

## A STATISTICAL STUDY OF "SELFITIS": THE DISEASE OF NEW ERA

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### **ABSTRACT**

*Selfie, has become one of the most commonly heard and said word in this era. Whenever people visit any place or go anywhere the first thing that pop-ups is to take selfies. This latest trend is now becoming an addiction among the society. Clicking selfies again and again can create addiction towards the mental disorder called as selfitis. In this paper, the recent trend in the selfie taking behaviour of people is briefly overviewed. The association between socio demographic factors such as age, profession, gender with the behaviour of respondents having mental disorder Selfitis is studied. We analyze 2<sup>3</sup> factorial design to study the impact on behaviour of respondents which takes them to mental disorder Selfitis. Further, Correspondence Analysis (CA) is performed to study the association between socio-demographic factors among age-group and gender.*

**KEYWORDS:** *Correspondence Analysis, Mental Disorder Selfitis, 2<sup>3</sup> factorial analysis, etc.*

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### **INTRODUCTION**

“Smartphone” is a gift from technology, which has a great impact on our daily life and has become an important part of it. We can't imagine our life without this digital toy which has transformed the society and their lifestyle today. The tendency of capturing own images by the smart phone known as selfie and has turn into a latest phenomenon of the recent culture of the society. The word ‘Selfie’ discussed for the first time by photographer Jim Krause in 2005. Selfie-taking can be a way of expressing yourself, communicating with others and interacting with environment.

Selfie is a modern phenomenon of the 21st century; the work of taking and sharing a selfie with friends/others pre-dates the Internet and was named the Oxford Dictionary Word for the year 2013 (Veena and Krishnamurthy (2015)). According to the oxford dictionary, “a photograph that one has taken of oneself, typically one taken with a Smartphone or webcam and uploaded to a social media website” (Day (2013)). Veena and Krishnamurthy (2015) investigated the perception towards capturing selfies and its impact among students.

Taking selfies is not a problem until it has some limitations but if it crosses its limits then it becomes a serious issue. Back to the past, in March 2014 an article on the adobo chronicles websites claimed that the American Psychiatric Association (APA) had established *Selfitis* as a new mental disorder: “The obsessive compulsive desire to take photos of one's self and post them on social media as a way to make up for the lack of self-esteem and to fill a gap in intimacy”. The

level of *Selfitis* for a person can be determined by *Selfitis* Behaviour Scale (SBS). This scale includes borderline, acute and chronic levels. APA (2014) has given three levels of *Selfitis*.

- **Borderline *Selfitis*:** Taking photos of oneself at least three times a day but not posting them on social media.
- **Acute *Selfitis*:** Taking photos of oneself at least three times a day and posting each of the photos on social media.
- **Chronic *Selfitis*:** Uncontrollable urge to take photos of oneself round the clock and posting the photos on social media more than 6 times a day.

“Selfie” is a global phenomenon and people do give excuse under the name of cultural change and be the victim of mental disorder *Selfitis*. In this paper, our interest is to examine the behavioural changes of individuals who are habitual to take selfie in their usual lifestyle. Also, we study whether taking selfie depends on factors such as profession, age, gender, etc.

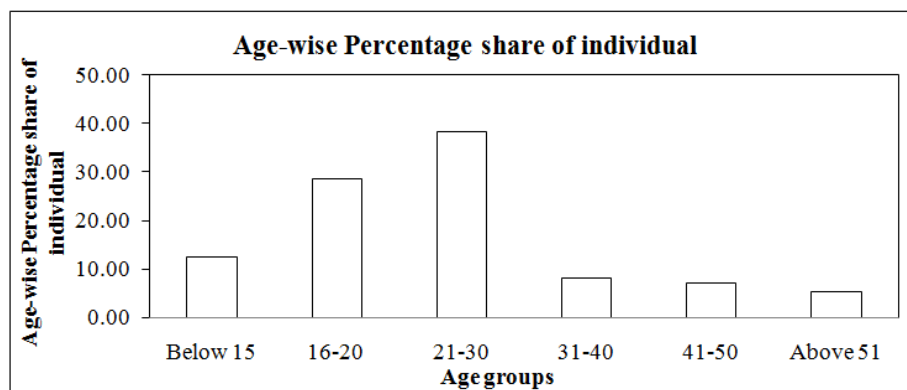
This paper is structured as follows. In Section 2, statistical analysis is given. Section 3 contains findings and results.

## MATERIALS AND METHODS

A Statistical survey is carried out to study mental disorder *Selfitis* among people of Nashik City in Maharashtra. Data of 642 respondents is collected through convenient sampling, out of which 324 are males and 318 females. We analyze  $2^3$  factorial design to study the impact on behaviour of respondents which takes them to mental disorder *Selfitis*. To study the impact on behaviour of respondents like whether they take selfies regularly or rarely, average number of selfies taken by them and their posting habits which takes them to mental disorder, analysis of  $2^3$  factorial design is used. CA is a graphical technique used to study the association between socio-demographic factors among age-group and gender.

## EXPLORATORY DATA ANALYSIS

Data is collected from 642 respondents’ through convenience sampling method, out of which 69% respondents who take selfies. The finding of the study shows that majority that is 75% of respondents think that taking selfie in a risky place is dangerous while 25% of respondents found it adventurous or thriller. The present study suggests that individuals should follow a few safe selfie rules while capturing selfies to avoid mental disorder *Selfitis*. The data is presented according to various attributes such as gender, age group, social, economic, educational status, profession, etc. There are 66.81% respondents within the age group 16-30. In Figure 1, we have presented the age-wise percentage share of individual.



**Figure 1: Age-Wise Percentage Share of Individual.**

From Figure 1, we observe that, 38.31% respondents are from the age-group 21–30, 28.50% respondents belong to age-group of 16–20, and very few respondents (5.45%) belong to age-group above 51. Almost 66% of respondents are youth.

In Figure 2 and Figure 3, profession-wise and motivation-wise data is presented.

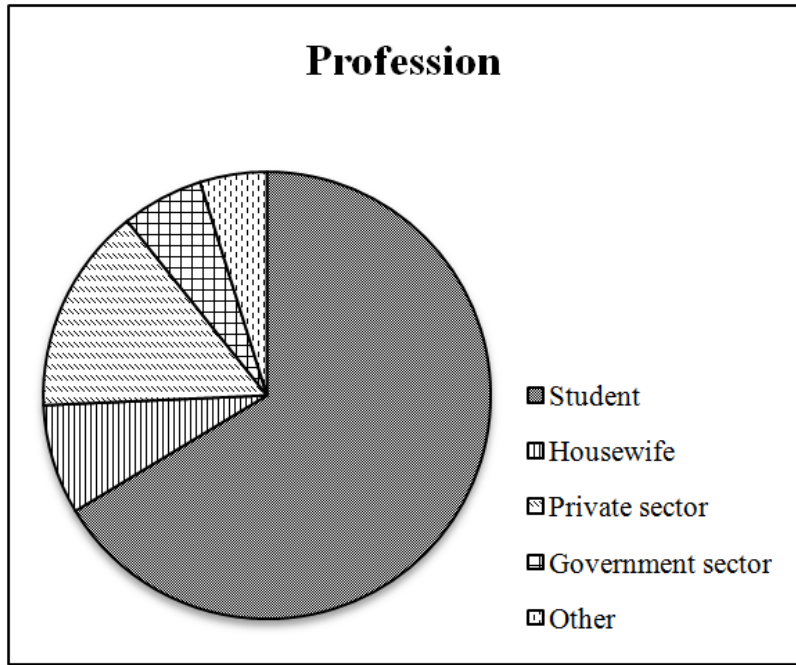


Figure 2: Profession-Wise Percentage Share of Individual.

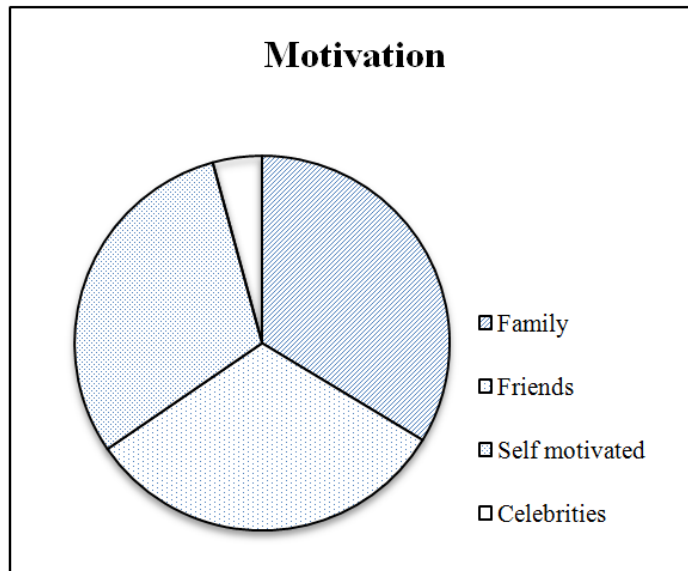
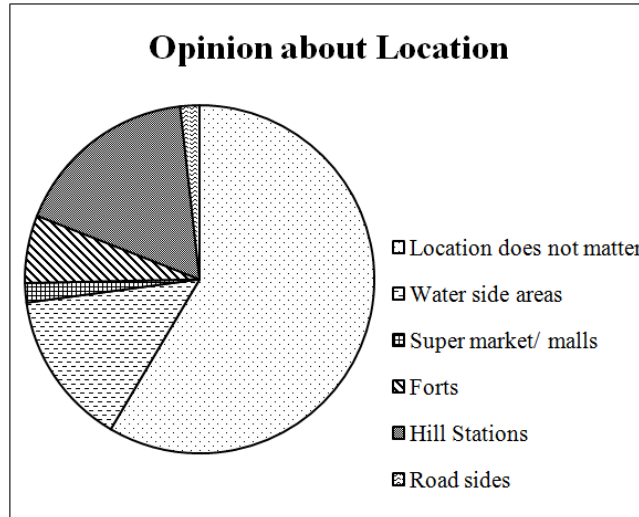
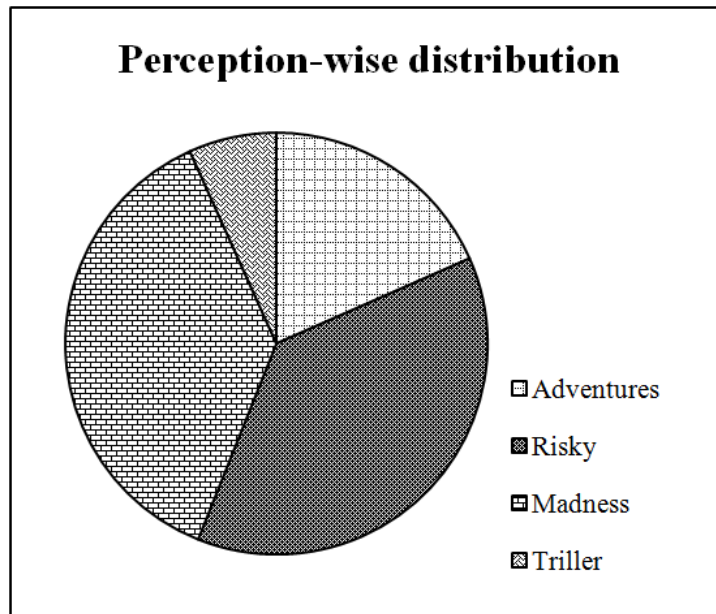


Figure 3: Motivation-Wise Percentage Share of Individual.

From Figure 2, it is seen that there are 66.35% students involved in the survey whereas from Figure 3, it is observed that most of the people are motivated by family (33.63%) and friends (31.83%). Overall, 63% of the people are being motivated by family and friends.



**Figure 4: Preferable Location-Wise Percentage Share of Individual.**



**Figure 5: Perception-Wise Distribution of Individual.**

Location plays an important role to take selfie but from Figure 4, we observed that almost 59% people do not prefer any location for taking selfies. We noticed that camera (39.01%) is most preferred feature following storage and battery backup specifications overall by 50%. This indicates that how much people give the importance to camera. Figure 5 shows perception of people on selfies. It is observed that, the perception of 74% of people towards selfies are madness and risky for capturing the photograph in dangerous location. But still near about 24% of total population whose responses were

found to be adventures and thriller. The biggest disadvantage of selfie is that it is very risky because people, especially youngsters, try to take selfie in risky locations. There are many cases all over the world where many people have died due to taking selfie at risky location.

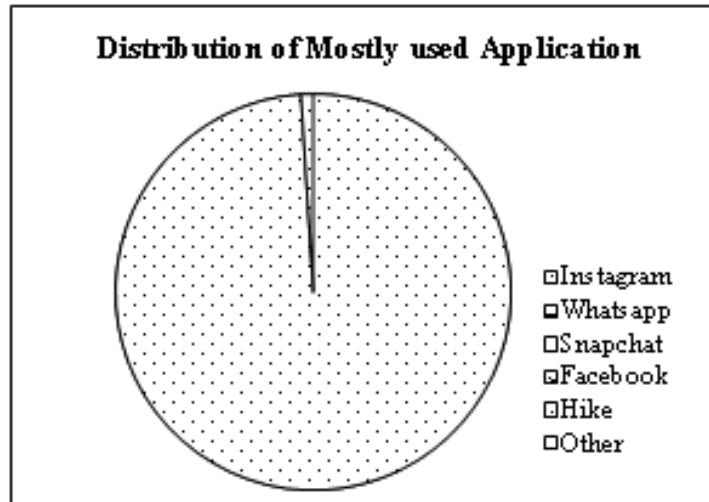


Figure 6: Used Application-Wise Percentage Share of Individual.

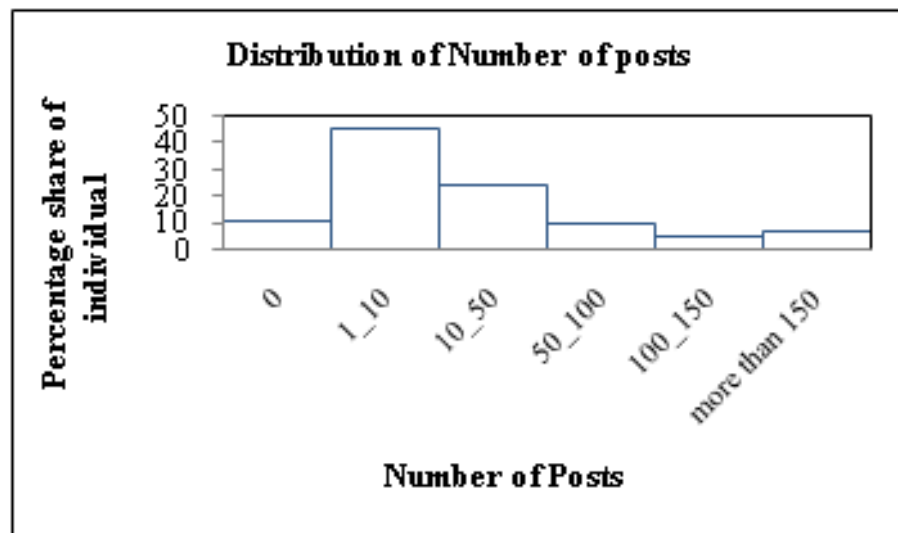


Figure 7: Percentage Share of Individuals as per Number of Posts.

Figure 6 shows that, almost 49% people used WhatsApp and 43% people used Instagram for posting their selfies. The big trend is observed for the WhatsApp and Instagram among the people. From Figure 7, it can be seen that 44.82% people have 1 to 10 posts on their social media account while 23.56% people have 10 to 50 posts. So, the posts on the social media are still at moderate stage.]

### STATISTICAL METHODOLOGY

Nowadays, people click their selfie more than the number of times they peep into the mirror. The article published by Lifestyle Desk on November 6/2019, claims that, Uttar Pradesh Post Graduate Institute of Medical Sciences (SGPGIMS) is

treating four-five patients daily for 'Selfitis'. Though it may seem funny at first, the obsessive trend raises some serious concern, which should be discussed and talked about. The technical problems related to this paper are to study the association between age of individual and their intension behind taking selfie, to study the impact of how often people take selfie, average number selfies taken by them per day and their posting habits on their mental health and to find out whether there is gender difference between the behaviour of individuals for taking selfie.

### Correspondence Analysis

CA is graphical method for picturing the association between two or more categorical variables. Here, simple CA is performed on two-way contingency data given in Table 1. The association between two categorical variables is given graphically in Figure 8.

- Exploration of association between age and how often people take selfies

**Table 1: Contingency Table**

Age	How often People Take Selfies				Total
	Regularly	Rarely	Very Rarely	Never	
below 15	18	36	9	17	80
16-20	25	73	32	52	182
21-30	45	97	36	68	246
31-40	11	15	8	18	52
41-50	3	14	10	19	46
above 51	1	4	10	21	36
Total	103	239	105	195	642

We performed CA on Table 1, the obtained results are summarized in Table 2.

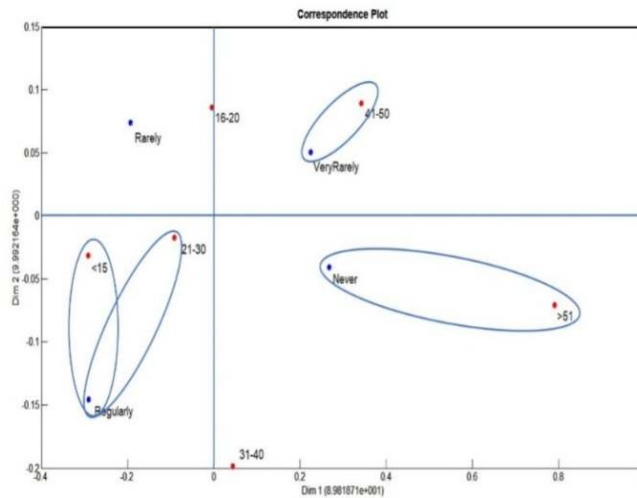
**Table 2: Chi-Square Distances**

Age	How often People Take Selfies				Total
	Regularly	Rarely	Very Rarely	Never	
below 15	2.079	1.298	1.275	2.193	6.844
16-20	0.604	0.406	0.168	0.195	1.372
21-30	0.776	0.321	0.445	0.604	2.146
31-40	0.846	0.981	0.030	0.308	2.166
41-50	2.600	0.570	0.815	1.809	5.794
above 51	3.949	6.596	2.872	9.265	22.682
Total	10.853	10.172	5.605	14.374	41.005

**Table 3: Analysis of Contingency Table**

Axis	Inertia	Proportion of Inertia	Cumulative of Proportion of Inertia
1	0.0574	0.8982	0.8982
2	0.0064	0.0999	0.9981
3	0.0001	0.0019	1.0000
Total	0.0639		

The  $\chi^2$ -value corresponding to the simple CA is 41.0238 and  $p$ -value corresponding to it with 15 degrees of freedom is 0.0003. The  $p$ -value indicates that the ages and how often do people take selfies are associated.



**Figure 8: Association Between Age and How Often People Take Selfies.**

From Figure 8, it is observed that:

- People of age groups below 15 and 21-30 prefer taking selfies regularly
- People in the age group 41-50 taking selfies very rarely
- People belonging to age group above 51, never take selfie

To explore the association between profession and how often people take selfies, CA is performed on Table 4. Results are summarized in Table 5.

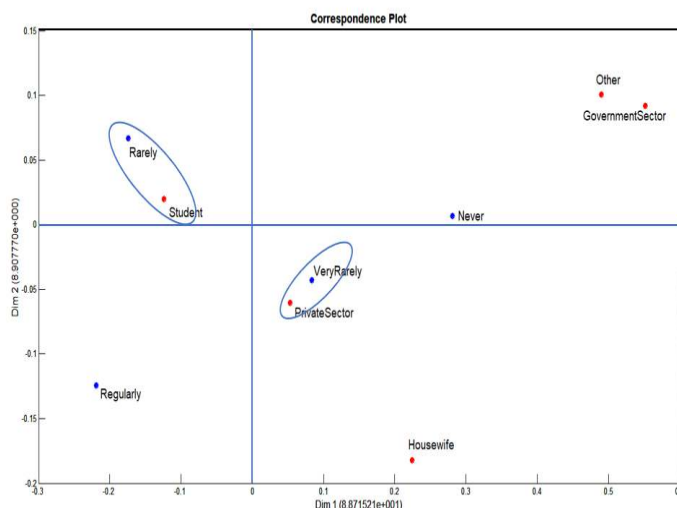
**Table 4. Contingency Table**

Profession	How often People Take Selfies				Total
	Regularly	Rarely	Very rarely	Never	
Student	74	178	65	109	426
Housewife	9	12	10	20	51
Private sector	16	32	17	31	96
Government sector	2	9	6	21	38
Other	1	8	7	15	31
Total	102	239	105	196	642

**Table 5. Results by performing CA**

Axis	Inertia	Proportion	Cumulative
1	0.0442	0.8872	0.8872
2	0.0044	0.0891	0.9762
3	0.0012	0.0238	1.0000
Total	0.0498		

The  $\chi^2$ -value corresponding to the simple CA is 31.9716 and  $p$ -value corresponding to it with 15 degrees of freedom is 0.0065. The  $p$ -value indicates that the profession and how often do people take selfies are associated.



**Figure 9: Association Between Profession and How Often People Take Selfies.**

From Figure 9 it can be seen that:

- Students prefer taking selfies rarely
- People working in private sector and housewives choose taking selfies very rarely
- People belonging to government and other sector, never take selfies

**2<sup>3</sup> Factorial Analysis**

The data is presented in the required format and analyse 2<sup>3</sup> factorial experiments. Here, three factors each at two levels are considered. The summary of factors and their levels is given in Table 6. In Table 7, there are frequencies according to the treatment combinations.

**Table 6. Summary of Factors and Their Levels**

Factors	Level of the Factor
A (How often people take selfies?)	Level1: Rarely or very rarely( $a_0$ ) Level2: Regularly( $a_1$ )
B(Average number of selfies)	Level1: less than 3 per day( $b_0$ ) Level2: 3-6 per day or $\geq 6$ per day( $b_1$ )
C(Posting of selfies)	Level1: No( $C_0$ ) Level2: Yes( $C_1$ )



**Table 7: Frequency Table**

Treatment Combinations	Age-Groups						Row Total
	Below 15	16-20	21-30	31-40	41-50	Above 50	
1	17	37	47	12	13	9	135
<i>a</i>	1	3	5	5	1	0	15
<i>b</i>	15	6	6	1	2	0	30
<i>ab</i>	7	1	2	1	0	0	11
<i>c</i>	5	47	60	9	6	5	132
<i>ac</i>	0	9	13	2	1	0	25
<i>bc</i>	8	15	20	1	3	0	47
<i>abc</i>	10	12	25	3	1	0	51
Column Total	63	130	178	34	27	14	446

Here, the main interest is to find the treatment combinations which can cause selfitis and help to stay away from mental disorder selfitis. To fulfil the objective data is analysed data using 2<sup>3</sup> factorial experiments. Treatments and their combinations are defined based on the above data are given below.

**A:** People taking selfies regularly and rarely or very rarely.

**B:** People taking selfies 6 or more than 6 per day and between 3 to 6 per day or less than 3 per day.

**C:** People post their selfies or not.

**AB:** People taking regularly, 3 to 6 or 6 or more than 6 selfies per day and not posting.

**AC:** People taking regularly, less than 3 selfies per day and posting.

**BC:** People taking rarely or very rarely, 3 to 6 or 6 or more than 6 selfies per day and posting.

**ABC:** People taking regularly, 3 to 6 or 6 or more than 6 selfies per day and posting.

To analyse 2<sup>3</sup> factorial design, Yate’s method is used. The calculated Yate’s table is given in Table 8 and analysis of variance of 2<sup>3</sup> factorial experiment is given in Table 9.

**Table 8: Yate’s Table**

Treatment Combinations	Treatment Total	C <sub>1</sub>	C <sub>2</sub>	Effect Total	Mean Effect Total
1	135(1)	150	191	446= <b>G</b>	--
<i>a</i>	15( <i>a</i> )	41	255	-272 = [A]	-1.33
<i>b</i>	30( <i>b</i> )	157	-169	-168 = [B]	-7.00
<i>ab</i>	11( <i>ab</i> )	98	-103	242 = [AB]	10.08
<i>c</i>	132( <i>c</i> )	-150	-109	64 = [C]	2.67
<i>ac</i>	25( <i>ac</i> )	-19	-59	66 = [AC]	2.75
<i>bc</i>	47( <i>bc</i> )	-107	131	50 = [BC]	2.08
<i>abc</i>	51( <i>abc</i> )	4	111	-20 = [ABC]	-0.83

**Table 9: ANOVA for 2<sup>3</sup> Factorial Design**

Source of Variation	Degrees of Freedom	Sum of Square	Mean sum of Square	F-Ratio	F Table	P Value
Age	5	2685.17	537.03	9.67	2.49	0.0000*
<b>A</b>	1	1541.33	1541.33	26.02	4.12	0.0000*
<b>B</b>	1	588	588	9.92		0.0033*
<b>C</b>	1	85.33	85.33	1.44		0.2781
<b>AB</b>	1	1220.08	1220.08	20.60		0.0000*
<b>AC</b>	1	90.75	90.75	1.53		0.2240
<b>BC</b>	1	52.08	52.08	1.14	254.3	0.6452
<b>ABC</b>	1	8.33	8.33	7.11		0.2902
Error	35	2072.83	59.22	-	-	-
Total	47	8343.92	-	-	-	-

\*: significant at 5% l.o.s.

From Table 10, we have the mean of main effect of people taking selfies regularly and rarely or very rarely (**A**) is -11.33. Since it is negative, taking selfies rarely or very rarely (low level =  $a_0$ ) is noble. Therefore, to prevent from selfitis it is necessary to take selfies rarely (low level:  $a_0$ ). Mean of main effect of people taking selfies more than three and less than three per day (**B**) is -7. Therefore, taking less than six selfies per day (low level =  $b_0$ ) is noble. But, as we go from low level ( $b_0$ ) to high level ( $b_1$  = taking selfies more than three) then the significant impact may be observed for causing the mental disorder “selfitis”. Therefore, to prevent this it is necessary to take less than three selfies per day. Mean of main effect of people post their selfies or not (**C**) is 2.67. Therefore, we can say that, sometimes we can post selfies on social media but not in large aggregate.

Mean of interaction effect of people taking regularly, more than three selfies per day and not posting (**AB**) is 10.08. Therefore, taking more than 3 selfies per day, regularly and not posting them is decent. Mean of interaction effect of people taking regularly, less than three selfies per day and posting them (**AC**) is 2.75. Therefore, taking regularly less than three selfies per day and posting them, is not good. Hence, this combination of **AC** may leads to the 2<sup>nd</sup> stage of mental disorder *selfitis* i.e. acute stage. It is necessary to avoid this combination by changing our behaviours. Mean of interaction effect of people taking rarely or very rarely, more than three selfies per day and posting them (**BC**) is 2.08. Which implies taking more than three selfies rarely or very rarely and posting is not noble. Hence, this combination of **BC** may leads to mental disorder “selfitis”. Mean of interaction effect of people taking regularly more than three selfies per day and posting (**ABC**) is -0.83. Therefore, taking more than 3 selfies regularly per day and posting is not noble. Hence, this combination of **ABC** may leads to chronic stage. It is necessary to avoid this combination.

## RESULTS

We observed that almost 40% respondents have chances of being victim of *Selfitis*. 11% youth are taking selfies regularly whereas senior citizens not addicted towards taking selfies. The leading factors for causing *Selfitis* are gender, age, profession and their selfie taking behaviour. To avoid *Selfitis*, it is necessary to take *Selfitis* rarely, less than three and even sometimes you can post it. The following are the observations which are given below.

- Out of 318 females, almost 79% females take selfies in Nashik city, while only 50% males taking selfie.

- The senior citizens (71%) are motivated by their families whereas youth (66%) are self-motivated or by their friends.
- WhatsApp (49%) and Instagram (43%) are mostly preferred by the users.
- Selfie is more trending in youth (16-30) as compared to other age groups. No doubt more in students.
- There is association between how often they take selfie with age and profession.
- There are almost 25% of people having age group above 51 who are not taking selfies.
- There is no significant difference in opinion of male and female for mental and social situations.
- The combination of people taking regularly selfie with three or more than three selfies may cause selfitis.
- There are 38% people in our sample which are either on chronic or acute stage, while 62% people are tending to borderline.

## **CONCLUSIONS**

We were curious to know how many people are suffering or have chances of *selfitis*. Responses of people were collected through online (creating a Google form) as well as offline survey (directly communicating with senior citizens and children).

The findings from this study suggest that how often people take selfies, influenced of age and profession. The opinion regarding to reason behind taking selfies of males and females are statistically equivalent, even if they do not take selfies, there is no statistical difference, which we thought to be contradict. Whereas there is statistical difference between genders for how they feel after taking selfies. We observed that almost 96% of the people are motivated by their friends, family and self-motivated. Also, near about 58% of the people do not prefer any location for taking selfies. It is expected, youth to be most fascinated of selfies and that's exactly what we got, our expectations fulfilled.

During the process of survey, it is found that students below 15 age groups have social media account but their parents are unknown about this fact. Parents not allow their children to use mobiles and hence children hide this fact from their parents. Is it only solution to this problem, as it boosts the dishonesty in the children. So, rather than restricting them we should aware them by healthy communication.

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