


Does taking selfies lead to increased desire to undergo cosmetic surgery

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Abstract

Background: India is the country with the highest number of selfie-related deaths. However, little is known whether this selfie craze contributes toward the behavioral changes and desire to undergo cosmetic procedures & surgery.

Aim: To analyse how taking, altering and posting selfies on social media, affects individuals' self-esteem, confidence, body image perception and mood in the Indian population. And to see whether the practice of taking selfies leads to the promotion of self-image dysmorphia and an increased desire to undergo cosmetic surgical procedures.

Methods: A total of 300 participants from four Indian cities (75 each from Delhi, Hyderabad, Kolkata, and Mumbai) were included in the study. The study experimentally tested whether taking and posting selfie, with and without photograph retouching, elicits changes in mood, body image, and desire to undergo cosmetic surgery among young men and women.

Results: A significant increase in the level of social anxiety ($P < .004$), feeling of decrease in confidence ($P < .002$), feeling of decrease in physical attractiveness ($P < .001$) and the desire to undergo cosmetic surgery ($P < .001$) was noted in the experimental group. Also, all the findings were higher in women compared with men.

Conclusion: This first of its kind experimental study in the Indian population highlights the deleterious effects of uploading selfies on human mankind and well-being. The prevalent obsessively looks-oriented culture is engulfing our youth's innocence and warrants immediate attention. Few steps taken in the right direction and at the right time can save us from the disastrous effects of this selfie craze in future.

KEYWORDS

selfie and cosmetic surgery, selfie craze, selfie study in Indian population, social media appearance and cosmetic surgery

1 | INTRODUCTION

Nowadays, social media plays a significant role in an individual's daily life. Conventional mass media being less interactive has been taken over by social media, which has now become a vast and

popular form of online communication and conversation media, especially among adolescents and youth. Out of the 7.3 billion of global population, 2.3 billion individuals are actively using social networking sites. A rise of 176 million has been noted compared to previous years.¹ Recently, a national survey by the Pew Research

Center found that in the USA, approximately 88% of individuals between 18 and 29 years of age were found using one or the other forms of social media.²

Social media allows individuals to create their own personal profiles and share information and photographs with users on their social network.³ Facebook, Instagram, and Snap chat are among the most widely used social media platforms available and can be accessed via Computer, Smartphone, Computer tablet, and other forms of technology with easy open access. Peers usually post comments based on the physical appearance and provide tips as well on how to look attractive.⁴ Also, TV shows and magazines portray good looking individuals as the ideals of beauty and advertise cosmetic strategies based on that.⁵

Studies have shown that appearance pressure with the use of social media has a direct impact on the appearance investment. (refers to the degree to which physical attractiveness is important to a person and his/her behavior and the thoughts center on appearance).⁶ Higher appearance investments, in turn, lead to negative consequences like engaging in appearance changing behavior (which may be risky for health), including unhealthy form of dietary practice and cosmetic surgery.^{7,8}

Although, several studies are available in literature that highlights the increase in the appearance pressure with the use of social media, still, there are few shortcomings in our knowledge. First, there is scarcity of data related to the selfie upload and post upload psychological impact on body image, self-confidence, and desire to undergo any cosmetic procedure. The term Selfie is defined as "A self-portrait photograph, usually taken with a digital camera or a camera phone held in hand or supported by a selfie stick."⁹ According to Google company statistics in 2016, over 24 billion selfies were uploaded on Google photographs in a period of 1 year. Interestingly, it was found that more than 1 million selfies are clicked per day and more than 17 million selfies are taken and uploaded on social media each week.¹⁰

Second, the role of gender in this social appearance pressure remains unclear. Although, few studies⁸ suggest that investment in appearance is independent of gender, the data regarding anxiety level of men and women, post selfie upload and their desire to take appearance modifying measures is still lacking.

Third, there are numerous photograph editing apps available on smartphones these days. These apps allow an individual to click, retouch, edit, and modify their image before posting it on social media. To the best of our knowledge, no data in the literature highlight on how these apps act on an individuals' psychological level and whether they contribute toward body & face dysmorphia, self-confidence, and potentially the increased desire for cosmetic alterations.⁸

Fourth, in 2015, 12 deaths were reported while taking selfies, which was more than the total death due to shark attacks, in that particular year.¹¹ Interestingly, India is the country with the highest number of selfie-related deaths. Bansal et al; in 2019 mentioned that out of 259 selfie-related deaths, 159 deaths were reported in India.¹² Looking at these data points, it is clear that the selfie trend has a significant impact on people in India. However, there is no available data regarding how selfie upload affects the anxiety level, feeling of

self-confidence, and desire to undergo cosmetic surgery, in Indian population.

In current study, we focus on analyzing how taking, altering (using retouching app) and posting selfies on social media, affects individuals' self-esteem, confidence, body image perception, and mood in the Indian population. We also attempt to understand, whether the practice of taking selfies leads to the promotion of self-image dysmorphia and an increased desire to undergo cosmetic surgical procedures.

2 | MATERIALS AND METHODS

2.1 | Participants

A total of 300 individuals in the age range of 21 to 26 years of age with equal number of both male and female gender were selected for the study. Random sampling was implemented for the selection procedure to target entire population, as it gives equal chance of being selected from the sample and thus eliminating the sampling bias. The sample size was calculated using single population proportion formula: $n = (Z\alpha/2)^2 p(1-p)/d^2$, by considering the following assumptions: $Z\alpha/2 = 1.96$ (Standard score value for 95% confidence level), $P = .5$ (Prevalence of selfies related death as per 2017 survey is 2.59%). Since there is no similar study conducted in the study setting in India, and d (tolerated margin of error) = 10%, The finite population correction formula was applied for the study population which was less than 10 000, and finally 30% nonresponse rate was added and the total number of study participants became $N = 300$.

The participants were the patients of The Esthetic Clinics, belonging to four different cities of India (Delhi, Hyderabad, Mumbai, and Kolkata), with seventy-five participants from each city. India is a country with unique & exceptional diversity in terms of caste, religion, beliefs, and customs. The reason for selecting four different population groups, based in four completely different regions of India, with different racial evolutionary patterns, was to cover as much diversity as possible, across the country.

2.2 | Inclusion criteria

1. Basic knowledge about handling a smartphone and cellular data services.
2. Individuals' having their own active Instagram or Facebook account with minimum 100 followers.

2.3 | Exclusion criteria

1. Individuals' with no knowledge whatsoever about the smartphones and cellular data services.

2. Individuals' having Instagram or Facebook account, but not logged into their accounts in the past 1 month.
3. Individuals' with known/diagnosed history of personality/psychological & psychiatric disorders.

Random sampling was performed to divide the subjects into experimental (untouched selfie group $n = 100$ and retouched selfie group $n = 100$) and control group $n = 100$. This study was executed after Institutional Review Board approval from the ethics committee of The Esthetic Clinics, India. Informed verbal and written consents were received from the participants at the commencement of the study.

2.4 | Apparatus

We asked the participants to use a smartphone, iPhone, or iPad and install the softwares like Internet browser, camera, and photograph modification app (You-Cam perfect, Beauty plus, and Candy Camera), as per participants choice, in their own devices.

2.5 | Experimental procedure

Random allocation method was used to distribute participants into three experimental groups. *Simple random sampling* is the most straightforward approach for getting a random sample. It involves picking a desired sample size from population of The Esthetic Clinics patients and further selecting observations (people who are using smartphones an uploading the picture daily on social media platform) from a population in such a way that each observation has an equal chance of selection until the desired sample size is achieved.

Participants were asked to leave their bags and any personal electronic devices and gadgets outside the testing area. They were then tested individually behind a partition wall from the experimenter. After arrival to the laboratory, participants read and signed a written informed consent form and then the demographics questionnaire with additional filler items to distract them from the purpose of the study.

For ethical reasons, the informed consent form contained the information sheet explaining that participants may be asked to post a selfie to their own social media profiles (Facebook and Instagram).

2.5.1 | Experiment group- 1

In the untouched selfie group, 100 participants were asked to take two photographs of themselves (a headshot and a full-length selfie, using a selfie stick) on the laboratories iPhone, iPad, or smartphone and upload it on their preferred social media profile (Facebook or Instagram).

2.5.2 | Experiment group- 2

In the retouched selfie group, 100 participants were asked to take two photographs of themselves (a headshot & a full-length selfie, using a selfie stick) on the laboratories iPhone, iPad, or smartphone and use the photograph editing app installed on the particular phone to retouch the photograph to their satisfaction before uploading it to their social media profiles (Facebook or Instagram).

2.5.3 | Control group task

In the control group 100 participants were given the laboratories iPhone, iPad, or smartphone but were asked to read a short article from a social media news website of their choice, in their preferred local language, nonappearance related content (ie, the day's newspaper and magazines) and to answer questions about the article.

2.6 | VAS scaling and measurement

A series of visual analogue scales (VAS) were used to measure the mood and body image at baseline as well as after the experimental manipulation (described below). This commonly used set of scales was designed to assess pre-post changes in the psychological states in experimental research designs.¹³ The measure consisted of four VAS, each with a 10-centimeter horizontal line labeled with a specific attitude or emotional state (1 representing—not at all to 10 representing very much). Participants were asked to place a tick mark at the point on the line that most accurately depicted the degree to which they were experiencing that feeling at that moment. The 1st item depicting the mood, included social anxiety, 2nd was the decrease in the level of confidence. The 3rd scale was assigned to the body image item viz; feeling of decrease in physical attractiveness. The 4th and the final scale measured the desire of an individual to undergo cosmetic surgical procedures after uploading the selfie on social media. Rather than collapsing scores into global affect or appearance concerns, we separated the items so that we could examine specific affective changes among participants.

Visual analogue scales format is recommended over Likert scale for pre and post research designs because it reduces recall bias (ie, participants cannot recall their previous response). It has been used in the past for several studies, also, it can be completed quickly and is very sensitive to emotional changes. The protocol followed in our study was similar to the one used in various published studies in Canada.¹⁴

2.7 | Data collection and statistical analysis

All the collected data were stored in Microsoft excel version 2007, and the statistical analysis was performed using Graphpad prism version: 6. Shapiro-Wilk test was used to see the distribution of

TABLE 1 Participant's demographics from different cities in India

Participants Location	Participants distribution N = 300	Age Mean ± SD	BMI Mean ± SD	Time spent on Status update and Social media(Hrs)
Hyderabad	75(25%)	21.2 ± 6.25	20.2 ± 3.66	6.2 ± 0.12
Kolkata	75(25%)	24.76 ± 3.12	25.7 ± 2.74	4.1 ± 0.31
Mumbai	75(25%)	26.62 ± 1.23	26.2 ± 3.26	6.55 ± 0.71
Delhi	75(25%)	22.46 ± 2.29	22.7 ± 1.54	8.3 ± 0.22

data. As the data are parametric and normally distributed, one-way ANOVA test was selected to test the significance among the groups (within subject factors) and between three experimental groups—untouched selfie, retouched selfie, and control groups (between subject factors). And the comparison among all the four cities in India was interpreted by percentage distribution.

3 | RESULTS

All the demographic variables including the number of participants in each group from a particular city, age, gender, BMI (body mass index), and amount of time spent on social media were equally distributed in the study (Table 1).

The levels of significance among the experimental groups and control group measured with one-way ANOVA test, showed that there was a significant increase in the factors like level of social

anxiety ($P < .004$), feeling of decrease in confidence ($P < .002$), feeling of decrease in physical attractiveness ($P < .001$), and the desire to undergo cosmetic surgery ($P < .001$) in the experimental group (both untouched and retouched group). The mean values for all the parameters, post the photograph upload, were more in the retouched selfie group except social anxiety which was more in the untouched selfie group.

No significant correlation ($P > .005$) was seen in the control group for the increase in social anxiety ($P = .62$), feeling of decrease in the level of confidence ($P = .99$), feeling of decrease in the level of physical attractiveness ($P = .45$), or the desire to undergo cosmetic surgery ($P = .07$) (Table 2).

The overall gender-wise distribution depicted that increase in the level of social anxiety (women—60%, men—58%), feeling of decrease in the level of confidence (women—70%, men—55%), feeling of decrease in the level of physical attractiveness (women—67%, men—61%), and desire to change the looks through cosmetic surgery

TABLE 2 Distribution of participants (pre and post) of both experiment and control group

One-way ANOVA analysis										
Variables	Experimental group				Control group					
	Untouched selfie (N = 100)		Retouched selfie group (N = 100)		Significance		(N = 100)		Significance	
	Mean	SD	Mean	SD	df	P-value	Mean	SD	df	P-value
Social anxiety										
Pre	56.34	12.66	44.71	10.62	2	<.004	74.26	12.33	3	.62
Post	79.22	10.37	68.94	13.44			62.13	6.21		
Co-Variance	-22.88	+2.29	-24.23	-2.82			+12.13	+6.21		
Decrease in confidence										
Pre	46.74	9.21	49.88	12.92	2	<.002	78.94	8.65	3	.99
Post	69.11	14.07	71.16	17.12			63.12	4.62		
Co-Variance	22.368	-4.86	-21.28	-4.2			15.82	4.03		
Decrease in physical attractiveness										
Pre	61.36	5.74	55.93	10.32	2	<.001	65.32	11.43	3	.45
Post	78.33	11.68	81.22	16.33			61.06	9.24		
Co-Variance	-16.97	-5.94	-25.29	-6.01			+4.26	+2.19		
Desire for cosmetic surgery										
Pre	40.25	13.21	48.44	7.16	2	<.001	30.16	54.26	3	.07
Post	75.55	18.22	82.66	13.31			22.14	33.21		
Co-Variance	-35.3	-5.01	-34.22	-6.15			+8.02	21.05		

$P < .005$ is considered as significant.

FIGURE 1 Gender-wise distribution of study factors in Indian population

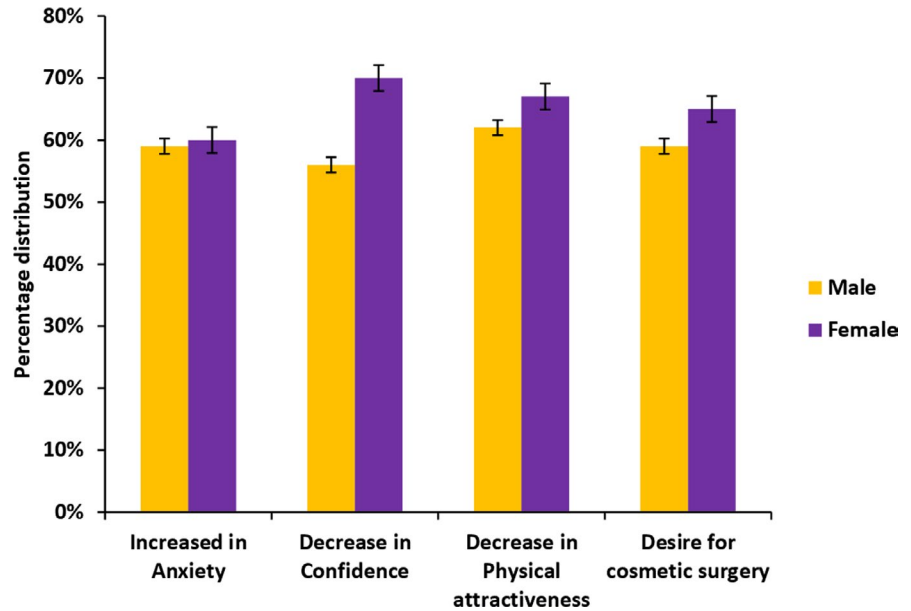
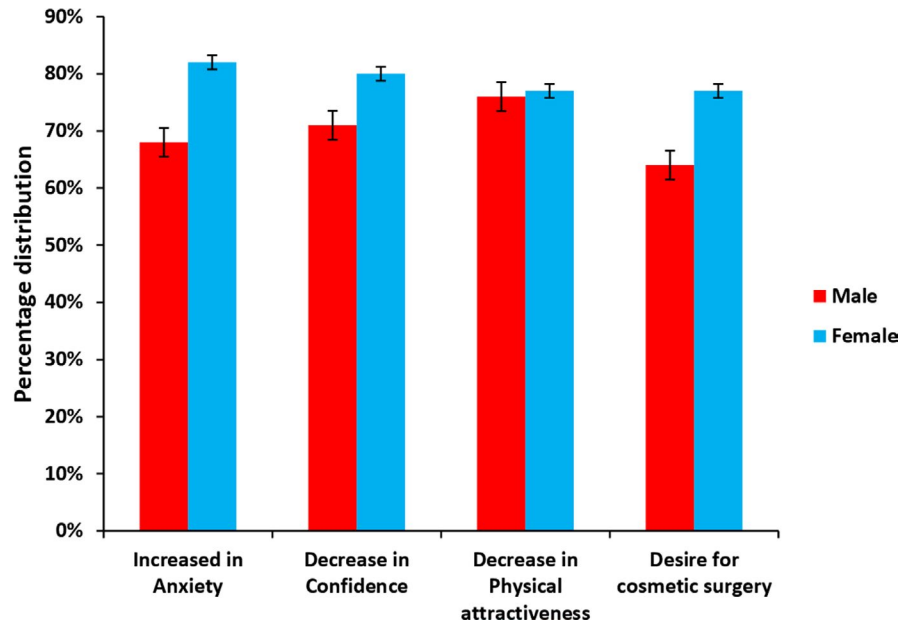


FIGURE 2 Gender-wise distribution of study factors in study population from Delhi



(women—65%, men—62%) were all higher in women compared to men (Figure 1).

Similarly, the gender distribution across four cities (Delhi, Mumbai, Hyderabad, and Kolkata) showed that all the parameters were higher in women compared to men except one parameter from Kolkata city, where, increase in the level of social anxiety was higher in men (56%) compared with women. (55%) (Figures 2-5).

4 | DISCUSSION

Self-definition and identity formation have always been a challenge for adolescents.¹⁵ Nowadays, the modern way of self-presentation or “selfie” has become a culture worldwide. Over the years, selfies have changed the behavior of an individual on a psychological level.

As per Cooley's looking-glass theory, the ideas and concepts of others leave a strong impact on an individuals' self. He mentioned in his theory, that, for people how they appear to others is more important than who they are.¹⁶

Self-verification theory by Swann also highlights issues about the selfie craze and its role in psychological molding. Accordingly, it is evident that validation from others is of prime importance for self-verification and even self-sustenance.^{17,18} There are reports which demonstrate that positive feedback from the social networking sites leads to an increase in self-esteem and general well-being, ultimately leading to identity formation and improved psychological health.¹⁹ The number of positive comments and likes on selfies posted on social media is directly related to the increase in self-confidence, especially in individuals' with low self-esteem.²⁰

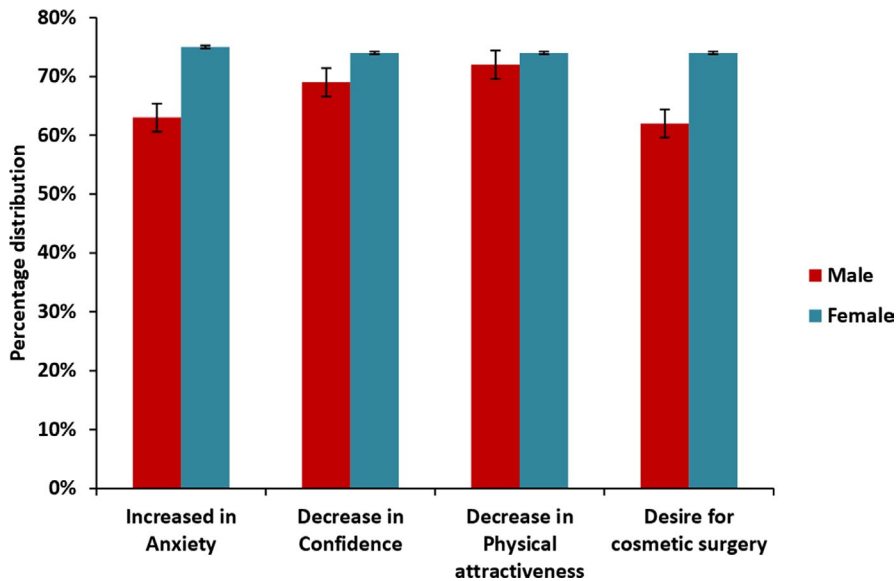


FIGURE 3 Gender-wise distribution of study factors in study population from Mumbai

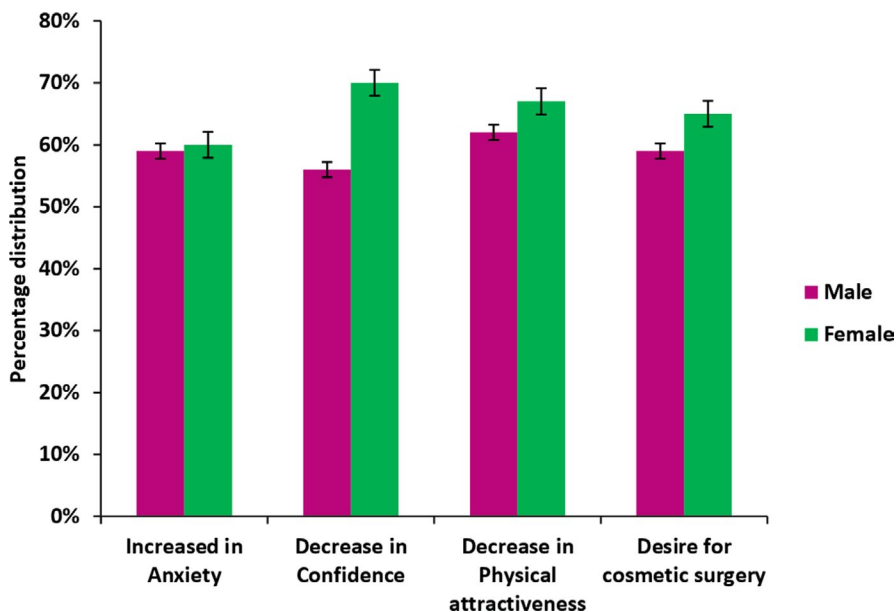


FIGURE 4 Gender-wise distribution of study factors in study population from Hyderabad

Selfies not only leave an impact on the self-consciousness, humor, irony, privacy, public behavior, and social interaction of an individual posting them, but also affect the viewers who are passively browsing these pictures in the form of exclusion, envy, loneliness, and inadequacy.^{21,22} Victoria et al, named the individuals with selfie obsession as Narcissists, who find gratification by their physical appearance, which they perceive based on the opinion of others.²³

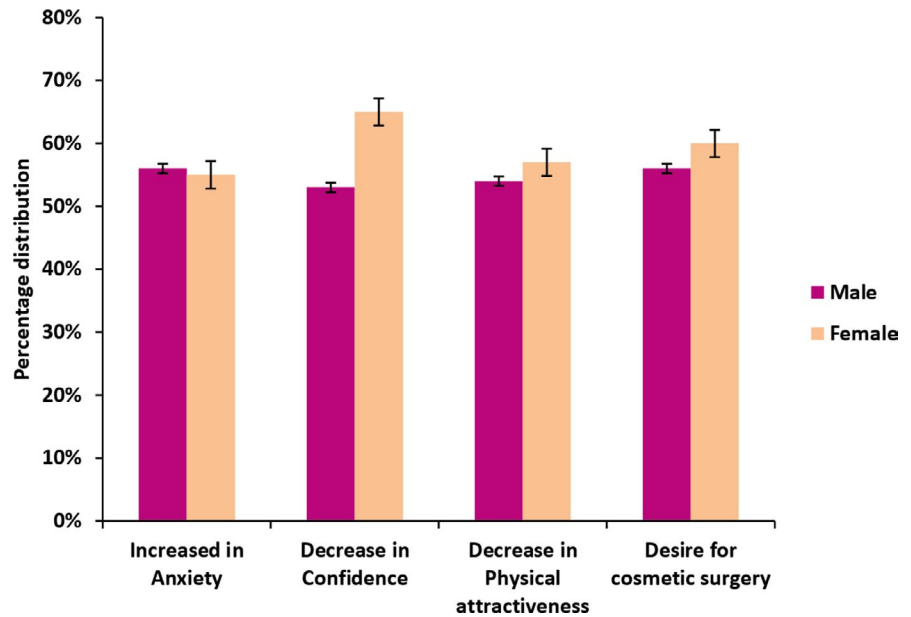
This is the first experimental study which unmask the effects of a selfie upload on social media in Indian population. The findings and the results support our hypothesis that taking and posting a selfie on social media results affect individual's confidence level and worsens the self-image. A significant increase in the level of social anxiety, feeling of decrease in self-confidence, and decrease in physical attractiveness was noted post an image upload on social media in both the retouched and untouched group. It was also noted that the

desire to undergo cosmetic procedure also increased significantly after posting a selfie on social media.

Editing an image before upload can lead to increased body dissatisfaction, low self-esteem, and body-image related anxiety.²⁴⁻²⁶ Also, internalization of thin ideals in female can contribute toward unhealthy diet and exercise behaviors and can ultimately lead to eating disorders.²⁷ These unrealistic expectations built up by photograph editing apps can lead to dissatisfaction of appearance when they are not achieved in reality.²⁴

It was interesting to note that participants who had an opportunity to retake and modify their selfies (retouched group) before posting it on social media still experienced decrease social anxiety compared with those who could not retouch their photographs before upload (untouched group). However, other findings like feelings of a decrease in self-confidence, physical attractiveness, and the desire to undergo cosmetic surgery were higher in those participants

FIGURE 5 Gender-wise distribution of study factors in study population from Kolkata



who had an option to retouch their selfies before upload. (Retouched group) compared with untouched selfie group. Although, re-testing these findings one week later may have yielded further more interesting results, getting the same study population back 1 week later would have been very difficult, given that the participants voluntarily participated in the trial.

The role of gender in body dysmorphia and other anxiety related factors is debatable. Few studies suggests that there is no relationship between gender and the appearance pressure and desire to undergo cosmetic surgery.^{6,27} However, Manago et al ;2008, in his study, mentioned that females are more strongly evaluated on the basis of physical appearance on social media compared with males.²⁸ Studies have also shown that increased appearance exposure to Facebook (like, posting, viewing, and commenting on images) is associated with a greater weight dissatisfaction, drive for thinness, thin-ideal internalization, and self-objectification among female high school students.²⁹ Our study was in line with the above studies, with higher social anxiety, increase in the feeling of decreased self-confidence and physical attractiveness, and increased desire to undergo cosmetic surgery in women compared to men, except, for the higher social anxiety in male compared to female participants from Kolkata.

A survey by the American Academy of Facial Plastic and Reconstructive Surgeons suggests that 55% surgeons, in 2017, reported seeing patients who request surgery, to improve their appearance in selfies.³⁰ In the current scenario, the Indian youth is inclined more toward the global trends. In a study, conducted on Indian college students, 35.83% of the students reported that they posted selfies on social media with an intention to receive likes or comments. About 14.17% individuals accepted that they were addicted with clicking selfies.¹¹

Considering these selfie effects in Indian adolescents, it becomes extremely crucial for a doctor to understand the concerns of a patient. An individual's social media related, selfie related and other virtual media related personality aspects govern the mental health

& psychology on multiple levels. It is very important to understand if their demands for cosmetic surgery are based on the ideology of how they should look in selfies. Such concerns & desire of the patient can lead to disappointment post the procedure as the discrepancies between the perceived self, ideal self, and real self are difficult to equalize. Future research should examine and also focus on the long term and/or sociological effects of posting selfies on social media using prospective, cohort, and qualitative research designs.

5 | CONCLUSION

The available evidence through this study suggests that clicking and uploading a selfie on social media platform has a harmful impact on human mankind and well-being. This obsessively looks-oriented culture is engulfing our youths' innocence and thus warrants immediate attention. Few steps taken in the right direction and at the right time can save us from the disastrous effects of selfie craze in future. Taking measures for media literacy interventional program and also educating the youth & their guardians about the impacts of selfie uploads on the overall body image and body dysmorphia could be a crucial step. Last but not the least, an important step would be sensitizing the doctors to seek psychological counseling for such patients & refuse to perform aesthetic and cosmetic procedures that show more harm and less benefit, especially in patients with over expectations in terms of results.

Although this was a cross-sectional study, it would have been interesting to see if the results continue to persist in a longitudinal study of a similar kind. Calling these same subjects back a week later and evaluating whether their choices changed may have been interesting. However, considering the present scenario of the study, it was impractical to call participants back with a loss to their working time, for the follow-up survey, which obviously has no reimbursement or remunerations. Besides, follow-up studies may not have

solved the purpose because most people who are addicted to selfies and social media are anyways clicking selfies and posting on social media, all the time.

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CONFLICTS OF INTEREST

The author(s) declare that there were no conflicts of interest with respect to the authorship or the publication of this article.

AUTHORS CONTRIBUTION

Debraj Shome involved in development and conceptualization of study and support in manuscript writing. Sapna Vadera involved in literature review and manuscript writing. Male Shiva Ram involved in statistical analysis and support in manuscript writing. Rinky Kapoor involved in data collection and support in manuscript writing.

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