Development of a Preoperative Psychological Screening Tool: Piloting the Cosmetic Readiness Questionnaire (Pilot-CRQ)

Toni D. Pikoos, BSc (Hons), PhD;
Ben Buchanan, BA, Post Grad Dip, Dpsych;
David Hegarty, BA, MhlthSc, PhD; and Susan L. Rossell, BSc (Hons), PhD

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Abstract

Background: Patients with psychological risk factors such as body dysmorphic disorder (BDD) and unmanaged mental health concerns are considered at higher risk for dissatisfaction with aesthetic procedures. Identifying these risks before a procedure may decrease the chance of adverse outcomes for patients and practitioners.

Objectives: In this study we aimed to develop a comprehensive psychological screening tool to assess patient's psychological suitability for surgical and nonsurgical aesthetic procedures.

Methods: Items for the Pilot Cosmetic Readiness Questionnaire (CRQ) were developed by psychologists ($n = 3$) and then reviewed by plastic surgeons ($n = 2$) and nonsurgical cosmetic doctors ($n = 3$). Patient interviews ($n = 15$) and piloting of the questionnaire ($n = 69$) provided data regarding the scale's initial psychometric properties.

Results: Results supported the reliability and validity of the Pilot-CRQ's subscales of Body Dysmorphia, Psychological Distress, Self-Criticism, Perfectionism, and Lack of Openness. Lack of Openness was a validity scale that examined the degree that respondents might be underreporting symptoms. The CRQ predicted individuals with a BDD diagnosis, as rated by a blinded expert clinical psychologist, with high sensitivity and specificity.

Conclusions: These results provide support for the Pilot-CRQ identifying people with BDD and psychological factors related to aesthetic treatment outcomes and provide a strong basis for employing the CRQ in clinical contexts and in future research.

Level of Evidence: 2 (Diagnostic)

As both surgical and nonsurgical cosmetic procedures increase in popularity and accessibility, there is growing interest in identifying patients who are most likely to benefit from these procedures, and those who may be dissatisfied.[1] Determining patient suitability for aesthetic treatment extends beyond aesthetic or physical indications to also encompass an individual's motivations and mindset. Mental health concerns are often overrepresented in patients seeking aesthetic procedures and are thought to predict poorer treatment outcomes.[2] In particular, body dysmorphic disorder (BDD) remains the most well-documented risk factor for poor cosmetic treatment outcomes.[3] BDD is a common but underrecognized psychiatric condition in which individuals fixate on perceived flaws in their physical appearance, which may appear slight or nonexistent to others. It can lead to significant distress and impairment, with affected individuals worrying about their appearance between 3 and 8 hours per day on average, and around 80% experiencing suicidal ideation.[4]

In a systematic review of BDD prevalence rates, it was found that 1.9% of the adult population met the diagnostic criteria. In general cosmetic surgery this prevalence was much higher, at 13.2%, and in rhinoplasty patients it was 20.1%.[4] Many people with BDD seek out aesthetic treatments as the solution to a perceived physical problem, and present to cosmetic practitioners or dermatologists long before considering psychological intervention.[5] Unfortunately, cosmetic treatment outcomes are often unsatisfactory, and patients report continuing to fixate on the area they had treated, developing new appearance concerns in their place, or experiencing regret and self-loathing following the procedure.[3] In turn, this can lead to legal or reputational risks for the cosmetic practitioner, with estimates that 29% of people with BDD seeking cosmetic treatment lodge

Dr Pikoos is postdoctoral research fellow, Centre for Mental Health, Swinburne University of Technology, Melbourne, Australia. Dr Buchanan is an adjunct research fellow, Monash University, Melbourne, Australia. Dr Hegarty is an adjunct professional fellow, Southern Cross University, Coffs Harbour, Australia. Professor Rossell is an adjunct research professor, Psychiatry, St Vincent's Hospital, Melbourne, Australia.

Corresponding Author:
Dr Toni Pikoos, Level 1/66 Whitehorse Rd, Deepdene, VIC 3103, Australia.
E-mail: toni@readymind.com.au; Instagram: @thebddtherapist

complaints or take legal action against the practitioner.[6] This growing body of evidence prompted the Medical Board of Australia to introduce guidelines that require screening for BDD in patients seeking aesthetic treatments.[7]

Other unmanaged mental health conditions such as depression and anxiety, personality disorders, eating disorders, and obsessive-compulsive disorder have also been associated with poor outcomes from aesthetic treatments.[2,8] Furthermore, patients who display heightened perfectionism, external motivations, or unrealistic expectations for aesthetic treatment are thought to be at higher risk of dissatisfaction.[2,3,8-13] Therefore multiple psychological factors should be considered when evaluating patient suitability for an aesthetic procedure.

Anxiety and depression are highly prevalent in the population, and individuals experiencing these conditions are also more likely to undergo cosmetic procedures.[14,15] Indeed, patients who had cosmetic surgery displayed greater increases in anxiety over a 6-year period than those who had not undergone surgery.[16] Unmanaged anxiety and depression can complicate recovery from a cosmetic procedure and result in potential "post-surgical blues."[17] A recent study reported that an estimated 13% of people (previously undiagnosed and untreated for depression) undergoing rhinoplasty surgery experienced postoperative major depression within the 2 months following surgery, and females who have had cosmetic breast augmentation are at a 2 to 3 times higher risk of suicide.[18,19] Identifying individuals experiencing anxiety or depression preoperatively may facilitate intervention to help the patient develop coping strategies and realistic expectations for their recovery or receive further psychological support if needed. In turn, this may reduce the risk of postoperative complications. Although a comprehensive mental health assessment may be beneficial before aesthetic procedures, this may be too onerous or burdensome to healthcare systems if implemented for all prospective patients. Brief screening questionnaires that can identify patients most at risk and who may require further assessment and support before an aesthetic procedure are needed.[15] Depression, anxiety, and most other mental disorders are collectively characterized by "psychological distress," therefore psychological distress may be a key target for preoperative screening.

Several screening tools have been validated for use in aesthetic settings, predominantly targeting BDD. These include the Dysmorphic Concern Questionnaire (DCQ), Cosmetic Procedure Screening Questionnaire (COPS), and the Body Dysmorphic Disorder Questionnaire (and its shorter derivatives, the BDDQ–Dermatology Version and BDDQ–Aesthetic Surgery).[20-23] A recent review reported that none of these questionnaires have been universally accepted across the aesthetic field, but the BDDQ-DV and DCQ display the highest sensitivity and specificity for detecting BDD.[24] Most studies included in the review had significant limitations because they had not validated these brief screening questionnaires against gold-standard BDD diagnostic tools. Few studies have included screening questionnaires that extend beyond BDD and capture broader psychological risk factors. One older study reported on utilization of the Primary Care Evaluation of Mental Disorders (PRIME-MD) to screen for multiple mental health concerns, however this questionnaire does not assess for BDD, greatly reducing its utility in an aesthetic context.[25] Some researchers have included separate screening questionnaires for BDD and other mental health concerns, including the Hospital Anxiety and Depression Scale and Hamilton Depression and Anxiety Scale.[15] However, to our knowledge, the process of utilizing multiple psychological screening questionnaires has predominantly occurred for research purposes and is not widely used in clinical practice. A 2011 study incorporated various psychological risk factors into a single screening measure, the PreFACE, including body image, self-esteem, general health, depression, and anxiety.[26] Although this approach has significant merits because it considers a broad array of risk factors, it was developed in a small pilot sample ($n = 84$ patients) and validation in a larger sample was recommended but not undertaken. Further, self-reported measures are often limited by a patient's level of insight, openness, and honesty.[27] When screening questionnaires may affect access to a procedure, patients are less likely to provide open responses. Nevertheless, patient honesty has never been assessed on previous aesthetic screening measures.

An ideal preoperative screening tool should comprehensively assess a range of psychological risks, while remaining brief to have utility in an aesthetic practice.[15] It is challenging to screen for an exhaustive list of mental health concerns that *may* complicate aesthetic treatments, and many aesthetic practitioners may see this as stepping outside of their role and into the domain of psychology or psychiatry. Further, with the implementation of widespread screening as is currently required in Australia, there is a risk that patients may be motivated to underreport mental health concerns or withhold information on preoperative screening to access aesthetic treatments.

To address these needs, we sought to develop and pilot a comprehensive preoperative screening tool that covers the most pertinent psychological risk factors and includes an assessment of the openness and honesty of patient responses. We called this scale the Pilot Cosmetic Readiness Questionnaire (Pilot-CRQ).

METHODS

Ethical approval for the study was obtained at Swinburne University of Technology and complied with the Declaration of Helsinki. We developed the Pilot-CRQ according to the Consensus-based Standards for the Selection of Health Status Measurement Instruments (COSMIN) checklist and best practice guidelines for scale development for health research.[28,29]

Scale Development

Scale development and validation of the Pilot-CRQ was conducted between May 2022 and May 2023. The development of the Pilot-CRQ involved identification of psychological risk factors for poor cosmetic treatment outcomes or patient dissatisfaction through an extensive literature review and a priori identification of conceptual domains, conducted by 2 clinical psychologists with expertise in assessing patient suitability for cosmetic surgery. Given that validated questionnaires of many of the domains identified already existed, we opted to take items from existing scales where possible to develop a composite measure to which a singular scoring system could be applied (ie, deductive item generation). The full list of measures utilized in the construction of the Pilot-CRQ has been provided in Supplemental Table 1, located online at https://doi.org/10.1093/asj/sjae187.

Additional items were generated inductively through qualitative interviews with 15 individuals (4 males, 11 females, ages 21-69 years) who had undergone surgical or nonsurgical cosmetic treatments in the last 12 months. Participants were recruited through social media and snowball sampling. This resulted in the generation of 114 items across 5 conceptual domains (BDD, psychological distress, perfectionism, self-criticism, and lack of openness [socially desirable responding]). These items were then assessed for clarity, content, and face validity by a panel of field experts including psychologists ($n = 3$), plastic surgeons ($n = 2$), and nonsurgical cosmetic doctors ($n = 3$). Clinicians were asked to point out whether items were not

Table 1. Sample Characteristics ($n = 69$)

Variable	M	SD
Age	34.34	10.24
CRQ Body Dysmorphia Scale average score	1.10	0.81
CRQ Perfectionism Scale average score	1.27	0.88
CRQ Self-Criticism Scale average score	1.42	0.64
CRQ Psychological Distress Scale average score	1.01	0.83
CRQ Lack of Openness Scale average score	2.54	0.52
Satisfaction composite score	34.67	11.99
BDD-YBOCS ($n = 15$)	15.27	10.23
Variable	***n***	**%**
Sex (females)	61	88.4
Highest educational attainment		
Secondary school	4	5.8
Trade qualification	1	1.4
Certificate or diploma	11	15.9
Undergraduate degree	35	50.7
Masters, PhD, other postgraduate	16	23.2
Other	2	2.9
Occupational status		
Part-time/full-time study	13	18.8
Part-time/full-time employment	59	85.5
Home/carer duties, retired, or volunteering	2	2.9
Unemployed	5	7.2
Marital status		
Single	27	39.1
Living with partner	18	26.1
Married	15	21.7
Separated	1	1.4
In a relationship, not living together	8	11.6
Sexual orientation		
Heterosexual	52	75.4
Homosexual	8	11.6
Bisexual	6	8.7
Asexual	1	1.4
Other	2	2.8
Cosmetic procedure history		
Cosmetic injectables	55	79.7
Major cosmetic surgery	24	34.8
History of dissatisfaction with cosmetic procedure (yes)	28	40.6
BDD diagnosis (based on BDD-DM and BDD-YBOCS ($n = 15$)	6	40.0
Psychologist's ratings of suitability for cosmetic treatment ($n = 15$)		
Low risk	3	20.0
Moderate risk	7	46.7
High risk	5	33.3

BDD, body dysmorphic disorder; BDD-DM, Body Dysmorphic Disorder Diagnostic Module; BDD-YBOCS, Yale-Brown Obsessive-Compulsive Scale Modified for Body Dysmorphic Disorder; CRQ, Cosmetic Readiness Questionnaire; M, mean; SD, standard deviation.

useful or relevant concepts had been missed from the scale. Problematic items were amended or removed, which led to reduction of the scale to 44 items (see Appendix, located online at https://doi.org/10.1093/asj/sjae187, for full list of items). A 5-point Likert response scale was chosen to maximize reliability.[29]

Pilot Study

A pilot study was then conducted with 75 individuals who had previously had a surgical or nonsurgical cosmetic procedure (recruited through social media advertising by the researchers and their professional networks). Participants completed the CRQ online through Qualtrics (Seattle, WA), as well as additional questionnaires to establish reliability and construct validity. Survey responses were anonymous.

Additional measures in the survey included demographic information such as age, gender, ethnicity, education level, and the number and types of previous cosmetic procedures. Satisfaction with their most recent procedure was assessed through 5 questions rated on a 5-point Likert scale (extremely dissatisfied to extremely satisfied), assessing the visible change in appearance, decision to get the procedure, cost of procedure, information received, and the practitioner who administered procedure. A composite satisfaction score was then generated, ranging from 0 to 25 (Cronbach's $\alpha = .95$) with higher scores indicating greater satisfaction with past treatment. Participants were also asked if they were dissatisfied with any aspect of a past cosmetic procedure (Y/N), and to provide more detail if the answer was yes.

Interviews described above were conducted by a clinical psychologist who administered the Body Dysmorphic Disorder Diagnostic Module (BDD-DM) and the Yale-Brown Obsessive-Compulsive Scale Modified for BDD (BDD-YBOCS), which is considered the gold-standard method to confirm or exclude a BDD diagnosis.[30,31] Participants who endorsed key criteria on the BDD-DM and scored greater than 20 on the BDD-YBOCS were regarded as having a BDD diagnosis.[31] The psychologist also recorded a rating of participants' suitability for aesthetic treatment based on their clinical and qualitative interview while blinded to their Pilot-CRQ results. The psychologist independently classified patients as low risk (no risk factors

identified), moderate risk (some risk factors identified that may need to be addressed before aesthetic treatment), and high risk (clear risks identified that may increase likelihood of patient dissatisfaction). These data were also included to establish criterion validity of the CRQ.

RESULTS

Sample Characteristics

Five participants were excluded from analysis due to more than 10% missing data. Mean imputation was used for 2 participants with less than 10% missing data, resulting in a final sample size of 69 participants (8 males, 61 females), ages between 20 and 69 years (mean = 34.34 years, SD = 10.24 years). Sample characteristics are presented in Table 1. Pilot-CRQ average scores represented the typical response on the 5-point Likert scale (from 0 to 4).

Reliability

Internal consistency scores for the Pilot-CRQ subscales were as follows ($n = 69$): Body Dysmorphia (12 items, $\alpha = .92$), Psychological Distress (10 items, $\alpha = .92$), Self-Criticism (13 items, $\alpha = .77$), Perfectionism (4 items, $\alpha = .74$), and Lack of Openness (5 items, $\alpha = .46$). Internal consistency of the CRQ total score (44 items) was excellent, with $\alpha = .91$.

Convergent Validity

Convergent validity was assessed by exploring interrelations between the subscales of the Pilot-CRQ and satisfaction and dissatisfaction with previous cosmetic treatment. These correlations are displayed in Table 2.

Significant positive correlations of moderate to high strength were observed between the Body Dysmorphia, Perfectionism, and Psychological Distress Pilot-CRQ scales. The Self-Criticism scale was positively correlated with Body Dysmorphia and Psychological Distress, but not with Perfectionism. Significant negative correlations were observed between the Lack of Openness scale and Body Dysmorphia, Self-Criticism, and Psychological Distress, but not Perfectionism.

Only the Lack of Openness scale correlated significantly with satisfaction with previous cosmetic treatments, with individuals who were less open in their Pilot-CRQ responses reporting lower satisfaction with past procedures. None of the scales were significantly correlated with our binary measure of dissatisfaction.

Criterion Validity

Criterion validity could be assessed concurrently in participants who completed a clinical interview ($n = 15$) that included the gold-standard BDD-YBOCS and a blinded psychologist rating of psychological suitability for cosmetic treatment (rated as low, moderate, or high risk of dissatisfaction).

As seen in Table 2, the Pilot-CRQ total score, Body Dysmorphia, and Self-Criticism scales were strongly, positively correlated with BDD-YBOCS scores. As the Pilot-CRQ total score, Body Dysmorphia, and Psychological Distress scores increased, participants were also more likely to be rated by the blinded expert psychologist as high risk for dissatisfaction with cosmetic treatment. Self-Criticism, Perfectionism, and Lack of Openness scales were not significantly correlated with psychologist ratings.

For the Pilot-CRQ's Body Dysmorphia Scale, BDD diagnosis (based on BDD-DM and BDD-YBOCS) was an outcome variable for ROC curve analysis to determine which scores could best predict a positive BDD diagnosis. Area-under-curve scores were 0.87, indicating that the Pilot-CRQ Body Dysmorphia Scale was an excellent predictor of BDD diagnosis.[6] A raw score above 24 (average score = 2) on the Pilot-CRQ Body Dysmorphia Scale was found to best predict a BDD diagnosis, with 83% sensitivity and 89% specificity.

DISCUSSION

This study describes the background, development, and piloting of a preoperative screening tool for identifying psychological risk factors for patient dissatisfaction before surgical or nonsurgical aesthetic procedures. We call this early iteration of the scale the Pilot Cosmetic Readiness Questionnaire (Pilot-CRQ).

In the piloting stage, the Pilot-CRQ was a 44-item scale that measured 4 core factors that were considered risks for poor cosmetic treatment outcomes: body dysmorphia, psychological distress, self-criticism, and perfectionism. In addition, the Pilot-CRQ is the only existing screening tool that includes a measure of patient honesty, the Lack of Openness Scale.

Testing of the Pilot-CRQ revealed good to excellent reliability of individual subscales and the Pilot-CRQ total score. Despite the low internal consistency of the Lack of Openness Scale, we opted to retain all items for future testing to honor the original parent scale (SDRS-5; Supplemental Table 1, located online at https://doi.org/10.1093/asj/sjae187).[32] In later stages of CRQ development we expected internal consistency estimates to change when assessed in a clinical (rather than research) context. We anticipated that participants in clinical contexts might be more motivated to engage in socially desirable responding to access cosmetic treatment than the research sample examined here.

The study established strong construct validity for the Pilot-CRQ. The correlations between Pilot-CRQ subscales were as expected, given the comorbidity between BDD, low self-esteem, and psychological distress.[33] Similarly, socially desirable responding is often associated with lower scores on mental health measures.[27] Therefore the negative correlations between the Lack of Openness and mental health scales were also expected, and may indicate poor insight, a degree of self-deceptive denial among respondents, or socially desirable responding. The absence of a relationship between Lack of Openness and Perfectionism can be explained by the lack of a clear socially desirable response, given that some respondents may view perfectionism as a positive quality, while others may be aware of the potential risks of perfectionism when seeking aesthetic treatment.[8,34]

Our initial testing of the Lack of Openness scale in this research context validates further testing within a clinical setting. If the CRQ is administered preoperatively, the pattern of responding on the CRQ in general, and the Lack of Openness scale in particular, may materially change due to biased responding from the patient seeking to present a more favorable version of themselves. Further research in clinical settings to understand these biased responses is critical.

Criterion validity was established for the Pilot-CRQ Body Dysmorphia Scale, because it correlated strongly with the gold-standard BDD-YBOCS scores and was an excellent predictor of a BDD diagnosis. Furthermore, the Pilot-CRQ total score was strongly correlated with blinded expert clinical psychologist ratings of suitability for aesthetic treatment, indicating that the CRQ can detect individuals who would be flagged as higher risk if they were to undergo a more comprehensive clinical interview with a trained mental health

Table 2. Pearson's Correlations to Examine Construct Validity of the Pilot Cosmetic Readiness Questionnaire (Pilot-CRQ; $n = 69$)

Item	1	2	3	4	5	6	7	8	9	10
1. Body Dysmorphia	___									
2. Perfectionism	.49[b]	___								
3. Self-Criticism	.44[b]	−.07	___							
4. Psychological Distress	.76[b]	.62[b]	.46[b]	___						
5. Lack of Openness	−.31[a]	.04	−.57[b]	−.31[a]	___					
6. Pilot-CRQ total score	.90[b]	.58[b]	.65[b]	.91[b]	−.32[a]	___				
7. Satisfaction composite score	−.16	−.09	.12	−.07	−.29[a]	−.12	___			
8. Dissatisfaction	−.20	−.07	−.00	−.04	−.05	−.13	.36[a]	___		
9. BDD-YBOCS[c]	.63[a]	.22	.82[b]	.40	−.35	.63	−.24	−.23	___	
10. Psychologist rating[c]	.59[b]	.27	.33	.49[a]	−.25	.53[a]	−.13	−.28	.79[b]	___

Numbers 1 to 5 are Pilot-CRQ subscales. [a]significant at Bonferroni corrected $P < .005$ level. [b]significant at $P < .001$ level. BDD-YBOCS, Yale-Brown Obsessive-Compulsive Scale Modified for Body Dysmorphic Disorder. [c]Participants who completed interviews ($n = 15$).

professional. The current study established sufficient validity and reliability to begin field testing of the Pilot-CRQ.

This pilot study had several limitations, reinforcing the need for subsequent research. First, the participants were disproportionately female (88%) and responded to our questionnaire in a research context rather than a clinical context. Given that the intention is to create a tool for screening patients before they undergo a cosmetic procedure, we would expect different patterns of responding to emerge if it is administered clinically. Second, the Pilot-CRQ did not include all factors known to impact satisfaction with cosmetic outcomes. For example, expectations of procedural outcomes were not assessed, and the Pilot-CRQ results did not correlate with dissatisfaction with past cosmetic procedures.[10] Both these shortcomings will be addressed in subsequent studies.[35]

Because self-report measures are more efficient and easier to implement on a broad scale than an in-depth psychological assessment, these findings support the potential of future iterations of the CRQ to identify patients at risk for negative psychological outcomes with aesthetic treatment. Patients who are considered higher risk on the questionnaire may be directed to more thorough consultation with a mental health professional. This approach, recommended by many previous researchers and starting to be required by national medical licensing bodies, ensures that individuals who display psychosocial risks are directed to appropriate support pathways.[7,15,24] In turn, this may reduce the likelihood of adverse outcomes for patients and legal and reputational risks for aesthetic practitioners.

CONCLUSIONS

The Pilot-CRQ is a novel psychological screening tool that can predict BDD diagnosis with high sensitivity and specificity, but also extends beyond BDD and incorporates other psychological risk factors such as low self-esteem, perfectionism, and psychological distress. It is the first aesthetic screening questionnaire to incorporate a measure of patient honesty. This development study represents a firm basis for further research and validation of the Pilot-CRQ in cosmetic and research contexts. The version of the CRQ reported in this paper is an initial version, with a subsequent version of the CRQ designed for widespread clinical use further developed and reported on in a separate paper in this journal.

Supplemental Material

This article contains supplemental material located online at https://doi.org/10.1093/asj/sjae187.

Disclosures

Drs Pikoos and Buchanan are cofounders of ReadyMind (Melbourne, Victoria, Australia), a software platform for aesthetic practitioners, and receive revenue from subscriptions. Dr Pikoos has provided consulting services to the cosmetic pharmaceutical industry (Merz Aesthetics, Raleigh, NC, and Allergan Aesthetics, Irvine, CA) and was on an advisory board convened by the Australian Medical Board related to preoperative screening. Dr Pikoos has also received honoraria for presentations for Merz Aesthetics, Allergan Aesthetics, Eli Lilly Pty Ltd (Indianapolis, IN), Venus Concept (Toronto, ON, Canada), and Fresh Clinics (Sydney, NSW, Australia). All other authors do not have any interests to declare in relation to this manuscript.

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