

Research Paper

## An Analytical Cross-Sectional Study to Determine the Association between Personality Profile and Mobile Phone Usage Pattern among Students Ranging From 16-20 Years

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### ABSTRACT

**Aim:** The aim of the study is to assess the problematic mobile usage among students aged between 16 to 20 years using Problematic Use of Mobile Phones (PUMP) Scale and to assess the association between personality profile and mobile phone usage pattern among the study population. **Materials and methods:** 434 subjects aged 16 - 20 years from medical, dental and nursing streams who owned or used cell phone more than one year were recruited by random sampling with probability proportionate to their size (PPS) after explaining the nature of the study. The sample size was calculated using the formula  $4pq/z^2$  used for prevalence studies. A total of 434 questionnaires were collected. The study tools included Semi structured proforma, Problematic mobile phone usage scale and Short form of revised eyesenk personality questionnaire. **Results:** The data analysis showed that the mean total pump score was  $113.78 \pm 14.17$  in the study population. Range between was 60 to 154 (95% CI 112.41 to 115.15). The mean extraversion scale was  $7.83 \pm 2.12$  ranging from 0 to 12 (95% CI 7.63 to 8.04). The mean neuroticism scale was  $5.75 \pm 3.11$  ranging from 0 to 12 (95% CI 5.45 to 6.05). The mean lie scale was  $6.52 \pm 2.24$  ranging from 0 to 11 (95% CI 6.30 to 6.73). The mean psychoticism scale was  $6.94 \pm 1.83$  ranging from 0 to 11 (95% CI 6.77 to 7.12). 98 (23.80%) participants were introverts and remaining 314 (76.20%) participants were extraverts. 248(60.20%) participants had stable and remaining 164 (39.80%) participants were found to be neurotic. 63 (15.30%) participants were introvert & stable, 35 (8.50%) participants were introvert & neurotic, 184 (44.70%) participants were extravert & stable and 130 (31.60%) participants were extravert & neurotic. **Conclusion:** Our study may contribute to the association of Smartphone usage and its effects on psychological wellbeing. Mobile phone addiction is resistant to treatment and has significant risks and high relapse rates. So such studies like ours will be useful for psychiatrists, psychologists, family care physicians and other medical fraternity in setting boundaries and detecting early warning signs of underlying psychopathology at the earliest. There is not much research done related to this particular topic, DSM 5 or ICD 10 doesn't categorize smart phone addiction so such similar studies in future may help in classifying them. This study aims to raise awareness among

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individuals so that proper intervention can be done and problematic usage of mobile phones can be reduced.

**Keywords:** *Smart Phone, Mobile Phone Usage, Cell Phone, Addiction, Personality*

Cell phone usage is no more a luxury it has become a necessity amongst the present generation youths. Now a day's mobile phones have replaced our watch, calculator, alarm, camera, radio, walkman etc. The 21st century witnessed a storm of increasing demand for cell phones, Smartphone's to be precise. They provide numerous benefits, including increased accessibility, improved communication, social connectivity and improved safety on the darker side cell phones are highly distractible it reduces the attachment and emotional bonding with family members, hampers the teacher student interaction reduces the academic performance and finally resulting in cell phone addiction. Mobile usage has been increasing at an alarming rate globally, reasons being necessity, cost effective smart phones, entertainment, availability of data packages at affordable rates etc. They are constantly being remodeled, thereby contributing to their overuse and dependence.<sup>[12]</sup>

The risk factors associated with mobile phone usage include physical Problems<sup>[3,4]</sup> and psychiatric symptoms. Physical problems such as eyestrain, headache, fatigue<sup>[5]</sup>, hearing defects and digital thumb.

Psychiatric Symptoms in the form of anxiety<sup>[5]</sup> such as Textxiety, Ringxiety, textaphrenia, Phantom ringing, Communifaking, Nomophobia<sup>[6]</sup> also known as 'mobile phone mania'<sup>[7]</sup>, Depression, Relationship problems<sup>[8]</sup>, Obsessive compulsive disorder<sup>[9]</sup> and Internet addiction (social media, pornography etc.).

Easy access and overuse of mobile phones by students has induced sedentary behaviour, creating havoc in academic and social life, hence affecting mental health.<sup>[10]</sup> Due to lack of regulations, teenagers are able to freely access sites which harm them mentally as well as physically. Recently we have come across "The Blue whale challenge", which rose to prominence in 2016 as social network phenomenon dealing with tasks assigned to players over a 50 day period, propelling the player to commit suicide in the final task.<sup>[11,12]</sup> Similar suicidal games include The Cutting Challenge, The Fire Challenge and recently the MOMO challenge.

Mobile phone addiction is resistant to treatment, has significant risks and has high relapse rates. Moreover, it makes co-morbid psychiatric symptoms less responsive to therapy. In spite of significant proportion of adolescent population being affected by this emerging risk factor, the health care practitioners globally, and India are not yet sensitized and equipped to handle it effectively. Lack of adequate amount of literature is one of the most important reasons for this. Studies conducted on the subject can help highlighting the true burden of the problem and may in turn help in designing appropriate interventions to deal with it. Hence the current study has been planned to fill the existing lacunae in literature.

The mobile phone has been dubbed as one of the biggest non-drug addictions of the 21<sup>st</sup> century. It favours personal autonomy, provides identity and prestige, favours the establishment and maintenance of interpersonal relationships, and is a source of fun and entertainment<sup>[11,12]</sup>. These features along with countless perks it offers has consequently led

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to a tremendous increase in the number of mobile phone users in the world <sup>[13,14,15]</sup>. But studies have shown that this has led to behavioural addiction with symptoms of concern being the feelings of loss in the absence of the device, signs of anxiety/craving, signs of withdrawal/escape, signs of tolerance and the resulting loss of control in managing other activities along with the mobile phone.

Various studies took into consideration a wide range of age groups; a study conducted in Riyadh has considered a study group ranging from 20-24 year old, whereas a similar study conducted in South India had considered medical students, that is students ranging from 18-23 years of age, a wider study population was selected in a study done in UK <sup>[16]</sup> ranging from 13-69 years of age where they had a total of 640 smartphone users.

Smart phone usage was considered to be co-related with gender of the individual which was shown in a study conducted in Korea where it was seen that females are to be more addicted to smartphone usage compared to males. Another similar study conducted in Riyadh has shown that gender was not statistically significant related to the scores on the PUMP scale.

Moreover, anxiety levels and neurotic personality traits were found to increase with addiction severity levels. However, a study of nomophobia (the fear of being out of smartphone contact) and smartphone dependence among Indian medical students found that this disorder is equally prevalent among the study group irrespective of gender. <sup>[13]</sup>

In a study conducted in Korea, a similar finding was seen where smartphone addiction was not related with gender, family income, or parents' education. These results are consistent with those of some studies that reported that smartphone addiction is not significantly related with gender. In a study on cell phone usage of children aged 8–18 years, neither household income nor parents' education was found to have an effect on the use of smart phones.

(Groupe Special Mobile (GSMA), 2011)<sup>[17]</sup>. As smartphones offer a variety of content tailored to individual interests, every individual from different socioeconomic backgrounds could find content that he or she is interested in, or which fulfils his or her need or deficiency. Thus, demographic variables showed no relationship with smartphone addiction.

In various studies conducted on mobile phone usage, there was a positive correlation that was seen between the mobile phone dependency and the duration of daily smartphone usage of individuals. A study conducted in Riyadh regarding the number of hours spent per day using their smartphones, it was observed that 61% of study participants reported that they spent at least 5 hours per day using their smartphones, whereas 27.2% spent more than 8 hours per day. As the number of applications used increased, the mean values on the PUMP increased. A study conducted in UK <sup>[16]</sup> also suggested that the time spent using a smartphone was significantly related to problematic smartphone use. A similar conclusion was drawn from other research work conducted including Khang et al., 2012<sup>[18]</sup>; Thomee et al., 2011<sup>[19]</sup>.

In one Korean study, the investigators used an objective comprehensive smartphone use logging system over more than 800 days of usage logs and found different application category preferences between addicts and non-addicts wherein social and communication applications have a shorter usage time and a higher daily usage frequency than do game applications. <sup>[20]</sup>

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Oulasvirta et al. (2012)<sup>[21]</sup> reported that though smartphone addicts used a smartphone more frequently and for a shorter duration as compared with non-addicts, the sum of the duration of use in a day was longer for addicts as compared with that for non-addicts. Another study that analysed a large data set on actual smartphone usage revealed that the users typically spent almost 1 hour per day on the smartphone, but the duration was less than 1 minute at each instance of use (Boehmer et al., 2011)<sup>[22]</sup>. This study reported also the differences in app usage duration. News apps were accessed most frequently in the morning, whereas communication apps were used throughout the day.

By this study we would like to draw the attention of the government/private health care sectors regarding the lack of awareness regarding mobile phone usage and problems associated with psychological well-being

### **MATERIALS AND METHODS**

#### ***Subjects***

434 pre-university and undergraduate students (313 males, 99 females) of age between 16-20 from medical, dental and nursing streams who owned or used cell phone more than one year were recruited by random sampling with probability proportionate to their size (PPS) after explaining the nature of the study.

The sample size was calculated using the formula  $4pq/z^2$  used for prevalence studies. The institutions were selected by convenient sampling methods. The participants owned a personal mobile phone for last 1 year. A written informed consent was taken from all the individuals after being advised about the nature of the study according to a protocol approved by the Ethics Committee of our institution. Students who were not willing and did not give consent for the study, who did not use mobile phones and who have psychiatric illness treated or untreated were excluded from this study.

#### ***Study tools***

Semi structured proforma, Problematic mobile phone usage scale and Short form of revised eyesenk personality questionnaire were used. A semi structured Proforma comprising of personal, sociodemographic profile and cell phone usage pattern was used. Problematic Use of Mobile Phones (PUMP) Scale. A pool of 39 potential items for the PUMP Scale was developed based upon (1) informal interviews with several self-identified “cell phone addicts” who contacted the first author to discuss their mobile phone usage, (2) adaptation of the *DSM-V* criteria for substance use disorders, and (3) review of existing measures assessing consequences of excessive internet use. Short form of revised eyesenk personality questionnaire In its preliminary version, the Eysenck personality theory involved neuroticism-stability and extraversion-introversion dimensions; subsequently, the psychoticism dimension was added to the theory. All items were to be answered in the form of a YES or a NO, where YES a sign of agreement to the item and NO is a sign of disagreement. All items were rated on a 5-point scale ranging from 1 = “strongly disagree” to 5 = “strongly agree”; this was in accordance with the Likert scale. Scale analysis was utilized to assess psychometric properties of the individual items and the scale as a whole.

### **STATISTICAL ANALYSIS**

Prevalence of problematic mobile use was the primary outcome variable of interest. Psychological morbidity was assessed by specified tools in the methodology were secondary

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outcome variable of interest. Study group introvert & stable and total PUMP score was considered as Primary explanatory variables. Descriptive analysis was carried out by mean and standard deviation for quantitative variables, frequency and proportion for categorical variables. Data is represented using appropriate diagrams like bar diagram, pie diagram and box plots. For normally distributed Quantitative parameters the mean values were compared between study groups using Independent sample t-test (2 groups) / ANOVA (>2 groups).

Categorical outcomes were compared between study groups using Chi square test. P value < 0.05 was considered statistically significant. IBM SPSS version 22 was used for statistical analysis.(1)

1.Machines IB. IBM SPSS Statistics for Windows, Version 22.0. IBM Corp Armonk, NY; 2013.

### **RESULTS**

Of the total 434 students; According to the exclusion criteria, 22 students were excluded on account of not owning a mobile phone .Among 412 students, 313(76%) were males and 99(24%) were females. Their mean age was  $17.73 \pm 1.44$ .

Among the study population, 269 (65.30%) participants were PUC, 121 (29.40%) participants were MBBS, 17 (4.10%) participants were dental and 5 (1.20%) participants were nursing.

Educational status and occupation of father- 136 (33.70%) participants were professionals, 121 (30%) participants were graduates, 64 (15.80%) participants were diploma holders, 70 (17.30%) participants studied up to high school, 7 (1.70%) participants studied up to middle school, 2 (0.50%) participants studied up to primary school and 4 (1%) participants were illiterate. The majority proportion 39.90% participants were engaged in other occupations. The proportion of businessmen, engineers, farmers, government and private firm workers were 29.00%, 12.50%, 3.10%, 8.10% and 5.50% respectively.

Educational status and occupation of mother-Among the study population, 54 (13.30%) participants were professionals, 152 (37.40%) participants were graduates, 35 (8.60%) participants were diploma holders, 144 (35.50%) participants studied up to high school, 13 (3.20%) participants studied up to middle school, 5 (1.20%) participants studied up to primary school and 3 (0.70%) participants were illiterate. The majority proportion (76.20%) participants were homemaker. The majority proportion (72%) participants were Hindus. The proportion of Muslims and Christians was 20.40 and 6.40 respectively.

Among the study population, 24 (5.80%) participants had basic mobile and 388 (94.20%) participants had a smart phone. Among the study population, 175 (42.50%) participants had less than 2 hours and 237 (57.50%) participants had more than 2 hours of usage.

The mean duration was  $180.82 \pm 130.63$  minutes in the study population, the usage ranging from 5 minutes to 780 minutes (95% 168.12 to 193.52). The mean duration of mobile phone usage was  $2.98 \pm 1.61$  years in the study population, ranging from 1 to 10 (95% CI 2.82 to 3.14) years.

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Among the study population, 277 (99.60%) participants used smartphone for SMS and calling purpose. The mean duration of social media usage was  $38.01 \pm 41.01$  minutes in the study population, ranging from 1 to 240 minutes (95% CI 33.02 to 43).

Among the study population, 307 (99%) participants were reported to use social media. The mean duration of social media usage was  $46.65 \pm 45.09$  minutes in the study population, ranging from 3 minutes to 300 minutes (95% CI 41.57 to 51.73).

Among the study population, 338 (99.70%) participants were reported using Whatsapp. The mean duration of Whatsapp usage was  $37.12 \pm 38.78$  minutes in the study population, range from 1 minute to 400 minutes (95% CI 32.95 to 41.30).

Among the study population, 295 (99%) participants were reported watching videos (Youtube). The mean duration of viewing videos was  $51.74 \pm 46.3$  minutes in the study population, ranging from 2 minutes to 300 minutes (95% CI 46.40 to 57.07).

Among the study population, 121 (93.80%) participants shop online. The mean duration of online shopping was  $21.99 \pm 21.96$  minutes in the study population, ranging between was 0 to 180 minutes (95% CI 18.01 to 25.98).

Among the study population, 195 (96.10%) participants were indulged in gaming. The mean duration of gaming was  $55.93 \pm 60.78$  minutes in the study population, ranging from 5 minutes to 420 minutes (95% CI 47.32 to 64.53).

The mean family income was  $482047.97 \pm 509700.18$  in the study population, Minimum level was Rs.10000 and maximum level was Rs.3000000 in the study population (95% CI 421090.17 to 543005.77).

Among the study population, 260 (63.90%) participants accepted in being in an argument with their parents regarding mobile phone usage.

The mean family members were  $4.66 \pm 1.78$  in the study population, minimum level was 2 and maximum level was 18 in the study population (95% CI 4.48 to 4.83).

Among the study population, 57 (14%) participants agreed that mobile phone usage reduced their faith in religion.

The mean amount spent per month was  $160.41 \pm 122.49$  INR in the study population, ranging from 0 to 700 INR (95% CI 148 to 172.71).

The majority proportion of 46.30% participants used Airtel mobile phone network. The proportion of Jio, Vodafone, BSNL and other networks were 28.10%, 9.70%, 8% and 3.50% respectively.

The mean usage of earphones per day was  $62.62 \pm 81.01$  minutes in the study population, ranging from 0 minutes to 420 minutes (95% CI 53.92 to 71.33).

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**Table 1: Descriptive analysis of items in the study population**

| <b>Parameter</b>  | <b>Strongly Disagree</b> | <b>Disagree</b> | <b>Neutral</b> | <b>Agree</b> | <b>Strongly Agree</b> |
|---|--------------------------|-----------------|----------------|--------------|-----------------------|
| I often use my mobile phone without thinking  | 69(16.90%)               | 75 (18.30%)     | 98 (24.00%)    | 117 (28.60%) | 50 (12.20%)           |
| I frequently use my mobile phone spontaneously  | 38 (9.30%)               | 101 (24.70%)    | 102 (24.90%)   | 128 (31.30%) | 40 (9.80%)            |
| I use my mobile phone according to how I feel at the moment                           | 22(5.40%)                | 36 (8.80%)      | 65 (15.90%)    | 193(47.20%)  | 93 (22.70%)           |
| often send text messages without any particular purpose                               | 189 (46.00%)             | 119 (29.00%)    | 48 (11.70%)    | 45 (10.90%)  | 10 (2.40%)            |
| think, I text it” reflects how I use my mobile phone                                  | 108 (26.70%)             | 91 (22.50%)     | 91 (22.50%)    | 80 (19.80%)  | 26 (6.40%)            |
| When I read a text message ,I usually send one straight back                          | 42 (10.20%)              | 89 (21.70%)     | 110 (26.80%)   | 130 (31.70%) | 39 (9.50%)            |
| I immediately read my text messages, even when I am with a group of people            | 89 (21.70%)              | 129 (31.50%)    | 88 (21.50%)    | 76 (18.50%)  | 28 (6.80%)            |
| I carefully plan most of my mobile phone calls  | 48 (11.90%)              | 95 (23.50%)     | 98 (24.20%)    | 107 (26.40%) | 57(14.10%)            |
| The amount of time I spend using my cell phone does not allow me to do important work | 59 (14.40%)              | 84(19.50%)      | 100 (24.40%)   | 112 (27.30%) | 59 (14.40%)           |
| I do not use my mobile phone while having face to face conversations with others      | 24 (5.80%)               | 35 (8.50%)      | 79 (19.20%)    | 131 (31.80%) | 143 (34.70%)          |
| I feel anxious if I have not checked my mobile phone for some time                    | 84 (20.40%)              | 117 (28.40%)    | 92 (22.30%)    | 143 (34.70%) | 37 (9.00%)            |
| There are times when I strongly feel the need to use the cell phone                   | 11 (2.70%)               | 36 (8.80%)      | 78 (19.00%)    | 203 (49.40%) | 83 (20.20%)           |
| I feel relieved after using my mobile phone   | 33 (8.00%)               | 102 (24.90%)    | 136 (33.20%)   | 110 (26.80%) | 29 (7.10%)            |

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| <b>Parameter</b>   | <b>Strongly Disagree</b> | <b>Disagree</b> | <b>Neutral</b> | <b>Agree</b> | <b>Strongly Agree</b> |
|--|--------------------------|-----------------|----------------|--------------|-----------------------|
| I feel anxious if I have not received a call or message in sometime                | 112 (27.30%)             | 139 (33.80%)    | 94 (22.90%)    | 45 (10.90%)  | 21(5.10%)             |
| When I stop using my cell phone, I get moody and irritable                         | 129 (31.40%)             | 148 (36.00%)    | 79 (19.20%)    | 44 (10.70% ) | 11 (2.70%)            |
| I get irritated if people bother me with other things when I am on my mobile phone | 96 (23.40%)              | 130 (31.60%)    | 86 (20.90%)    | 73 (17.80%)  | 26(6.30%)             |
| My mobile phone helps me feel better by connecting with others                     | 17 (4.10%)               | 47 (11.40%)     | 125 (30.40%)   | 164 (39.90%) | 58(14.10%)            |
| Using my mobile phone helps me escape from daily pressures                         | 45 (10.90%)              | 89 (21.70%)     | 134 (32.60%)   | 111 (27.00%) | 32 (7.80%)            |
| I can't live without my mobile phone   | 149 (36.20%)             | 96 (23.30%)     | 88 (21.40%)    | 45 (10.90%)  | 34 (8.30%)            |
| If I don't know where my phone is, I feel worried and uneasy                       | 41 (10.00%)              | 61 (14.80%)     | 90 (21.90%)    | 153 (37.20%) | 66 (16.10%)           |
| When I don't have network on my phone , I have thoughts of missing many calls      | 120 (29.10%)             | 131 (31.80%)    | 68 (16.50%)    | 75 (18.20%)  | 18 (4.40%)            |
| I become frustrated if I have to switch off my mobile during dinner                | 172 (41.70%)             | 152 (36.90%)    | 58 (14.10%)    | 21 (5.10%)   | 9 (2.20%)             |
| I always want the mobile phone with me   | 87 (21.20%)              | 113 (27.50%)    | 101 (24.60%)   | 82 (20.00%)  | 28 (6.80%)            |
| I don't have a problem being separated from my mobile phone                        | 25 (6.10%)               | 67 (16.30%)     | 83 (20.10%)    | 151 (36.70%) | 86 (20.90%)           |
| I am not attached to my mobile phone   | 34 (8.30%)               | 84 (20.40%)     | 136 (33.10%)   | 111 (27.00%) | 46 (11.20%)           |
| I consider my mobile phone nothing more than a practical tool                      | 26 (6.30%)               | 58 (14.10%)     | 105 (25.50%)   | 111 (27.00%) | 57 (13.90%)           |
| I have tried to spend less time on my mobile phone                                 | 71.70%)                  | 23(5.60%)       | 68 (16.50%)    | 229 (55.70%) | 84 (20.40%)           |

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| <b>Parameter</b>   | <b>Strongly Disagree</b> | <b>Disagree</b> | <b>Neutral</b> | <b>Agree</b> | <b>Strongly Agree</b> |
|--|--------------------------|-----------------|----------------|--------------|-----------------------|
| I have tried to reduce my mobile phone usage                                 | 8 (2.00%)                | 27(6.60%)       | 65(15.90%)     | 218 (53.20%) | 92 (22.40%)           |
| I have broken a promise I made to myself to reduce my mobile phone usage     | 45 (11.00%)              | 93 (22.80%)     | 95 (23.30%)    | 131 (32.10%) | 44 (10.80%)           |
| When my mobile bill is too high, I try to decrease my mobile phone usage     | 61 (15.00%)              | 87 (21.40%)     | 115 (28.30%)   | 102 (25.10%) | 42 (10.30%)           |
| I have given up trying to control my mobile phone usage                      | 82 (20.00%)              | 150 (36.60%)    | 90 (22.00%)    | 69 (16.80%)  | 19 (4.60%)            |
| I have no need to control my mobile phone usage                              | 55 (13.50%)              | 95(23.30%)      | 108(26.50%)    | 100 (24.60%) | 49 (12.00%)           |
| I believe that having more mobile currency (balance) would solve my problems | 140(34.30%)              | 154 (37.70%)    | 74 (18.10%)    | 30 (7.40%)   | 10 (2.50%)            |
| The only problem I have with my mobile is the lack of currency               | 159(39.10%)              | 152(37.30%)     | 60(14.70%)     | 22 (5.40%)   | 14 (3.40%)            |
| I can stop using my mobile phone at any time                                 | 43(10.50%)               | 75(18.40%)      | 76(18.60%)     | 128 (31.40%) | 86 (21.10%)           |
| I cannot see any difficulty in having unlimited currency on my mobile phone  | 22 (5.50%)               | 43 (10.70%)     | 114 (28.30%)   | 161(40.00%)  | 63 (15.60%)           |
| My mobile phone does not cause any problem in my life                        | 30 (7.30%)               | 91 (22.20%)     | 100 (24.40%)   | 126 (30.70%) | 63 (15.40%)           |
| Nobody should tell me when to use my mobile phone and when not to use it     | 55 (13.40%)              | 87 (21.30%)     | 105 (25.70%)   | 101(24.70%)  | 61 (14.90%)           |
| I try to hide how long I spend on my mobile phone                            | 94 (22.90%)              | 137 (33.40%)    | 78 (19.00%)    | 82 (20.00%)  | 19 (4.60%)            |

The mean total pump score was  $113.78 \pm 14.17$  in the study population. Range between was 60 to 154 (95% CI 112.41 to 115.15).

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**Table 2: Descriptive analysis of item in study population (N=412)**

| <b>Parameter</b>  | <b>Yes</b>   | <b>No</b>    |
|---|--------------|--------------|
| Are you a talkative person?   | 256 (62.70%) | 152 (37.30%) |
| Are you rather lively?  | 366 (90.60%) | 38 (9.40%)   |
| Do you enjoy meeting new people?  | 342 (83.60%) | 67 (16.40%)  |
| Can you usually let yourself go and enjoy yourself at a lively party?                                     | 266 (65.40%) | 141 (34.60%) |
| Do you usually take the initiative in making new friends?   | 297 (72.80%) | 111 (27.20%) |
| Can you easily get some life into a rather dull party?  | 185 (46.40%) | 214 (53.60%) |
| Do you tend to keep in the background on social occasions?  | 164 (41.30%) | 233 (58.70%) |
| Do you like mixing with people?   | 315 (76.80%) | 95 (23.20%)  |
| Do you like plenty of bustle and excitement around you?   | 321 (79.10%) | 85 (20.90%)  |
| Are you mostly quiet when you are with other people?  | 185 (45.30%) | 223 (54.70%) |
| Do other people think of you as being very lively?  | 297 (73.90%) | 105 (26.10%) |
| Can you get a party going?  | 234 (59.70%) | 158 (40.30%) |
| Does your mood often go up and down?  | 290 (71.10%) | 118 (28.90%) |
| Do you ever feel 'just miserable' for no reason?  | 194 (48.40%) | 207 (51.60%) |
| Are you an irritable person?  | 147 (36.50%) | 256 (63.50%) |
| Are your feelings easily hurt?  | 227 (56.00%) | 178 (44.00%) |
| Do you often feel 'fed-up'?   | 190 (47.00%) | 214 (53.00%) |
| Would you call yourself a nervous person?   | 183 (45.10%) | 223 (54.90%) |
| Are you a worrier?  | 191 (47.30%) | 213 (52.70%) |
| Would you call yourself tense or 'highly strung'?   | 125 (31.50%) | 272 (68.50%) |
| Do you worry too long after an embarrassing experience?   | 272 (67.70%) | 130 (32.30%) |
| Do you suffer from 'nerves'?  | 160 (39.70%) | 243 (60.30%) |
| Do you often feel lonely?   | 175 (43.20%) | 230 (56.80%) |
| Are you often troubled about feelings of guilt?   | 216 (53.90%) | 185 (46.10%) |
| If you say you will do something, do you always keep your promise no matter how inconvenient it might be? | 237 (59.00%) | 165 (41.00%) |
| Were you ever greedy by helping yourself to more than your share of anything?                             | 143 (36.40%) | 250 (63.60%) |
| Would you take drugs which may have strange or dangerous effects?   | 24 (6.00%)   | 376 (94.00%) |
| Have you every blamed someone for doing something you knew was really your fault?                         | 169 (42.00%) | 233 (58.00%) |
| Are all your habits good and desirable ones?  | 196 (48.60%) | 207 (51.40%) |
| Have you ever taken anything (even a pin or button) that belonged to someone else?                        | 267 (66.40%) | 135 (33.60%) |
| Have you ever broken or lost something belonging to someone else?   | 298 (73.90%) | 105 (26.10%) |
| Have you ever said anything bad or nasty about anyone?  | 272 (68.50%) | 125 (31.50%) |

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| Parameter   | Yes          | No           |
|---|--------------|--------------|
| As a child were you every cheeky to your parents?   | 106 (26.80%) | 290 (73.20%) |
| Have you ever cheated at a game?  | 280 (70.20%) | 119 (29.80%) |
| Have you ever taken advantage of someone?   | 151 (38.10%) | 245 (61.90%) |
| Do you always practice what you preach?   | 210 (52.90%) | 187 (47.10%) |
| Do you sometimes postpone the work that had to be done today to tomorrow?                     | 356 (88.80%) | 45 (11.20%)  |
| Do you take much notice of what people think?   | 256 (64.00%) | 144 (36.00%) |
| Would being in debt worry you?  | 262 (67.40%) | 127 (32.60%) |
| Do you prefer to go your own way rather than act by the rules?                                | 284 (71.40%) | 114 (28.60%) |
| Do good manners and cleanliness matter much to you?   | 373 (92.30%) | 31 (7.70%)   |
| Do you think marriage is old-fashioned and should be done away with?                          | 92 (23.00%)  | 308 (77.00%) |
| Do you enjoy co-operating with others?  | 365 (91.70%) | 33 (8.30%)   |
| Does it worry you if you know there are mistakes in your work?                                | 345 (86.70%) | 53 (13.30%)  |
| Do you think people spend too much time safeguarding their future with savings and insurance? | 265 (67.40%) | 128 (32.60%) |
| Do you try not to be rude to people?  | 335 (83.80%) | 65 (16.30%)  |
| Would you like other people to be afraid of you?  | 66 (16.50%)  | 333 (83.50%) |
| Is it better to follow society's rules than go your own way?                                  | 194 (48.60%) | 205 (51.40%) |

**Table 3: Descriptive analysis of others in study population (N=45)**

| Others       | Frequency | Percent |
|--------------|-----------|---------|
| Studies      | 18        | 40.00%  |
| News         | 5         | 11.10%  |
| Research     | 4         | 8.90%   |
| Songs        | 3         | 6.70%   |
| Music        | 3         | 6.70%   |
| Movies       | 2         | 4.40%   |
| Terrarium TV | 2         | 4.40%   |
| Netflix      | 2         | 4.40%   |
| PUBG         | 1         | 2.20%   |
| Anime        | 1         | 2.20%   |
| Browsing     | 1         | 2.20%   |
| Sports       | 1         | 2.20%   |
| Wattpad      | 1         | 2.20%   |

The mean extraversion scale was  $7.83 \pm 2.12$  in the study population, ranging from 0 to 12 (95% CI 7.63 to 8.04). (Table 2).

The mean neuroticism scale was  $5.75 \pm 3.11$  in the study population, ranging from 0 to 12 (95% CI 5.45 to 6.05). (Table 2).

The mean lie scale was  $6.52 \pm 2.24$  in the study population, ranging from 0 to 11 (95% CI 6.30 to 6.73). (Table 2).

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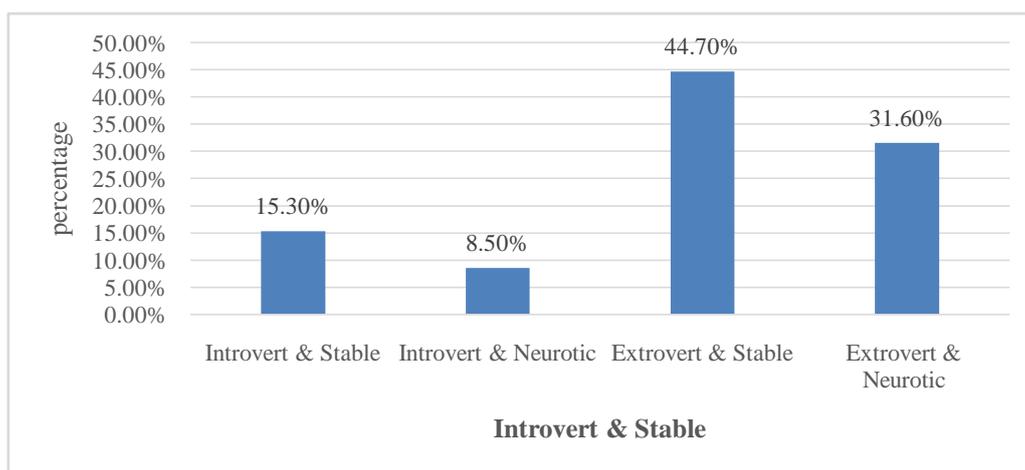
The mean psychoticism scale was  $6.94 \pm 1.83$  in the study population, ranging from 0 to 11 (95% CI 6.77 to 7.12). (Table 2)

Among the study population, 98 (23.80%) participants were introverts and remaining 314 (76.20%) participants were extraverts. (Table 2).

Among the study population, 248 (60.20%) participants had stable and remaining 164 (39.80%) participants were found to be neurotic. (Table 2).

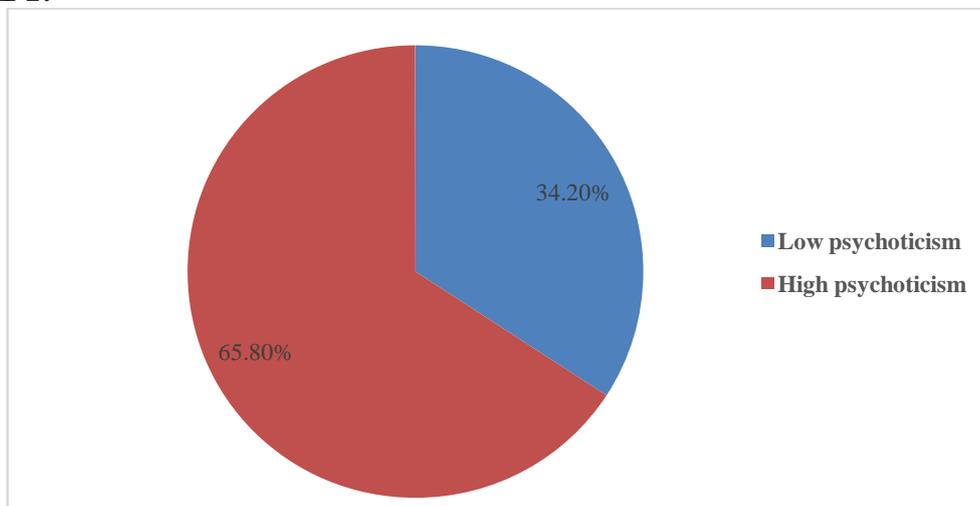
Among the study population, 63 (15.30%) participants were introvert & stable, 35 (8.50%) participants were introvert & neurotic, 184 (44.70%) participants were extravert & stable and 130 (31.60%) participants were extravert & neurotic as shown in figure 1.

**FIGURE 1**



Among the study population, 141 (34.20%) participants had low psychoticism and remaining 271 (65.80%) participants had high psychoticism as shown in figure 2.

**FIGURE 2:**



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**Table 4: Comparison of mean total PUMP score between demographic parameter**

| Parameter                               | Total pump Score<br>Mean $\pm$ SD | P value      |
|---|-----------------------------------|--------------|
| <b>Gender</b>                           |                                   |              |
| Male                                    | 113.58 $\pm$ 14.54                | 0.604        |
| Female                                  | 114.42 $\pm$ 12.97                |              |
| <b>Educational status</b>               |                                   |              |
| PUC                                     | 113.36 $\pm$ 14.65                | Base line    |
| MBBS                                    | 113.95 $\pm$ 12.95                | 0.702        |
| Dental                                  | 119.71 $\pm$ 13.86                | 0.074        |
| Nursing                                 | 112.2 $\pm$ 16.59                 | 0.856        |
| <b>Educational status</b>               |                                   |              |
| Professional                            | 114 $\pm$ 14.23                   | Base line    |
| Graduate                                | 113.76 $\pm$ 14.13                | 0.912        |
| Diploma                                 | 113.20 $\pm$ 14.21                | 0.797        |
| High school                             | 113.46 $\pm$ 14.77                | 0.815        |
| Middle school                           | 116.46 $\pm$ 12.61                | 0.578        |
| Primary school                          | 119.20 $\pm$ 13.47                | 0.437        |
| Illiterate                              | 105.33 $\pm$ 9.07                 | 0.308        |
| <b>Which religion do you belong to?</b> |                                   |              |
| Hindu                                   | 112.75 $\pm$ 14.3                 | Base line    |
| Muslim                                  | 116.72 $\pm$ 14.35                | <b>0.024</b> |
| Christian                               | 114.23 $\pm$ 12.67                | 0.609        |
| Others                                  | 119.2 $\pm$ 7.16                  | 0.313        |

There was no statistically significant difference between gender in other baseline parameters like total PUMP score ( $P > 0.05$ ). There was no statistically significant difference across educational status in other baseline parameters like total PUMP score ( $P > 0.05$ ). There was no statistically significant difference across religion in other baseline parameters like total PUMP score ( $P > 0.05$ ). The Mean total pump score with in Hindu was  $112.75 \pm 14.3$ , it was  $116.72 \pm 14.35$  Muslim, it was  $114.23 \pm 12.67$  Christian and it was  $119.2 \pm 7.16$  in Others. Taking Hindu as base line, the difference of Muslim was statistically significant ( $P$  value  $< 0.05$ ) and Christian and others was statistically not significant ( $P$  value  $> 0.05$ ).

**Table 5: Comparison of extraversion & neuroticism with demographic parameter**

| Demographic parameter     | Introvert & Stable           |                                |                               |                                 |
|---------------------------|------------------------------|--------------------------------|-------------------------------|---------------------------------|
|                           | Introvert & Stable<br>(N=63) | Introvert & Neurotic<br>(N=35) | Extrovert & Stable<br>(N=184) | Extrovert & Neurotic<br>(N=130) |
| Age                       | 17.59 $\pm$ 1.38             | 17.49 $\pm$ 1.31               | 17.72 $\pm$ 1.48              | 17.88 $\pm$ 1.45                |
| <b>P value</b>            | Base line                    | 0.738                          | 0.536                         | 0.191                           |
| <b>Gender</b>             |                              |                                |                               |                                 |
| Male                      | 51 (81%)                     | 30 (85.7%)                     | 140 (76.1%)                   | 92 (70.8%)                      |
| Female                    | 12 (19%)                     | 5 (14.3%)                      | 44 (23.9%)                    | 38 (29.2%)                      |
| <b>P value</b>            | 0.203                        |                                |                               |                                 |
| <b>Educational status</b> |                              |                                |                               |                                 |
| PUC                       | 43 (68.3%)                   | 25 (71.4%)                     | 120 (65.2%)                   | 81 (62.3%)                      |

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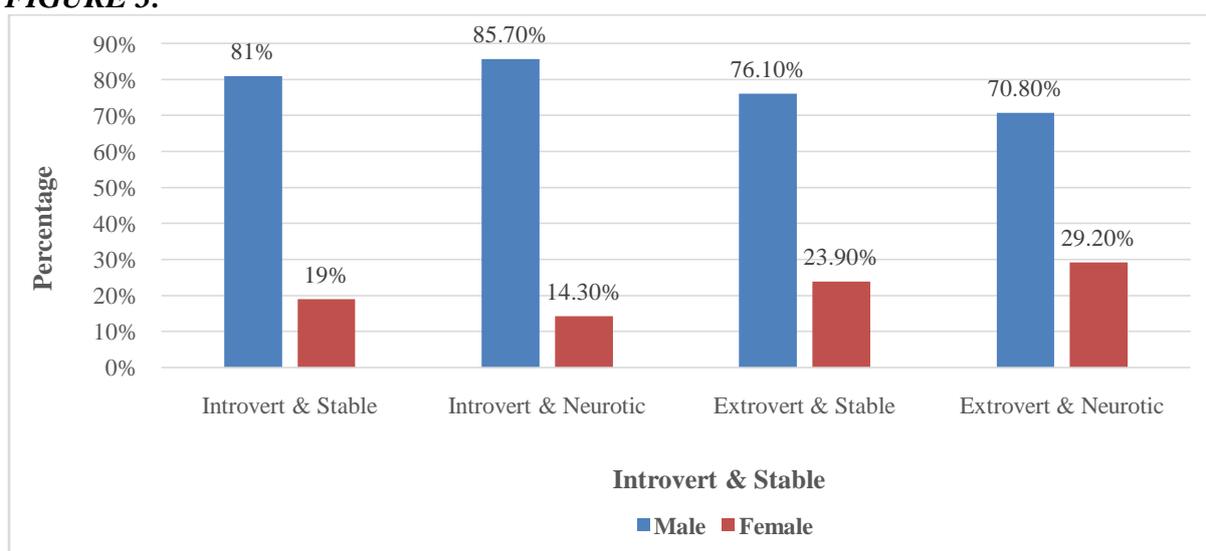
| Demographic parameter              | Introvert & Stable        |                             |                            |                              |
|------------------------------------|---------------------------|-----------------------------|----------------------------|------------------------------|
|                                    | Introvert & Stable (N=63) | Introvert & Neurotic (N=35) | Extrovert & Stable (N=184) | Extrovert & Neurotic (N=130) |
| MBBS                               | 13 (20.6%)                | 8 (22.9%)                   | 58 (31.5%)                 | 42 (32.3%)                   |
| Dental                             | 5 (7.9%)                  | 1 (2.9%)                    | 4 (2.2%)                   | 7 (5.4%)                     |
| Nursing                            | 2 (3.2%)                  | 1 (2.9%)                    | 2 (1.1%)                   | 0 (0%)                       |
| Professional                       | 15 (23.8%)                | 11 (33.3%)                  | 69 (38.5%)                 | 41 (31.8%)                   |
| Graduate                           | 20 (31.7%)                | 12 (36.4%)                  | 49 (27.4%)                 | 40 (31%)                     |
| Diploma                            | 12 (19%)                  | 1 (3%)                      | 27 (15.1%)                 | 24 (18.6%)                   |
| High school                        | 14 (22.2%)                | 9 (27.3%)                   | 30 (16.8%)                 | 17 (13.2%)                   |
| Middle school                      | 2 (3.2%)                  | 0 (0%)                      | 1 (0.6%)                   | 4 (3.1%)                     |
| Primary school                     | 0 (0%)                    | 0 (0%)                      | 0 (0%)                     | 2 (1.6%)                     |
| Illiterate                         | 0 (0%)                    | 0 (0%)                      | 3 (1.7%)                   | 1 (0.8%)                     |
| <b>Educational status (Mother)</b> |                           |                             |                            |                              |
| Professional                       | 7 (11.1%)                 | 5 (14.7%)                   | 22 (12.3%)                 | 20 (15.4%)                   |
| Graduate                           | 19 (30.2%)                | 15 (44.1%)                  | 71 (39.7%)                 | 47 (36.2%)                   |
| Diploma                            | 5 (7.9%)                  | 3 (8.8%)                    | 15 (8.4%)                  | 12 (9.2%)                    |
| High school                        | 30 (47.6%)                | 8 (23.5%)                   | 59 (33%)                   | 47 (36.2%)                   |
| Middle school                      | 1 (1.6%)                  | 3 (8.8%)                    | 7 (3.9%)                   | 2 (1.5%)                     |
| Primary school                     | 0 (0%)                    | 0 (0%)                      | 3 (1.7%)                   | 2 (1.5%)                     |
| Illiterate                         | 1 (1.6%)                  | 0 (0%)                      | 2 (1.1%)                   | 0 (0%)                       |
| <b>Occupation of Father</b>        |                           |                             |                            |                              |
| Homemaker                          | 0 (0%)                    | 0 (0%)                      | 1 (0.6%)                   | 0 (0%)                       |
| Private                            | 2 (3.4%)                  | 1 (3.6%)                    | 10 (5.8%)                  | 8 (6.5%)                     |
| Government                         | 5 (8.5%)                  | 3 (10.7%)                   | 14 (8.1%)                  | 9 (7.3%)                     |
| Farmer                             | 0 (0%)                    | 2 (7.1%)                    | 6 (3.5%)                   | 4 (3.3%)                     |
| Doctor                             | 0 (0%)                    | 0 (0%)                      | 6 (3.5%)                   | 0 (0%)                       |
| Business                           | 22 (37.3%)                | 8 (28.6%)                   | 46 (26.6%)                 | 35 (28.5%)                   |
|                                    |                           |                             |                            |                              |
| Engineer                           | 10 (16.9%)                | 4 (14.3%)                   | 24 (13.9%)                 | 10 (8.1%)                    |
| Others                             | 20 (33.9%)                | 10 (35.7%)                  | 66 (38.2%)                 | 57 (46.3%)                   |
| <b>Occupation of Mother</b>        |                           |                             |                            |                              |
| Homemaker                          | 45 (75%)                  | 20 (66.7%)                  | 133 (74.7%)                | 103 (81.1%)                  |
| Private                            | 0 (0%)                    | 0 (0%)                      | 1 (0.6%)                   | 0 (0%)                       |
| Government                         | 1 (1.7%)                  | 0 (0%)                      | 1 (0.6%)                   | 0 (0%)                       |
| Doctor                             | 0 (0%)                    | 1 (3.3%)                    | 4 (2.2%)                   | 2 (1.6%)                     |
| Others                             | 14 (23.3%)                | 9 (30%)                     | 39 (21.9%)                 | 22 (17.3%)                   |

*\*No statistical test was applied- due to 0 subjects in the cells.*

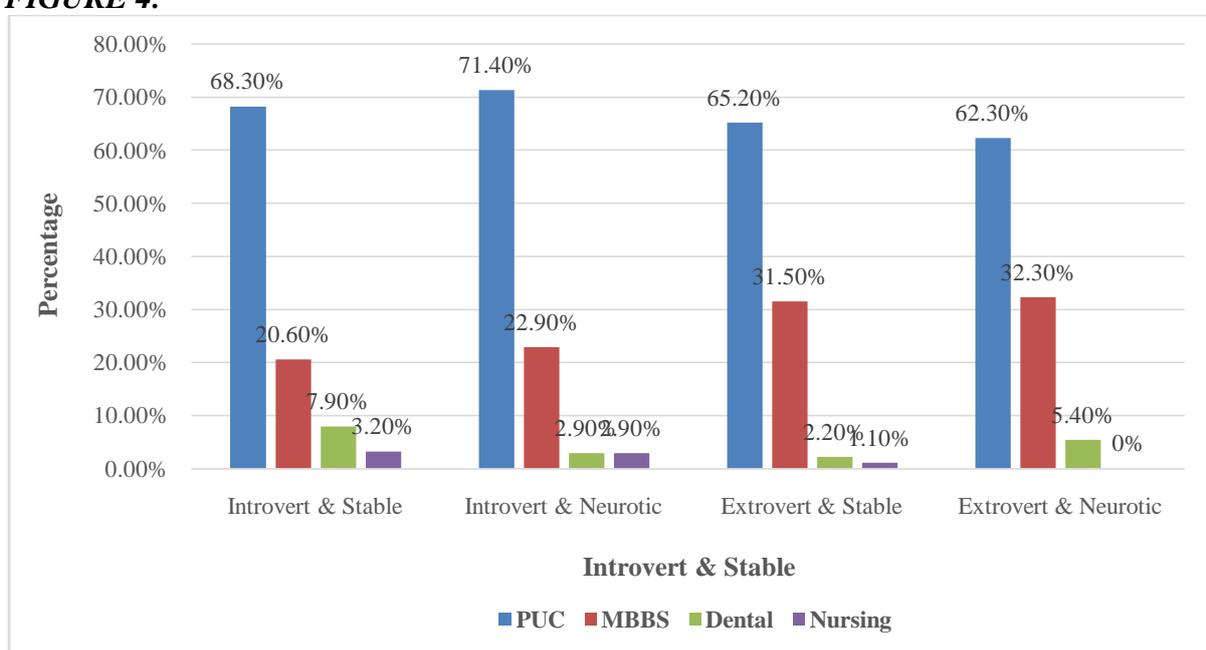
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The Mean age with in introvert & stable was  $17.59 \pm 1.38$ , it was  $17.49 \pm 1.31$  introvert & neurotic, it was  $17.72 \pm 1.48$  extrovert & stable and it was  $17.88 \pm 1.45$  in extrovert & neurotic. Taking introvert & stable as base line, the difference of introvert & neurotic, extrovert & stable and extrovert & neurotic was statistically not significant ( $P$  value  $>0.05$ ). Among the people with introvert & stable group, 51(81%) participants were male and remaining 12 (19%) participants were female. Among the people with introvert & neurotic, 30 (85.7%) participants were male and remaining 5 (14.3%) participants were female. Among the people with extrovert & stable, 140 (76.1%) participants were male and remaining 44 (23.9%) participants were female. Among the people with extrovert & neurotic, 92 (70.8%) participants were male and remaining 38 (29.2%) participants were female. The difference in the proportion of gender between introvert & stable was statistically not significant ( $P$  value 0.203).(figure 3)

**FIGURE 3:**



**FIGURE 4:**



## **DISCUSSION**

The population group considered for this study were Indian students ranging from 16-20 years of age. Similar studies that were done took individuals ranging from 20-24 years into consideration.

The study population were using a smartphone for more than a year, the mean average being 2.98+/- 1.61 years.

Majority of the population i.e. 46.3% used Airtel, 28% used Jio and 9.7% of the population used Vodafone as their mobile network.

In our study, gender was not statistically significant; This figure is identical to the study done in Riyadh and a study conducted in Korea<sup>[30]</sup> where gender was not found to be significant in relation with the mobile phone usage.

In our study, it was seen that the socioeconomic status of the individual did not play a major role in the mobile phone usage of the individual. A matching study conducted on cell phone usage of children aged 8–18 years, suggested that cell phone usage pattern had no relation with the parents' educational status and neither their occupation<sup>[17]</sup>.

As smartphones offer a variety of content tailored to individual interests, every individual from different socioeconomic backgrounds could find content that he or she is interested in, or which fulfills his or her need or deficiency. Thus, demographic variables showed no relationship with smartphone addiction.

Regarding the number of hours spent per day using their smartphones, 42.5% claimed that they use their smartphone for less than 2 hours a day, whereas 57.5% agreed spending more than 2 hours on their smartphone per day. A study conducted in Riyadh, shows that 61% of the study group uses their cell phone for less than 5 hours a day while 27.2% spend more than 8 hours per day.

Only 6% of the subjects have reacted positively to the question regarding consumption of drugs having strange effects .A parallel study conducted in Riyadh has shown that 10.6% of its study population responded positively to a similar question.

About 99.1% of the population agree to the fact of using their mobile phones for the purpose of social media and YouTube. Majority of the males mainly use their smartphones for the purpose of gaming, time period ranging from 30 minutes to 4 hours a day; most of the males have a common interest regarding the games played i.e. most of them prefer playing RPG games when compared to other genre of games; most popular of them being PUBG and Fortnite, followed by Clash of Clans. Another study conducted in Korea demonstrates a similar result where News applications had the highest usage during the mornings followed by communication app usage throughout the day.

Our study revealed that about 31.6% of the study group showed an extraverted and neurotic behaviour and about 8.50% of the population showed an introverted and neurotic behaviour, 15.3% of the population demonstrated an introverted and a stable behaviour ,whereas a majority of the given study population; 44.7% to be precise ,demonstrated an extraverted and stable behaviour. A similar study conducted in UK suggests that emotional

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stability is characterized by being stable and emotionally resilient, and in this study, being less emotionally stable was associated with problematic smartphone behaviour<sup>[26]</sup>. This finding supports the findings of Augner and Hacker (2012)<sup>[27]</sup> who reported that low emotional stability was associated with problematic smartphone use.

This is of potential concern because people who experience mood swings, anxiety, irritability, and sadness are more likely to develop problematic smartphone use behaviour. Being less emotionally stable (i.e., neurotic) has been associated with many health disorders such as anorexia and bulimia (Davis & Claridge, 1998)<sup>[28]</sup> and drug addiction. Thus, while the findings presented here are correlational, this relationship is potentially concerning and requires further empirical investigation. The bivariate correlations demonstrated significant relationships between a number of variables and problematic smartphone use.

Our study also talks about the dependence of an individual towards their mobile phones where, 8.3% of the participants believe that they cannot live without their cell phones. About 50% of the participants strongly agree to the fact that they use their mobile spontaneously without thinking, and about 59% of the study group also believes that their cell phone usage does not allow them to do important work.

This in contrast with a parallel study done where adolescents in Hong Kong were analysed and, 27.4% of them were classified as mobile phone addicts<sup>[31]</sup>. A British study showed that 40% of the subjects had admitted that they could not do without their cell phones and that 7% had admitted to either losing a relationship or a job due to their cell phone usage<sup>[32]</sup>. Among young adults in Sweden, 13% of the males and 22% of the females said they were using mobile phones too much<sup>[19]</sup>. In a younger sample of Spanish adolescents, 20% admitted to having cell phone dependence<sup>[33]</sup>. These findings indicate the highly problematic use of mobile phones, which is most likely due to addiction.

In our study, majority of the study group have shown the property of control loss wherein 53.2% of the population have agreed to the fact that they have tried to reduce their mobile phone usage but have failed to do so. 33.1% of the population have a neutral judgement towards the fact that they are not attached to their mobile phone. 32.1% of the group have agreed that they have broken a promise which they made to themselves with regard to reducing their mobile phone usage and 27.3% of the group also agrees to the fact that the amount of time they spend on their mobile phones doesn't allow them to do important work. This indicates that majority of the study group taken into consideration are addicted to their mobile phones and therefore have a problematic mobile phone usage.

Psychotic behaviour was observed in the majority of participants i.e. 65.8% whereas the rest were graded low on psychotic scale i.e. 34.3%.

The present study shows that about 39.80% of the given study population is neurotic whereas the majority of the population i.e. 60.20% are stable. In a similar study<sup>[34]</sup>, it was found that neuroticism-symptom relations were pronounced among individuals low in agreeableness, but were absent among individuals high in agreeableness. Such interactive relations are consistent with the idea that self-regulation skills can inhibit trait-linked vulnerabilities, a general principle that has been suggested in both the adult (e.g., Mischel & Ayduk, 2004)<sup>[35]</sup> and developmental (e.g., Kochanska, Murray, & Harlan, 2000)<sup>[36]</sup> literatures.

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### LIMITATIONS

1. The results of this study are derived based on the fact that the students have given honest response to the questionnaire, as it was self-administered so there is high chances of students giving biased results
2. There is no much literature regarding the use of PUMP scale
3. This study only gives the personality profile and problematic mobile phone usage doesn't assess psychiatric morbidities like depression, anxiety and psychosis.
4. Ours is a cross sectional study

### CONCLUSION

Our study may contribute to the association of Smartphone usage and its effects on psychological well-being. Mobile phone addiction is resistant to treatment and has significant risks and high relapse rates. So such studies like ours will be useful for psychiatrists, psychologists, family care physicians and other medical fraternity in setting boundaries and detecting early warning signs of underlying psychopathology at the earliest. There is not much research done related to this particular topic, DSM 5 or ICD 10 doesn't categorize smart phone addiction so such similar studies in future may help in classifying them. This study aims to raise awareness among individuals so that proper intervention can be done and problematic usage of mobile phones can be reduced.

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**SEMI STRUCTURED PROFORMA**

NAME:  
AGE:  
GENDER:  
EDUCATION:

1. What type of phone do you use?  
     Basic mobile        
     Smartphone
2. How long do you use your phone per day ? (please specify the duration)
3. Since how many years have you been using your mobile phone?
4. What purpose do you use your phone for? (can tick multiple options)

| PURPOSE  | DURATION |
|--|----------|
| Calls and SMS only   |          |
| INTERNET-<br><ul style="list-style-type: none"> <li>• Social media</li> <li>• Whatsapp</li> <li>• Videos (YouTube)</li> <li>• Online shopping</li> </ul> |          |
| Gaming   |          |
| OTHERS(please specify)   |          |

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5. Educational status of father:

| EDUCATIONAL STATUS | Father | Mother |
|--------------------|--------|--------|
| Professional       |        |        |
| Graduate           |        |        |
| Diploma            |        |        |
| High school        |        |        |
| Middle school      |        |        |
| Primary school     |        |        |
| Illiterate         |        |        |

6. Occupation of father:

Occupation of mother:

7. Average family income(in Indian rupees) per year:

8. Have you been in an argument with your parents regarding your mobile phone usage?  
Yes / no

9. How many members are present in your family?

10. Which religion do you belong to?

11. Has your mobile phone usage reduced your faith in religion?  
Yes / no

12. Amount spent per month on data packs?

13. Which mobile network do you use?

14. How long do you use your earphones per day?

| ITEMS  | Strongly disagree | Disagree | Neutral | Agree | Strongly Agree |
|--|-------------------|----------|---------|-------|----------------|
| 1 I often use my mobile phone without thinking.  |                   |          |         |       |                |
| 2 I frequently use my mobile phone spontaneously.  |                   |          |         |       |                |
| 3 I use my mobile phone according to how I feel at the moment.   |                   |          |         |       |                |
| 4 I often send text messages without any particular purpose.   |                   |          |         |       |                |
| 5 "I think, I text it" reflects how I use my mobile phone.<br>(as soon as I think of something interesting, I text it to someone). |                   |          |         |       |                |
| 6 When I read a text message ,I usually send one straight back .   |                   |          |         |       |                |
| 7 I immediately read my text messages, even when I am with a group of people.  |                   |          |         |       |                |
| 8 I carefully plan most of my mobile phone calls.  |                   |          |         |       |                |
| 9 The amount of time I spend using my cell phone does not allow me to do important work.   |                   |          |         |       |                |
| 10 I do not use my mobile phone while having face to face conversations with others.   |                   |          |         |       |                |

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|    |   |  |  |  |  |  |
|----|---|--|--|--|--|--|
| 11 | I feel anxious if I have not checked my mobile phone for sometime.                  |  |  |  |  |  |
| 12 | There are times when I strongly feel the need to use the cell phone.                |  |  |  |  |  |
| 13 | I feel relieved after using my mobile phone.  |  |  |  |  |  |
| 14 | I feel anxious if I have not received a call or message in sometime.                |  |  |  |  |  |
| 15 | When I stop using my cell phone, I get moody and irritable.                         |  |  |  |  |  |
| 16 | I get irritated if people bother me with other things when I am on my mobile phone. |  |  |  |  |  |
| 17 | My mobile phone helps me feel better by connecting with others.                     |  |  |  |  |  |
| 18 | Using my mobile phone helps me escape from daily pressures.                         |  |  |  |  |  |
| 19 | I cant live without my mobile phone.  |  |  |  |  |  |
| 20 | If I don't know where my phone is, I feel worried and uneasy.                       |  |  |  |  |  |

| ITEMS |   | Strongly disagree | Disagree | Neutral | Agree | Strongly Agree |
|-------|---|-------------------|----------|---------|-------|----------------|
| 21    | When I don't have network on my phone, I have thoughts of missing many calls. |                   |          |         |       |                |
| 22    | I become frustrated if I have to switch off my mobile during dinner.          |                   |          |         |       |                |
| 23    | I always want the mobile phone with me.                                       |                   |          |         |       |                |
| 24    | I don't have a problem being separated from my mobile phone.                  |                   |          |         |       |                |
| 25    | I am not attached to my mobile phone.   |                   |          |         |       |                |
| 26    | I consider my mobile phone nothing more than a practical (important) tool.    |                   |          |         |       |                |
| 27    | I have tried to spend less time on my mobile phone.                           |                   |          |         |       |                |
| 28    | I have tried to reduce my mobile phone usage.                                 |                   |          |         |       |                |
| 29    | I have broken a promise I made to myself to reduce my mobile phone usage.     |                   |          |         |       |                |
| 30    | When my mobile bill is too high, I try to decrease my mobile phone usage      |                   |          |         |       |                |
| 31    | I have given up trying to control my mobile phone usage                       |                   |          |         |       |                |
| 32    | I have no need to control my mobile phone usage                               |                   |          |         |       |                |
| 35    | I can stop using my mobile phone at   |                   |          |         |       |                |

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|    |  |  |  |  |  |  |
|----|--|--|--|--|--|--|
|    | any time   |  |  |  |  |  |
| 36 | I cannot see any difficulty in having unlimited balance (currency) on my mobile phone. |  |  |  |  |  |
| 37 | My mobile phone does not cause any problem in my life.                                 |  |  |  |  |  |
| 38 | Nobody should tell me when to use my mobile phone and when not to use it               |  |  |  |  |  |
| 39 | I try to hide how long I spend on my mobile phone.                                     |  |  |  |  |  |

| ITEMS |   | YES | NO |
|-------|---|-----|----|
| 1     | Are you a talkative person?   |     |    |
| 2     | Are you rather lively (cheerful)?   |     |    |
| 3     | Do you enjoy meeting new people?  |     |    |
| 4     | Can you usually let yourself go and enjoy yourself at a lively party?     |     |    |
| 6     | Can you easily get some life into a rather dull party?                    |     |    |
| 7     | Do you tend to keep in the background (go unnoticed) on social occasions? |     |    |
| 8     | Do you like mixing with people?   |     |    |
| 9     | Do you like plenty of bustle and excitement around you?                   |     |    |
| 10    | Are you mostly quiet when you are with other people?                      |     |    |
| 11    | Do other people think of you as being very lively (cheerful)?             |     |    |
| 12    | Can you get a party going?  |     |    |
| 13    | Does your mood often go up and down?                                      |     |    |
| 14    | Do you ever feel 'just miserable' (unhappy) for no reason?                |     |    |
| 15    | Are you an irritable person?  |     |    |
| 16    | Are your feelings easily hurt?  |     |    |
| 17    | Do you often feel 'fed-up'?   |     |    |
| 18    | Would you call yourself a nervous person?                                 |     |    |

**INFORMED CONSENT FORM**  
SAMBHRAM INSTITUTE OF MEDICAL SCIENCE AND RESEARCH

**Patient information:**

NAME:

AGE:

SEX:

TITLE:

*AN ANALYTICAL CROSS-SECTIONAL STUDY TO DETERMINE THE ASSOCIATION BETWEEN PERSONALITY PROFILE AND MOBILE PHONE USAGE PATTERN AMONG STUDENTS RANGING FROM 16-20 YEARS*

NAME OF PRINCIPAL INVESTIGATOR: **Dr . J VINODH KUMAR**

NAME OF SPONSORS: **INDIAN COUNCIL OF MEDICAL RESEARCH**

## **An Analytical Cross-Sectional Study To Determine The Association Between Personality Profile And Mobile Phone Usage Pattern Among Students Ranging From 16-20 Years**

I, DR JVinodhkumar from Sambhram Institute of medical science and research , doing this research project on determining the relationship between the mobile phone usage pattern and the psychiatric morbidity among students ranging from 16-20 years.

This study helps me to assess the behavioural changes and rule out psychiatric morbidity among students using a mobile phone.

The questionnaire contains questions related to personality and mobile phone usage in accordance to the problematic mobile phone usage scale and the short form of revised Eysenck personality questionnaire .You are requested to answer all the questions in a period of 20 minutes.

Explanation of the questionnaire to the students shall be done prior to answering the questions .If any queries arise; they shall be addressed by me.

The participation by you is voluntary and you can withdraw from participating in the study at any point of time.

### **CONSENT BY SUBJECT**

The detail of the study has been provided to me in writing and explained to me in my own language. I confirm that I have understood the above study and had the opportunity to ask questions. I agree not to restrict the use of any data or results that arise from this study provided such a use is only for scientific purpose .I fully consent to participate in the above study.

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### ***Conflict of Interest***

The authors carefully declare this paper to bear not conflict of interests

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