indicating very consistent addiction levels over time among participants.
Secondly, addiction scores before intervention show a strong correlation with pre-test knowledge scores ($r = 0.699$, $p < 0.001$), suggesting that initial addiction tendencies were associated with certain levels of pre-existing knowledge.
Thirdly, addiction scores before intervention also correlate strongly with post-test knowledge scores ($r = 0.670$, $p < 0.001$), indicating that participants with higher addiction tendencies before the intervention showed specific patterns in post-intervention knowledge acquisition.
Moreover, post-intervention addiction scores correlate significantly with both pre-test knowledge ($r = 0.686$, $p < 0.001$) and post-test knowledge ($r = 0.660$, $p < 0.001$), reinforcing the connection between addiction tendencies and knowledge acquisition across different phases of the study.
Finally, there is a very strong correlation between pre-test and post-test knowledge scores ($r = 0.931$, $p < 0.001$), indicating that initial knowledge levels strongly predicted subsequent knowledge gains after the intervention.
not lead to significant changes in overall psychological well-being.

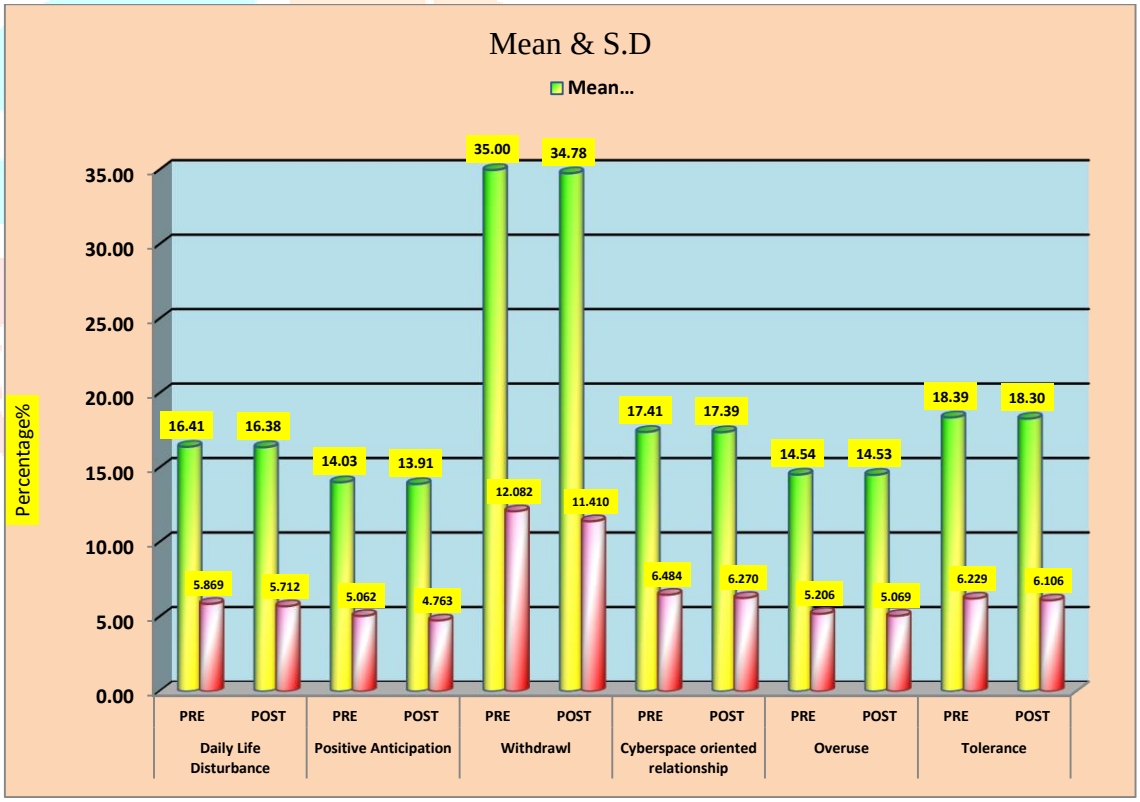


Figure No.23.. Comparison of subscale of addiction score of pre and Post-test Control group.

Age: Addiction scores increase with age, from 63.63 (SD = 8.42) for 10-11 years to 147.43 (SD = 17.86) for 17-19 years, showing a clear upward trend as age increases.

Gender: Boys (Mean = 122.04, SD = 35.87) exhibit higher addiction scores compared to girls (Mean = 106.65, SD = 36.45).

Type of Family: Nuclear families (Mean = 127.93, SD = 31.67) show higher addiction scores than joint (Mean = 99.61, SD = 38.17) and extended families (Mean = 105.76, SD = 35.14).

Class/Grade: Addiction scores increase with higher grades, ranging from 63.63 (SD = 8.42) for 6th grade to 147.43 (SD = 17.86) for 12th grade.

Family Income Monthly: No significant trend observed across income brackets (Less than Rs.15000: Mean = 116.23, SD = 36.13; 15001-20000: Mean = 115.11, SD = 36.60; 20001-30000: Mean = 111.68, SD = 38.85; More than 30000: Mean = 107.82, SD = 39.45).

Residential Area: Urban areas (Mean = 117.10, SD = 36.91) show slightly higher addiction scores compared to rural (Mean = 106.72, SD = 35.21) and other areas (Mean = 108.85, SD = 41.97).

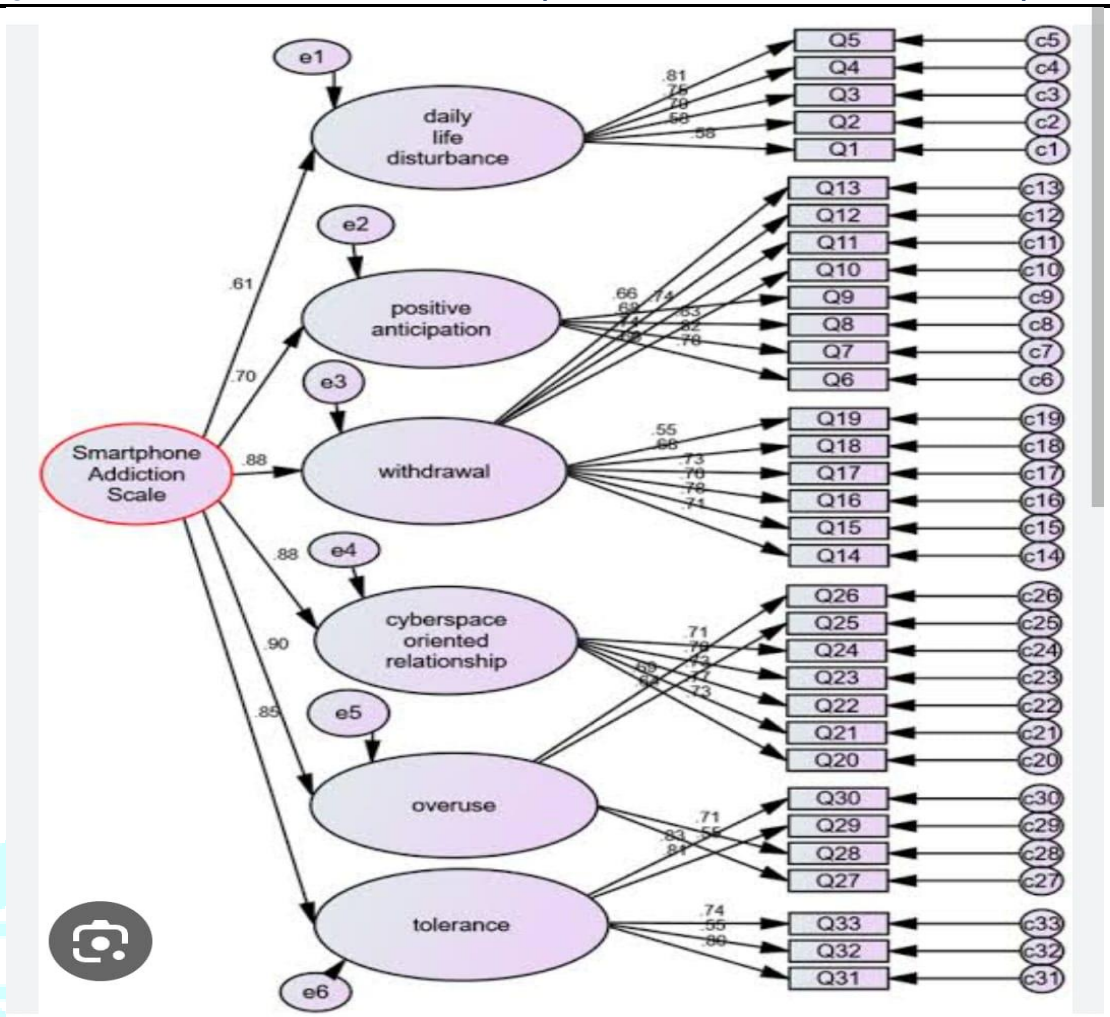
Qualification of Mother: Mothers with "Other" qualifications (Mean = 138.67, SD = 9.29) have notably higher addiction scores compared to Matriculation (Mean = 115.40, SD = 35.85), under graduation (Mean = 113.83, SD = 38.31), and Post graduation (Mean = 106.30, SD = 39.69)

Qualification of Father: Fathers with Matriculation (Mean = 121.79, SD = 35.00) and Post graduation (Mean = 116.32, SD = 40.13) qualifications show higher addiction scores compared to under -graduation (Mean = 103.56, SD = 35.98) and other qualifications (Mean = 98.73, SD = 38.36).

Occupation of Father: Fathers in Service (Mean = 125.01, SD = 35.45) and Business (Mean = 117.44, SD = 37.36) have higher addiction scores compared to Agriculture (Mean = 107.16, SD = 34.44) and other occupations (Mean = 106.65, SD = 36.99).

Occupation of Mother: Mothers at home (Mean = 117.70, SD = 34.19) show higher addiction scores compared to those in Service (Mean = 97.61, SD = 43.54), Business (Mean = 112.55, SD = 41.47), and other occupations (Mean = 103.60, SD = 35.87).
Use of Smartphone Duration: No significant trend is observed across different durations (1 year: Mean = 98.65, SD = 35.19; 2 years: Mean = 109.03, SD = 33.61; 3 years: Mean = 113.54, SD = 37.20; 4 years: Mean = 121.31, SD = 36.69)

3.9.1 Smartphone addiction sub-scale



AREAS / SUBSCALE OF SAS;

1 Daily Life Disturbance

2. Positive Anticipation

3 Withdrawal

4. Cyberspace oriented relationship

5. Overuse

6. Tolerance

Acknowledgement

At this moment of accomplishment, first of all I pay homage to my guide, respected Dr. Prabhjot Singh, professor, Faculty of nursing Desh Bhagat University, Punjab. This work would not have been possible without his guidance, support and encouragement. Under his guidance, I successfully overcame many difficulties and learned a lot. I can't forget His hard work to make this thesis possible. I feel proud that I got an opportunity to work under his supervision on this thesis. She used to review my thesis progress, give her valuable suggestions and made corrections. His unflinching courage and conviction will always inspire me, and I hope to continue to work with his noble thoughts. I can only say a proper thanks to him through my future work.My heartfelt thanks to members of **ethical committee** of Desh Bhagat University, Punjab, for

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DISCUSSION It is here to discus that in previous study, that was conducted by Mohender singh yadav ,(2021) among 285 adolescents at selected schools that 156 (54.70%) participants had a low mobile dependency and 191 (67%) participants had negative behavioural changes while 125 (43.90%) participants had shown decreased academic performance due to overuse of the mobile phone of selected schools of Rishikesh, Uttarakhand, India. This study also described a significant relationship between mobile phone dependency with behavioural changes and academic achievement among adolescents. One of the other previous study had described the prevalence of smartphone addiction that was found 53.3% (n = 312) in the overall sample of 600 comprises, 54.5% in males (n = 109), and 52.7% (n = 203) in females. While before COVID the smartphone addiction prevalence in adolescents in the Philippines (21%), Hong Kong (18%) and England (10%). This study had also showed higher addiction prevalence that found in medical students in India (24.65%), Poland (37.02%), and Spain (14.9%). It was also revealed in this study that the prevalence of addiction in the categories of primary, middle and high school was respectively 63.2% (n = 115), 53.6% (n = 102) and 51.4% (n = 109). A research study had described by Mathew K V and Walarine (2020**)** had introduced the self regulating preventive strategies for neck pain and muscle stiffness due to smartphone overuse and addiction, which is the major health disorder due to smartphone addiction by various other studies. They enlisted these self-management strategieslike "Smartphone-Free Time", "Smartphone-Free Zone", "Focus Breaks", "Mobility Breaks", use of headphone or Bluetooth devices, regular exercises, preparing activity schedule, and inculcating health habits need to be promoted among the people.[52] In this study researcher had taught and demonstrated the different strategies to assess and control the prevalence of smartphone addiction, which had shown the substantial gain in knowledge and improvement in addiction score among adolescents. In the analysis report of this study, Out of total 560 subjects (Experimental group, N=280 +Control group, N= 280), the majority 183 (32.67%) subjects had severe Smartphone addiction followed by 193(34.46%) subjects from both groups had reported with the moderate addiction score while the remaining 184 (32.85%) had been found at the risk or in the low addiction score. An notable effectiveness of a nurse led educational package regarding smart phone addiction among adolescents had been reported on severe addiction score of experimental group with the post- test addiction score of 4 (1.4%) that was shifted from a higher pre-test mean score of severe addiction 92 (32.5 %) of experimental group .The moderate addiction score was raised up to mean score 140(50%) from 99(35.4%) Followed by the low addiction mean score 136 (48.6%) from the 94 (33.6%) of the addiction score of experimental group .The pre-test mean percentile addiction score was 114.35 %which decreased up to post –test score of 94.71% after the intervention of a nurse led educational package .

SUMMARY OF THE STUDY:

The present study undertaken by the investigator for evaluating the Effectiveness of A nurse led educational package regarding smart phone addiction and associated health problems among adolescents in selected schools at Patiala, Punjab. The study was experimental in nature with a sample size of 560 Adolescents (280 in control and 280 in experimental group). The participants adolescents were selected by two stage probability Sampling, lottery and stratified random sampling techniques. Pre- test was conducted for both control and experimental group, followed by administration of a nurse led educational package regarding smart phone addiction and associated health problems only to experimental group and post- test was taken from both groups.

Analysis and interpretation was done according to objectives of the study. Descriptive and inferential statistics were used in data analysis. Bar diagrams were used to depict the findings. Mean, mean percentage, standard deviation was used for analyzing the distribution of the students according to their demographic variables. In inferential statistics chi-square and T test were used.

The purpose of the study is to assess the effectiveness of a nurse led educational package regarding smart phone addiction and associated health problems among adolescents in selected schools at Patiala, Punjab.

In experimental group, the intervention of a nurse led educational package regarding smart phone addiction and associated health problems among adolescents was administered .

The data collected was tabulated, coded and analyzed by means of descriptive and inferential statistics, such as mean, mean percentage, standard deviation (SD), paired and unpaired T test. The level of significance chosen was p=0.05; bar graphs were used to depict the findings.

Major findings;

Findings related to sample characteristics:

The participants were the 560 adolescents age 10- 19 years , at the selected schools of Patiala, Punjab, Which were randomly selected among the boys and girls of 6th grade to 12th grade of both groups , with stratified sampling techniques. Both the groups had homogeneity in description of selected sample. There are total 280 subjects in each group containing 40 subjects (20 girls and 20 boys) every kth from each grade .Most of the participants, about 48 % in each group were belonging to the nuclear Family, followed by average 30% from joint family and remained about 22% belonging to the extended type of family. There are about 72% participants who live in the urban areas and about 24%in rural areas and the remained 4 % participants belonging to other areas

According to the family income of the participants about 76%have the income up to Rs.20000 per month; followed by the 14%of Rs. 20000- 30000 and the remained 10% participants are from the family income of Rs. 30000 per month and above in both of the groups .The maximum participants about 50-55% having their parental qualification up to matriculation, joining by 20-25% have under and post graduation Only 5-10% participants are there whose parental qualification is informal education. As per the occupation of father, there are 70-75 % participants, whose father are having a service and business, while the 15-16 %are working with agriculture and remained 10-15% participants have their father working as labor or falls in other work category. As the occupation of mother, maximum participants about 72% whose mothers are working at home, followed by only 20-25 % subjects ,whose mothers are in service. Mothers of the Remained subjects are in labour or in other work. The duration of smartphone use is very important variable of this study. Maximum of the subjects about 72-76% ,use the smartphone for 3-4 years or more, followed by 12-18% in others duration of 1, 2, and 3 year of smartphone use .

Findings related to prevalence of smartphone addiction and associated health problems among adolescents;

Out of total 560 subjects (experimental group, n=280 +control group, n= 280), the majority 183 (32.67%) subjects (experimental 92 and control 91) had severe Smartphone addiction followed by 193 (34.46%) subjects from both groups had reported with the moderate addiction score while the remaining 184 (32.85%) had been found at the risk or in the low addiction score. An notable effectiveness of a nurse led educational package regarding smartphone addiction among adolescents on addiction score of experimental group had been reported with the post- test addiction score of 4 (1.4%) that was shifted from a higher pre-test mean score of severe addiction 92 (32.5 %) of experimental group . The moderate addiction score was raised up to mean score 140(50%) from 99(35.4%) followed by the low addiction mean score 136 (48.6%) from the 94 (33.6%) of the addiction score of experimental group .the pre-test mean percentile addiction score was 114.35 % which had been decreased to 94.71% after the intervention of a nurse led educational package.

Findings related to correlation between the prevalence and knowledge score regarding smartphone addiction and associated health problems among adolescents;

There is an extremely strong positive correlation between addiction scores before and after the intervention ($r = 0.991$, $p < 0.001$), indicating very consistent addiction levels over time among participants. Addiction scores before intervention show a strong correlation with pre-test knowledge scores ($r = 0.699$, $p < 0.001$), suggesting that initial addiction tendencies were associated with certain levels of pre-existing knowledge. Addiction scores before intervention also correlate strongly with post-test knowledge scores ($r = 0.670$, $p < 0.001$), indicating that participants with higher addiction tendencies before the intervention showed specific patterns in post-intervention knowledge acquisition.

Moreover, post-intervention addiction scores correlate significantly with both pre-test knowledge ($r = 0.686$, $p < 0.001$) and post-test knowledge ($r = 0.660$, $p < 0.001$), reinforcing the connection between addiction tendencies and knowledge acquisition across different phases of the study.

Finally, there is a very strong correlation between pre-test and post-test knowledge scores ($r = 0.931$, $p < 0.001$), indicating that initial knowledge levels strongly predicted subsequent knowledge gains after the intervention.

Findings related to association between the demographic variables and prevalence of Smartphone addiction and associated health problems among adolescents;

The prevalence of Smartphone addiction has been seen more or severe in participants of 17-19 years of grade 11th, 12th, whose fathers are in service with matriculation and mothers are working at home. The participants who are using the smartphone for 3-4 years or above have also shown a severe addiction score. Type of family and residential area has not shown any significant association with the prevalence of smartphone addiction.

Conclusion

A nurse led educational package regarding smart phone addiction and associated health problems among adolescents was effective in enhancing the knowledge of the respondents in the post test knowledge score, when compared to the pre-test of experimental group and with the post-test and pre-test of control group .The prevalence of Smartphone addiction among adolescents was also improved and reduced to lower level from higher level as compared with the post –test addiction score of the subjects of the experimental group and pre and post-test addiction score of the subjects of the control group.

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