

Systematic review

# Mental health screening in facial cosmetic surgery: a narrative review of the literature

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## Abstract

The popularity of cosmetic surgery is on the increase with the face being one of the most common anatomical areas operated on. Pre-existing mental health conditions can be associated with adverse patient outcomes after cosmetic surgery and can result in deterioration of postoperative mental health and lack of patient satisfaction. Therefore, identifying the presence of psychiatric disorders through preoperative screening should be considered during consultation for facial cosmetic surgery. In this study, we reviewed the types of preoperative mental health screening tools used in cosmetic facial surgery and the prevalence of mental health conditions among patients undergoing cosmetic facial surgery. A literature search was conducted on Pubmed, Prospero, Dynamed, DARE, EMBASE, and COCHRANE databases. A total of 12 articles fulfilled the inclusion criteria. A total of 2194 participants were included in this review. Rhinoplasty (n=1154), blepharoplasty (n=138) and rhytidectomy (n=83) were the most performed facial cosmetic procedures, respectively. A total of 758 (34.1%) had a diagnosis of a potential mental health problem following the preoperative screening. With body dysmorphic disorder (BDD) being the most common (20.0%). The BDD questionnaire was the most used screening tool (n=4). Mental health diagnoses were more common in patients in low-income countries (48.4%) compared to patients from non-low-income countries (25.7%). Given our findings, we propose the routine use of mental health screening tools in all patients undergoing facial cosmetic surgery. This will improve satisfaction rates post-facial cosmetic surgery and may reduce the number of unnecessary procedures.

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**Keywords:** Facial Cosmetic Surgery; Mental Health; Screening

## Introduction

The popularity of cosmetic surgery is on the increase with the face being one of the most common body areas to be operated on.<sup>1</sup> Facial cosmetic surgical procedures include blepharoplasty, rhinoplasty, and facelifts.<sup>2,3</sup> Facial attractiveness is reported by some studies to influence mental

health.<sup>4,5</sup> Individual motivations to pursue cosmetic surgery include the desire to improve self-confidence, self-esteem, and social interactions. Most patients are satisfied following cosmetic surgery, but a subgroup of patients demonstrate discontentment despite a satisfactory clinical outcome.<sup>6</sup>

To ensure successful cosmetic facial surgery (CFS), it is imperative to assess for predictors of poor outcomes. These predictors include psychiatric disorders, demographic factors, relationship issues, unrealistic expectations, previously dissatisfactory surgery, and minimal deformity.<sup>1</sup> The relationship between CFS and psychiatric disorders is not well established. Prior work suggests that 30%–70% of patients seeking cosmetic surgery had some form of psychiatric illness.<sup>7</sup>

To ensure patients have the desired outcome after CFS, proper preoperative evaluation should be conducted. This includes the assessment of predictors of poor outcomes,

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including a potential psychiatric diagnosis but also the assessment of the patient's motivation and comprehension of the procedure.<sup>8</sup> Traditionally it was thought that having a psychiatric illness would make a patient a poor candidate for cosmetic surgery. However, some studies have demonstrated improvement in mental health following the desired cosmetic surgery. Nevertheless, such cases require in-depth pre/postoperative counselling, and such counselling is imperative to ensure the best outcome.<sup>8</sup>

Various methods have been proposed for the identification of mental health disorders pre-cosmetic surgery, which range from routine preoperative psychiatric evaluations of all patients seeking cosmetic surgery to an informal evaluation of the patient's emotional state during the initial consultation. The identification of mental health disorders can be difficult for many physicians; therefore simple measures should be put in place to facilitate assessment and diagnosis.<sup>8</sup> Moreover, a screening test that can be performed by the cosmetic surgeon could be a useful adjunct to identify patients requiring further support and referral to psychological services. Such a tool would not replace a formal in-depth assessment but would alert the surgeon that further assessment and referral is required.<sup>6</sup> Pre-existing mental health conditions can adversely impact patient satisfaction and result in the worsening of postoperative mental health. Hence, identifying the presence of psychiatric disorders through preoperative screening should be an integral part of the consultation.

In this narrative review, we reviewed the types of preoperative mental health screening tools used in CFS and the ability of preoperative screening to identify patients with mental health problems requiring additional support.

## Methodology

### Literature search

A literature search was conducted in December 2022 by two independent reviewers on Pubmed, Dynamed, DARE, Cochrane, and British Medical Journal (BMJ) electronic databases for articles published between 2000–2022. The following search parameters were used to retrieve the relevant articles: “Facial surgery”, “blepharoplasty”, “facelift”, “septorhinoplasty”, “rhinoplasty”, “pinnaplasty”, “cosmetic surgery”, “mental health”, “depression”, “body dysmorphia” and “anxiety”. A grey literature search was conducted looking at conference abstracts for the British Association of Plastic, Reconstructive and Aesthetic Surgeons and the British Association of Oral and Maxillofacial Surgeons.

Only original research studies published between 2000–2022 were considered. The following study types were reviewed: randomised control trials, prospective cohort studies, retrospective cohort studies, case studies and case series. Two independent reviewers screened titles and abstracts for eligibility and inclusion. The same reviewers then screened relevant full papers before inclusion. The review has not yet been registered on PROSPERO.

### Inclusion

For this article, all studies to focus specifically on facial cosmetic surgery and the use of mental health screening tools were included. With the study aims to determine the incidence of mental health conditions among patients undergoing facial cosmetic surgery.

### Exclusion

For this article, studies to focus exclusively on cosmetic surgery in areas away from the face were excluded, and non-surgical facial aesthetic procedures were also excluded. Patients requiring reconstruction of facial defects secondary to cancer, facial defects secondary to trauma, or congenital abnormalities were also excluded. Studies to focus on paediatric populations were excluded. Cosmetic dental procedures were also excluded from the analysis. Studies published in any language other than English were also excluded.

### Data extraction

The data were extracted on to a standardised data extraction template relating to population, intervention, comparison, and outcome (PICO). The population studied included patients undergoing cosmetic facial surgery. The intervention used was preoperative mental health screening. The comparator was patients not undergoing mental health screening. The primary outcome was to assess the number of patients who could be identified as having a potential mental health diagnosis on preoperative screening.

### Risk of bias and quality assessment

Each study was reviewed individually for risk of bias associated with the selection, comparability and outcome reporting using the Newcastle Ottawa Tool for cohort studies. The results from the Newcastle Ottawa Tool were translated into the Agency for Healthcare Research and Quality (AHRQ) scores.<sup>9,10</sup>

## Results

The number of studies screened, assessed for eligibility, and included in the review, with reasons for exclusion, are presented in the PRISMA flow diagram. (Fig. 1) Using the key search terms described earlier yielded a total of 581 results across Pubmed, EMBASE, Dynamed, DARE, Cochrane, and grey literature searches. Following the removal of duplicate results, articles were initially reviewed by two independent reviewers and included or excluded based on the title and abstract. A total of 42 full-text articles were reviewed and further evaluated against the inclusion and exclusion criteria. A total of twelve articles fulfilled the inclusion criteria. The study characteristics can be seen in Table 1.<sup>11–20</sup>

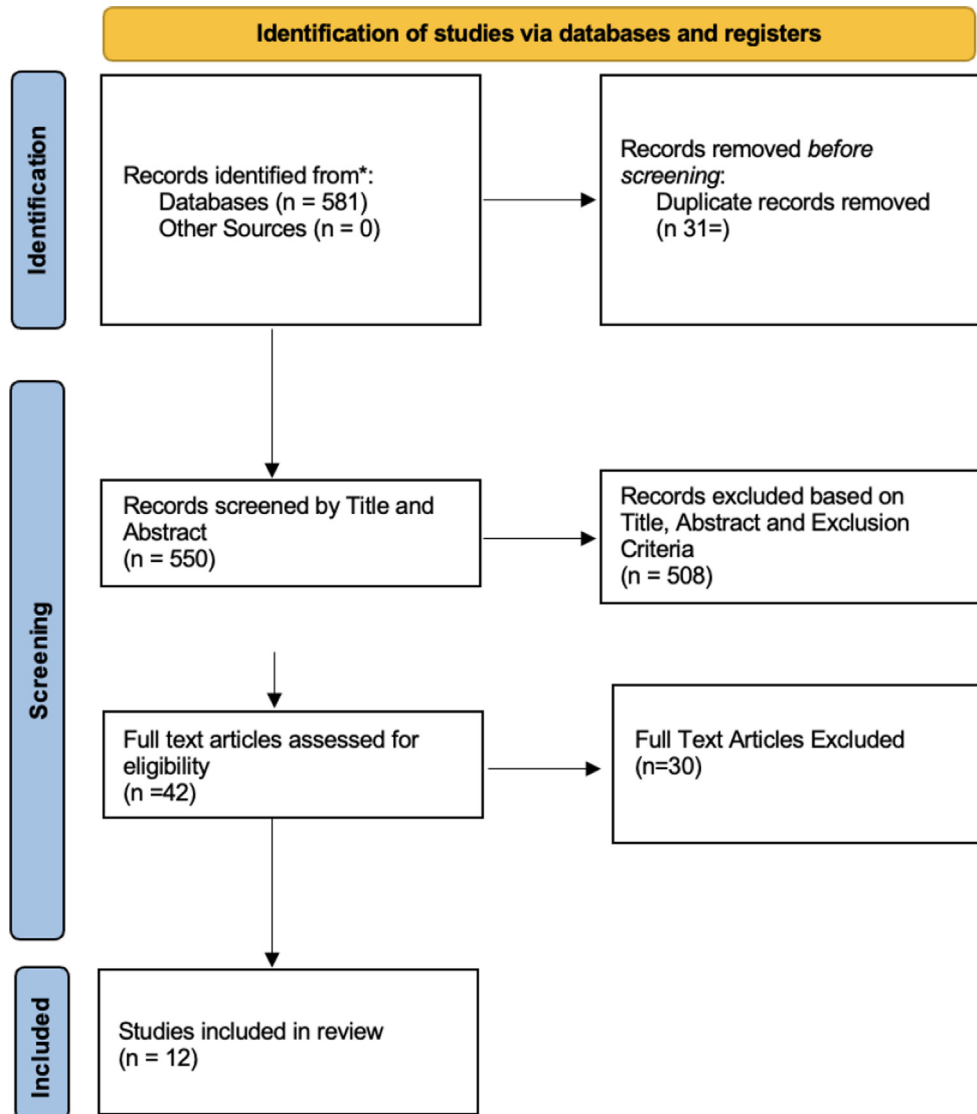


Fig. 1. PRISMA Search.

### Patient characteristics

A total of 2194 participants were included in this review. Participants originated from the following countries: USA (n = 3), Iran (n = 4), Belgium (n = 1), Japan (n = 1), UK (n = 1), Brazil (n = 1) and Greece (n = 1). The age of the included participants ranged from 18-71 years old (mean age 39.7 years). Female to male ratio was found to be 2.7:1 (gender information was not available in four studies)

Rhinoplasty (n = 1154), blepharoplasty (n = 138) and rhytidectomy (n = 83) were the most performed facial cosmetic procedures respectively.

### Mental health history

All 12 studies used generic psychiatric self-assessment questionnaires preoperatively as part of their evaluation this can be seen in Table 1. Three studies incorporated an interview

with a psychiatrist to support psychiatric evaluation and validity of diagnoses.<sup>6,11,20</sup>

A total of 206 (9.4%) participants were identified as having a pre-existing psychiatric history which was only reported by four studies. Only one study investigated the medical management regime that participants were on, of which seven participants were taking psychiatric medication.<sup>8</sup>

A total of 758 (34.5%) had a diagnosis of a mental health problem following the implementation of preoperative screening tools employed by cosmetic surgeons; of these patients, n=262 had their diagnoses confirmed upon psychiatric assessment.<sup>6,11,20</sup> A breakdown of the most identified conditions is outlined in Table 2. Body dysmorphic disorder (BDD) was the most common diagnosis among patients (20.0%), followed by the diagnoses not being specified (6.3%), obsessive compulsive disorder (OCD) (4.2%) and then anxiety (1.0%). Only two studies had reported on

Table 1  
Study characteristics. Data are number or mean (SD).

First author, year, reference, and country	No. of Participants	Age	Existing mental health diagnoses	Preoperative MH screening (performed by)	Number and type of cosmetic surgeries performed	Number of patients diagnosed with mental health diagnoses with screening tool (%)	Number of patients not undergoing surgery post-screening	Other results
Thomas et al 2001. <sup>8</sup> (USA)	75 Total 53 Female 22 Male	Average 43 ± 16	10.6% 9.3% using medications	PRIME-MD questionnaire (cosmetic surgeon)	27 Rhinoplasty 24 Rhytidectomy 18 Blepharoplasty 11 Forehead lift Blepharoplasty	3 Anxiety disorder 1 Depression 1 Dysthymia 2 Other 11 BDD	Not mentioned	14 revision surgeries
Hayashi et al 2007. <sup>6</sup> (Japan)	108 total gender data not available	38	32%	Hamilton Depression & Anxiety Scale (cosmetic surgeon + psychiatric assessment)	102 Rhinoplasty 70 Rhytidectomy 59 Facial osteotomy 58	5 Anxiety 9 Depression 4 Schizophrenia 2 OCD 1 Hypochondriasis 5 Psychogenic reaction 3 Personality disorder 9 Other	9 (20%) of diagnosed conditions continued psychiatric treatment 16/45 with a new diagnosis underwent surgery	Not mentioned
Alavi et al 2011. <sup>11</sup> (Iran)	306 Total 245 Female 61 Male	Average 23 ± 5	41%	BDD Questionnaire (cosmetic surgeon + psychiatric assessment)	306 Rhinoplasty	75 BDD 63 OCD 3 Anorexia nervosa 4 Anxiety 4 Somatic delusion 13 Dissociative identity disorder 31 BDD	Not mentioned	Not mentioned
Ghadakzadeh et al 2011. <sup>12</sup> (Iran)	104 89 Female 15 Male	Not mentioned	Excluded patients with pre-existing conditions	Body Image Concern Inventory in Persian (cosmetic surgeon)	104 Rhinoplasty	117 BDD	Not mentioned	Sensitivity 93.5% Specificity 80.8%
Picavet et al 2011. <sup>13</sup> (Greece)	147 81 Female 66 Male	33+/-16	Not mentioned	Yale brown obsessive-compulsive scale modified for BDD (Cosmetic surgeon)	147 Rhinoplasty	117 BDD	Not mentioned	Higher BDD scores Higher sex/body self-consciousness (p<0.001) Negative self-concept (p<0.001) Lower quality of life p<0.001
Fatholooloomi et al 2013. <sup>14</sup> (Iran)	130 99 Female 31 Male	26.43+/- 6.29	Not mentioned	BDD questionnaire & Hospital Anxiety and Depression Scale (HADS) (Cosmetic surgeon)	130 Rhinoplasty	41 BDD 11 Anxiety 12 Depression	Not mentioned	Not mentioned
Dey et al 2015. <sup>15</sup> (USA)	122 97 Female 25 Male	48	Not mentioned	BDD Questionnaire (Cosmetic surgeon)	122 Facial cosmetic surgery unspecified	24 BDD		Sensitivity 100% Specificity 90.3%

Golshani et al 2015. <sup>16</sup> (Iran)	274 Total 204 Female 70 Male	Average 30 ± 8 Range 18–58	10%	Symptom checklist-90-R Questionnaire (Cosmetic surgeon)	170 Rhinoplasty 18 Blepharoplasty 22 Face implant	140 Not specified		Not mentioned
Woolley et al 2015. <sup>17</sup> (USA)	728 Gender data not available	Not mentioned	Not mentioned	Dysmorphic concern questionnaire (Cosmetic surgeon)	728 Oculofacial surgery	50 BDD	Not mentioned	Higher complications 19.1% vs 0% (p=0002) More reoperations 22.7% vs 6.9% (p=0.05) Sensitivity 89.6% Specificity 91.9%
Lekakis et al 2016. <sup>18</sup> (Belgium)	116 Total 63 Female 53 Male	Average 31 ± 13	Not reported 10% previous aesthetic surgery	BDD-Aesthetic Surgery Questionnaire – Novel Tool (Cosmetic surgeon)	116 Rhinoplasty	55 BDD	Not mentioned	
Joseph et al 2016. <sup>19</sup> (UK)	34 Gender data not available	36.8 (+/-12.3)	Not mentioned	BDD Questionnaire (cosmetic surgeon)	34 Rhinoplasty	11 BDD	7 unsuitable for surgery (following consultation with psychologist)	Not mentioned
Ramos et al 2019. <sup>20</sup> (Brazil)	50 Gender data not available	32.3 +/- 11	Not mentioned	Yale Brown obsessive compulsive scale modified for BDD & body dysmorphic symptoms scale (cosmetic surgeon + psychiatric assessment)	50 Rhinoplasty	24 BDD 27 OCD	Not mentioned	Not mentioned

MH = mental health; BDD = body dysmorphic disorder; OCD = obsessive compulsive disorder.

Table 2  
Most identified psychiatric disorders.

Psychiatric disorder	No. (% of the total cohort)
Body dysmorphic disorder (BDD)	439 (20.0)
Obsessive compulsive disorder (OCD)	92 (4.2)
Anxiety	23 (1.0)
Depression	22 (1.0)
Personality disorders	16 (0.7)
Somatic delusions	4 (0.2)
Scophobia	4 (0.2)
Anorexia nervosa	4 (0.2)
Psychogenic reaction	5 (0.2)
Dysthymia	1 (0.04)
Hypochondriasis	1 (0.04)
Other	11 (0.5)
Not Specified	140 (6.3)

patients not requiring surgery following preoperative screening (n = 36/142) the remaining studies (n = 10) did not comment on this.

Four of the studies included in the review were published in low-income countries.<sup>11,12,14,16</sup> They had demonstrated that 48.4% (n = 394/814) of patients were identified with mental health diagnoses on preoperative screening compared to 25.7% (n = 364/1412) in non-low-income countries.

Table 3  
Preoperative surveys for mental health screening in cosmetic surgery.

Screening tool used	Number of studies	Description	Self-versus clinician administered questionnaire
BDD questionnaire	4	Brief self-reported measure derived from DSM-4 diagnostic criteria Sensitivity 94% Specificity 90%. <sup>21</sup>	Self
Yale brown obsessive-compulsive disorder modified for BDD	2	Semi structured clinician rates measure of current BDD severity, adapted from OCD severity due to the similarities between OCD and BDD Sensitivity 85.4–95.2% Specificity 92.9–95.5%. <sup>22</sup>	Clinician
Hamilton depression and anxiety scale	1	Widely used measures for depression and anxiety. Semi structured interview 14-point questionnaire. <sup>6</sup> Sensitivity 95% <sup>38</sup> Specificity 96% <sup>38</sup>	Clinician
Symptom checklist 90-R	1	Includes 90 symptoms and evaluated 9 symptomatic dimensions: somatisation, OCD, interpersonal sensitivity, depression, anxiety, hostility, phobic anxiety, paranoid ideation and psychoticism. <sup>23</sup> Sensitivity 94% specificity 98%. <sup>16</sup>	Self
BDD aesthetic surgery questionnaire	1	Seven item short questionnaire adapted from the BDDQ making it less time consuming and easier to interpret for the surgeon. Sensitivity 89.6% specificity 81.4%. <sup>18</sup>	Self
Dysmorphic Concern Questionnaire	1	Captures several key aspects of BDD (compulsive behaviours, negative appearance related cognitions and avoidance). <sup>17</sup> Sensitivity 96.4% <sup>17</sup> Specificity 90.6% <sup>17</sup>	Self
Hospital Anxiety and Depression Scale	1	Assesses both anxiety and depression comprising of 7 questions for depression and 7 for anxiety. Anxiety: sensitivity 90% and specificity 78% Depression: sensitivity 83% specificity 79%. <sup>24</sup>	Self
Primary Care Evaluation of Mental disorders (PRIME MD)	1	2-part test designed for use in general practise settings to identify patients with psychiatric illness. Self-reported questionnaire. Sensitivity 83% specificity 88%. <sup>25</sup>	Self
Body image concern inventory	1	Brief self-report measure designed to assess multiple aspects of dysmorphic appearance concern Sensitivity 96% and specificity 67%. <sup>26</sup>	Self

BDD = body dysmorphic disorder; OCD = obsessive compulsive disorder. BDDQ = body dysmorphic disorder questionnaire.

### Screening tools

A total of nine different preoperative mental health screening tools were used in the studies. Tools were self-administered by patients in ten studies followed by an interview with the surgeon or clinician, which was administered in three of the studies. With the body dysmorphic disorder questionnaire (BDD-Q) being the most utilised (n=4) followed by the Yale-Brown Obsessive Compulsive Disorder Scale (n = 2), results are depicted in Table 3. The sensitivity and specificity of the screening tools were reported by three studies and varied from 89.6%–100% for sensitivity and 80.8%–91.9% for specificity.

### Quality assessment and risk of bias

Evaluation using the Newcastle Ottawa Tool and subsequent AHRQ classification revealed that only four of the included studies were classified as ‘Good Quality’, five as ‘fair quality’ and three as ‘poor Quality’. All studies demonstrated a degree of comparability bias. One study had a high degree of selection and comparability bias.<sup>15</sup>

Table 4 outlines the Newcastle-Ottawa score breakdown and AHRQ classification.

Only four of the included articles used a multicentre approach in recruiting participants, the remaining eight stud-



Table 4  
Newcastle-Ottawa scores and Agency for Healthcare Research and Quality classification.

First author, year, and reference	Selection score	Comparability score	Outcome score	AHRQ rating
Hayashi, 2007 <sup>6</sup>	2	0	3	Poor
Alavi, 2011 <sup>11</sup>	3	1	2	Good
Dey, 2015 <sup>15</sup>	1	0	2	Poor
Fatholoolomi, 2013 <sup>14</sup>	2	1	1	Poor
Ghadakhzadeh, 2011 <sup>12</sup>	3	1	2	Good
Golshani, 2015 <sup>16</sup>	2	1	2	Fair
Woolley, 2015 <sup>17</sup>	3	1	1	Fair
Joseph, 2016 <sup>19</sup>	3	1	2	Good
Lekakis, 2016 <sup>18</sup>	2	1	2	Fair
Thomas, 2001 <sup>8</sup>	3	1	2	Good
Picavet, 2011 <sup>13</sup>	2	1	2	Fair
Ramos, 2019 <sup>20</sup>	2	1	2	Fair

ies recruited participants from a single institution only.<sup>8,11,16,30</sup>

Hayashi et al<sup>6</sup> reported a potential investigator bias in diagnosing psychiatric disorders. Previous similar studies had been carried out at the same institution and the psychiatrists were aware of which mental health disorders were more prevalent in this population. Therefore, a likely overestimation of psychiatric diagnosis is made. None of the 12 included studies declared a conflict of interest.

## Discussion

Patients undergoing cosmetic surgery tend to be more commonly affected by psychiatric disorders, which can predispose them to dissatisfaction and worsening of unidentified or pre-existing mental health conditions.<sup>27</sup> The results of our review demonstrate that there is an increased incidence of potential mental health disorders, particularly BDD, in those seeking cosmetic facial surgery in comparison to the general population. The prevalence of potential BDD amongst patients undergoing CFS was greater compared to that of the general population.

### Identifying patients with mental health disorders

Traditionally, a history of mental health diagnoses would often deter surgeons from performing cosmetic surgery.<sup>27,28</sup> Research highlights that cosmetic procedures can improve psychiatric symptoms and lead to improved mental health outcomes in certain patients.<sup>27,28–30</sup> Therefore, surgeons also need to be able to identify patients to whom surgery may provide benefit.<sup>30,31</sup> Interestingly, greater rates of mental health conditions were seen in patients in low-income countries that were undergoing cosmetic facial surgery, which may in part be due to poverty, poor access to healthcare, cultural/religious differences, and greater medical comorbidities in LMIC.<sup>11,12,14,16</sup>

Preoperative psychiatric assessment is recommended as it mitigates subsequent risk for both the patient and the surgeon.<sup>27</sup> Failure to identify mental health disorders preoperatively can be disastrous. For the patient, it can result in higher

rates of post-surgery dissatisfaction, decreased quality of life, and having to undergo an unnecessary procedure. For the surgeon, patients may feel dissatisfied and attempt retaliation in the form of threats or medico-legal cases.<sup>32</sup>

Within our review, an additional 34.1% of patients were identified with potential mental health disorders through the employment of preoperative mental health screening tools. This identifies a cohort of patients that require additional psychological support preoperatively and some of whom may not be suitable for cosmetic surgery or require greater postoperative support.

### Body dysmorphic disorder in cosmetic surgery

Within this narrative review, potential BDD was the most common mental health disorder diagnosed (20.0%) whilst its prevalence in the general population is around 0.7%–2.4%.<sup>33</sup> Prior work suggests that patients with BDD are at risk of being over-operated on and are continually dissatisfied.<sup>11</sup> There is also a reported 24%–28% risk of attempted suicide amongst BDD patients.<sup>34</sup> Hence, BDD is crucial to identify preoperatively, due to high suicidal risk, and patients with BDD require psychological therapy before considering cosmetic surgery as the procedure may not offer any improvement in their perceived body image.<sup>19</sup>

Social media plays a significant role in promoting beauty standards and even cosmetic surgery.<sup>35</sup> This often results in impacts on a person's self-esteem and body image and provides easy access to a cosmetic surgeon. Studies previously showed that a large proportion of female students follow cosmetic surgeons on social media and watching such content can increase body dissatisfaction and makes patients more likely to pursue cosmetic surgery.<sup>35,36</sup> In this era of mass social media consumption the rates of BDD may be rising and therefore screening for such disorders is critical before proceeding with surgery.<sup>37</sup>

### Ease of psychological screening

The psychological assessment aims to evaluate the patient's suitability to undergo the proposed treatment to reduce the

incidence of adverse outcomes and provide psychological support to those who need it.<sup>7,27</sup> Previous reports have suggested that 84% of plastic surgeons have unknowingly operated on patients with BDD and surgeons typically are poor at identifying patients with underlying mental health diagnoses, hence the need for validated screening tools that provide ease in assessment.<sup>32</sup> Each survey used within this review was conducted by the patient or by the surgeon making it part of the standard consultation avoiding additional stigma, with three studies incorporating psychiatric assessment.<sup>6,11,20</sup>

There is currently insufficient evidence to propose a specific screening tool that should be employed by surgeons. However, a screening tool should be accurate, relatively quick to use, identify which patients require further specialist input, and be able to screen for a breadth of mental health diagnoses. It is important to note that the screening tool is not used to provide a concrete diagnosis for a patient, but rather identify those requiring additional support and referral to psychological services prior to proceeding with cosmetic surgery. Future work should aim to validate a mental health screening tool for cosmetic facial surgery and provide a comparison to the currently used screening tools.<sup>32</sup> Studies should also report on surgeon confidence and experience using each of the tools.

### Limitations

The quality of the papers included in this narrative review and the significant heterogeneity between the papers was a major limitation. Studies had focused on different outcomes making the comparison between papers more difficult and the number of participants does not reflect the international cohort of patients that undergo cosmetic facial surgery. Demographic data were inconsistently reported between the papers and therefore it was difficult to compare differences. Moreover, outcomes and next steps following preoperative identification of a mental health diagnosis were not reported in most studies, particularly those going on to have psychological treatment, initiation of medication and those not suitable for cosmetic surgery. Moreover, nine studies did not employ psychiatric assessment and therefore diagnosis was confirmed solely through use of the screening tool. This is likely to have over-estimated the number of mental health diagnoses reported.

### Conclusion

Given the findings of our narrative review, we propose the routine use of mental health screening tools in patients undergoing cosmetic surgery. This will help the surgeon guide whether the surgery is in the patient's best interest by mitigating the risk of the adverse impact of any undetected mental health issue on postoperative outcomes. A multidisciplinary approach with facial cosmetic surgeons working in collaboration with mental health professionals after the detection of any mental health issues as part of routine screening may reduce the number of unnecessary operations and improve

patients' postoperative satisfaction.<sup>27</sup> Further research is required to create a highly sensitive and universally validated single screening tool for routine use in all facial cosmetic surgery consultation.

### Conflict of interest

We have no conflicts of interest.

### Ethics statement/confirmation of patient permission

Not required.

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