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A Critical Review of Cosmetic Treatment Outcomes in Body Dysmorphic Disorder

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Abstract

A high proportion of individuals with body dysmorphic disorder (BDD) undergo cosmetic treatments in an attempt to 'fix' perceived defect/s in their physical appearance. Despite the frequency with which such procedures are sought, few studies have prospectively examined the outcomes of cosmetic procedures in individuals with BDD. This article aims to critically review the literature and discuss the current debate that exists on outcomes of cosmetic treatment for individuals with BDD. An emerging literature suggests the majority of individuals with BDD have poor outcomes after cosmetic interventions; however, based on the current literature, it cannot be fully ruled out that certain individuals with mild BDD and localised appearance concerns may benefit from these interventions. Gaps in the current literature are highlighted, alongside recommendations for future research. Carefully conducted longitudinal studies with well-characterized patient populations are needed.

Keywords: Body Dysmorphic Disorder, Dysmorphophobia, Cosmetic surgery, Aesthetic surgery, Dermatologic treatments

Introduction

1 Body dysmorphic disorder (BDD) is a disabling mental health disorder characterised
2 by a distressing and/or impairing preoccupation with a *perceived* defect in physical
3 appearance. This is typically accompanied by time-consuming repetitive behaviours such as
4 mirror checking or camouflaging the perceived defect(s) (American Psychiatric Association,
5 2013). Epidemiological studies indicate that BDD affects between 0.7% to 2.4% of
6 individuals in the general population (Buhlmann et al., 2010; Faravelli et al., 1997; Koran,
7 Abujaode, Large, & Serpe, 2008; Otto, Wilhelm, Cohen, & Harlow, 2001; Rief, Buhlmann,
8 Borkenhagen, & Braehler, 2006). BDD is associated with substantial psychiatric comorbidity
9 (Pavan et al., 2008), poor quality of life (Didie et al., 2007) and high rates of suicidality
10 (Phillips, Menard, Fay, & Weisberg, 2005).

11 A high proportion of patients with BDD, around 76%, undergo cosmetic treatments,
12 both surgical and minimally invasive treatments, in an attempt to 'fix' perceived defect/s in
13 physical appearance (Crerand, Menard, & Phillips, 2010; Crerand, Phillips, Menard, & Fay,
14 2005; Metcalfe et al., 2014; Phillips, Grant, Siniscalchi, & Albertini, 2001). Surgical
15 treatments include operations such as rhinoplasty, breast augmentation, labiaplasty,
16 implants and rhytidectomy. Minimally invasive treatments include dermatological procedures
17 (e.g., chemical peels), dentistry work, electrolysis, collagen injections and mole removal. The
18 prevalence rate of BDD across surgical and minimally invasive treatment settings is believed
19 to be between 5% and 20% (Alavi, Kalafi, Dehbozorgi, & Javadpour, 2011; Crerand,
20 Franklin, & Sarwer, 2006; Metcalfe et al., 2014; Pavan et al., 2006; Phillips, Dufresne,
21 Wilkel, & Vittorio, 2000; Sarwer, Whitaker, Pertschuk, & Wadden, 1998; Veale, De Haro, &
22 Lambrou, 2003; Vulink et al., 2006). For instance, up to 25% of individuals seeking
23 rhinoplasty have been found to meet DSM-IV criteria for BDD (Alavi et al., 2011;
24 Ghadakzadeh, Ghazipour, Khajeddin, Karimian, & Borhani, 2011; Veale et al., 2003; Vulink
25 et al., 2008). Similarly high rates have been found in cosmetic, dermatological, and

26 orthodontic clinics, where 5%, 12%, and 10% of individuals endorse BDD symptomatology
27 respectively (Phillips et al., 2000).

28 BDD is a disorder of childhood with over 70% of cases reporting an onset prior to 18
29 years of age (Bjornsson et al., 2013; Phillips & Diaz, 1997). Initial research suggests up to
30 47% of young patients with BDD desire cosmetic treatment with around 33% receiving such
31 interventions (Crerand et al., 2005; Mataix-Cols et al., 2015; Phillips et al., 2001). The
32 psychological, legal and ethical considerations of performing cosmetic treatments on young
33 people have previously been detailed (e.g., Crerand & Magee, 2013). The literature on
34 cosmetic treatment for adults with BDD is limited, but the paucity of research is even more
35 pronounced in relation to young people under 18.

36 **Outcomes of Cosmetic Treatments**

37 Despite the frequency with which individuals with BDD seek cosmetic treatments, few
38 studies have examined the outcomes associated with such treatments in BDD. The overall
39 message to practitioners to date has been that cosmetic interventions for individuals with
40 BDD are detrimental (e.g., Crerand et al., 2006; Wilhelm, Phillips, & Steketee, 2013).
41 Recently, however, increasing numbers of studies have provided preliminary evidence for
42 positive outcomes in terms of satisfaction with procedure and reduction of BDD symptoms
43 (Felix et al., 2014; Veale et al., 2014a). These findings have re-energised the debate as to
44 whether the presence of BDD should be a contra-indication for cosmetic treatments (de Brito
45 et al., 2015; de Brito, Nahas, & Ferreira, 2012; Felix et al., 2014; Morselli & Boriani, 2012).
46 One side of the debate argues that cosmetic treatments are unlikely to address the
47 underlying core symptomatology of BDD (e.g., Crerand et al., 2005, 2010; Phillips et al.,
48 2001), the other side claims that a selected group of individuals with BDD (e.g., individuals
49 with mild to moderate BDD and with a single concern with realistic psychosocial
50 expectations) might respond well to certain cosmetic treatments (e.g., Felix et al., 2014;
51 Veale et al., 2003). Currently, mental health professionals are making recommendations

52 against cosmetic treatments for BDD but the evidence supporting these recommendations
53 needs to be clear.

54 **Aim of Current Review**

55 The aim of the present article is to provide an up-to-date critical review of the literature
56 on the outcomes of cosmetic treatments for individuals with BDD. Specifically, we aim to
57 present and critique the breadth of outcomes that form the current debate and consider the
58 clinical implications. Gaps in the current literature identified and future directions for research
59 discussed.

60

61

Method

62 A literature search was conducted using EMBASE, Psychinfo, and MEDLINE. The
63 inclusion criterion for this review were English-language articles on quantitative outcomes of
64 cosmetic treatment for individuals diagnosed with or reasonably suspected to have BDD,
65 with no other restriction. These were identified using the search terms “body dysmorphic
66 disorder,” OR “dysmorphophobia,” OR “imagined ugliness,” OR “polysurgical addicts,” OR
67 “insatiable patient,” AND “plastic surgery,” OR “cosmetic surgery,” OR “aesthetic treatment,”
68 OR “aesthetic surgery,” OR “cosmetic treatment”. Reviews and studies assessing the
69 prevalence of BDD, screening instruments, and/or other aspects not related to outcomes
70 were excluded. As summarised in Table 1, a total of 11 peer-reviewed articles on pre- or
71 post-cosmetic treatment outcomes for individuals with BDD or reasonably suspected BDD
72 were identified. Two of these articles included a minority of young people.

73

74

Results

75 **Negative Outcomes following Cosmetic Treatment in BDD**

76 To date, the vast majority of studies suggest that cosmetic treatments for individuals
77 with BDD are associated with poor outcomes (Crerand et al., 2005, 2010; Phillips & Diaz,

78 1997; Phillips et al., 2001; Picavet et al., 2013; Veale, 2000). Phillips and Diaz (1997) and
79 Veale (2000) were among the first authors to systematically examine psychological
80 outcomes for individuals with BDD who had received cosmetic treatments.

81 Using a semi-structured interview of treatment history and the Clinical Global
82 Impression Scale (CGI; Guy, 1976) to assess outcome of cosmetic interventions, Phillips
83 and Diaz (1997) asked 188 adults with BDD seeking psychological treatment about past
84 cosmetic treatments (both surgical and minimally invasive interventions). The majority of
85 patients (78% of women and 61% of men) reported their BDD symptoms to be unchanged or
86 worsened following such procedures.

87 Veale (2000) asked 25 patients with BDD who had received cosmetic treatment to
88 rate their satisfaction and any changes in preoccupation, distress and functional impairment
89 since the procedure. Self-report ratings using Likert scales, were consistently poor for the
90 majority of respondents. For example, 31 out of total of 46 procedures (surgical and
91 minimally invasive) resulted in satisfaction ratings of between 0-2.9 on an 11-point scale.
92 The average rating for changes in preoccupation and handicap were 4.4 and 4.1
93 respectively on a 7-point scale. However, outcomes varied according to the cosmetic
94 procedure, with worse outcomes found for rhinoplasty and those receiving repeated
95 operations. This finding raises the interesting question of whether certain cosmetic
96 procedures are associated with better or worse outcomes for BDD. In line with this
97 hypothesis, Crerand et al. (2010) found a trend for a more positive response to surgical
98 interventions compared to minimally invasive interventions (e.g., chemical peels) in terms of
99 preoccupation with the treated body part, but not for overall BDD symptomatology.

100 Among the most widely-cited studies in this area are three large retrospective studies
101 of between 200-289 patients with BDD, all of whom were seeking or receiving psychiatric
102 care (Crerand et al., 2005, 2010; Phillips et al., 2001). These studies are the largest to date
103 and two are the only studies currently that include outcomes for young people with BDD

104 (Crerand et al., 2005; Phillips et al., 2001). BDD diagnosis and severity were assessed using
105 the Structured Clinical Interview for DSM-BDD Module (SCID-BDD; Phillips et al., 1995) the
106 Yale-Brown Obsessive Compulsive Scale modified for BDD (YBOCS-BDD; Phillips et al.,
107 1997). Data on cosmetic treatments were obtained retrospectively using a semi-structured
108 interview of treatment history, whilst treatment outcomes were assessed using the CGI.
109 Specifically, patients were asked to rate the impact that the cosmetic intervention had on
110 overall BDD symptoms and on the treated body part, on a scale from one (very much
111 improved) to seven (very much worse). Consistently across these studies, CGI scores
112 indicated that both surgical and minimally invasive cosmetic treatments, rarely resulted in
113 improvements for adults or young people alike. For adults, in 72-91% of cases, the
114 procedures led to no perceived change of BDD symptoms, and in 5.4-16.3% of cases, BDD
115 symptoms deteriorated (Crerand et al., 2005; Phillips et al., 2001). In the later study by
116 Crerand et al. (2010), 97.7% of adults receiving either surgical or minimally invasive
117 procedures reported that there was no perceived change or a deterioration in BDD
118 symptoms. Most individuals reported developing new appearance concerns, continuing to
119 worry about the treated area (82.3%) and/or worrying that an improved body part would
120 become ugly again (73.3%) (Crerand et al., 2005; Phillips et al., 2001). For young people,
121 none of the cosmetic treatments received resulted in a reduction of the concern of the body
122 part or the overall BDD symptom severity (Phillips et al., 2001). Treatments included
123 minimally invasive procedures such as dermatology interventions and dentistry work as well
124 as one instance of cosmetic surgery (procedure not specified).

125 To date, there are just three prospective studies on cosmetic treatment outcomes for
126 individuals with BDD that add weight to the findings that individuals with BDD do not tend to
127 benefit from such procedures. In 2007, Tignol and colleagues compared outcomes of
128 surgical procedures for a group of individuals with BDD ($N = 10$) and a group without ('non-
129 BDD'; $N = 14$) in the first prospective study of this kind. The SCID-BDD (Phillips et al., 1995),

130 Mini International Neuropsychiatric Inventory (Sheehan, Harnett-Sheehan, & Raj, 1996), and
131 the Sheehan Disability Scale (SDS) (Sheehan et al., 1996) were utilised to examine the
132 impact of surgery on diagnosis, comorbidities, and BDD-related disability. There were no
133 significant differences in satisfaction ratings between the two groups 5 years post-
134 operatively, with overall high satisfaction being reported (a rating of 4/5 for the BDD group
135 and 4.4/5 for the non-BDD group, where 5 equalled 'highly improved'). However, six out of
136 the seven individuals with BDD who underwent surgery continued to meet DSM-IV criteria
137 for the disorder following this. Relative to the group without BDD, individuals with BDD also
138 endorsed significantly higher scores on the SDS following surgery, indicative of considerable
139 BDD-related disability in spite of the intervention.

140 In a second prospective study, Picavet et al. (2013) examined post-surgical
141 outcomes for 166 individuals attending an Ear, Nose and Throat Clinic using the YBOCS-
142 BDD (Phillips et al., 1997), the SDS (Sheehan et al., 1996), and a one-item satisfaction
143 questionnaire among other measures. Irrespective of any diagnosis, the authors note that
144 scores on the YBOCS-BDD before surgery were inversely correlated with satisfaction and
145 quality of life post-surgery, and positively correlated with appearance-related distress and
146 impairment. By extrapolating the results to the BDD population, the authors suggest that the
147 greater the severity of BDD symptoms initially, the poorer the outcomes of surgical
148 procedures may be.

149 Finally, among a sample of 728 individuals attending an oculofacial surgery clinic,
150 Woolley and Perry (2015) found that those who scored above the cut-off for BDD on the
151 Dysmorphic Concern Questionnaire (Oosthuizen, Lambert, & Castle, 1998) were more likely
152 to endorse negative complications following their surgery. Indeed, these individuals
153 experienced higher post-operative pain levels, greater complications, and higher re-
154 operation rates compared to those scoring below the cut-off.

155 Taken together, these studies suggest that cosmetic treatments for those with BDD
156 are generally associated with low levels of patient-reported satisfaction and overall poor
157 outcomes (Crerand et al., 2005, 2010; Phillips & Diaz, 1997; Phillips et al., 2001; Picavet et
158 al., 2013; Veale, 2000). The only prospective study using a standardised diagnostic
159 instrument suggested that such procedures do not impact on BDD diagnosis (Tignol,
160 Biraben-Gotzamanis, Martin-Geuhl, Grabot, & Aouizerate, 2007). However, results should
161 be interpreted in light of a number of methodological shortcomings, most notably the largely
162 retrospective nature of these studies as well as the sub-optimal diagnostic and assessment
163 methods.

164 The majority of these studies recruited individuals from psychiatric settings. Patients
165 attending such clinics following cosmetic treatments may be more likely to have experienced
166 ‘surgery failures’ and may have more severe presentations of BDD. Thus, there may be a
167 recruitment bias in favour of cosmetic treatment failures in these studies (Crerand et al.,
168 2005; Phillips et al., 2001). Furthermore, surgical outcomes have been frequently assessed
169 using single-item, self-reported scales of improvement in symptoms/appearance or
170 satisfaction with the surgery (e.g., Crerand et al., 2005, 2010; Phillips & Diaz, 1997; Phillips
171 et al., 2001; Veale, 2000). This method of assessment is dependent on the individual’s
172 perception of improvement, as opposed to being based on an objective measurement. It is
173 also subject to the individual’s recall and insight into their condition. Finally, without control
174 comparison groups we cannot know how cosmetic treatment outcomes for BDD may differ
175 from those for patients with other psychiatric disorders where such treatment is generally not
176 discouraged. This is important to address given claims that pre-existing psychopathology or
177 psychological problems predict outcomes in this area (Crerand, Infield, & Sarwer, 2007; von
178 Soest, Kvaalem, Skolleborg, & Roald, 2011; von Soest, Kvaalem, & Wichstrøm, 2012).

179 **Positive Outcomes following Cosmetic Treatment in BDD**

180 Recently, a small number of studies have provided data suggesting that surgery
181 may be helpful for a selected group of individuals with BDD (e.g., individuals with mild to
182 moderate BDD or those receiving specific types of surgical interventions) (Felix et al., 2014;
183 Veale et al., 2003, 2014a).

184 In the first study, Veale et al. (2003) identified 6 out of 29 individuals undergoing
185 rhinoplasty as having “possible BDD” pre-surgery using the Body Dysmorphic Disorder
186 Questionnaire (BDDQ; Phillips, Atala, & Pope, 1995). The BDDQ is a screening
187 questionnaire involving four questions. Individuals were considered to have “possible BDD” if
188 they answered ‘yes’ to both parts of question one, at least one option in question three and
189 either of the last two options of question four. They all answered ‘no’ to question two
190 regarding whether their main concern with appearance was that they might become too fat.
191 Of these six individuals, one individual with BDD was lost to follow-up. Of the remaining five,
192 three were classified as having “possible BDD” at 3 months post-surgery and none with
193 “possible BDD” at 9 months post-surgery. Furthermore, the BDD and non-BDD groups were
194 found to be equally satisfied with the outcome of rhinoplasty, as assessed using a one-item
195 questionnaire on satisfaction.

196 A similar pattern of findings was reported in a recent, larger study (Felix et al., 2014)
197 in which 116 women seeking rhinoplasty were screened for BDD pre- and post- operatively,
198 using the Body Dysmorphic Disorder Examination (BDDE; Rosen & Reiter, 1996). In total,
199 31 women were classified as having mild-to-moderate BDD pre-surgery. Post-surgery and at
200 1 year follow-up, this patient group reported satisfaction with the procedure (the authors
201 however do not state how satisfaction was assessed in their study). The authors concluded
202 that “individuals with mild to moderate BDD may benefit from rhinoplasty”. There are
203 however, some serious methodological limitations with this study which are discussed
204 below.

205 The third and final study suggesting positive outcomes for cosmetic surgery in BDD
206 examined psychosexual outcomes following labiaplasty (Veale et al., 2014a). Individuals
207 who scored above cut-off on the Cosmetic Procedure Screening for Labiaplasty (COPS-L;
208 Veale et al., 2013) were then assessed for BDD using the SCID-BDD (Phillips et al., 1995).
209 Nine out of 49 women seeking labiaplasty met diagnostic criteria for BDD pre-surgery. Eight
210 were followed-up 3 months post-surgery, seven of whom achieved remission from BDD
211 according to the SCID-BDD module. These individuals also reported satisfaction with the
212 procedure in response to a 'yes/no' question. The authors suggest BDD may not be
213 contraindicated for labiaplasty, at least in the short term.

214 The interpretation of these positive findings must be considered within the context of
215 a number of important methodological limitations. A major uncertainty emerging from the
216 investigations cited above is whether the diagnosis of BDD could be confidently established.
217 In particular, considerable methodological limitations related to diagnostic procedures limit
218 the validity of findings by Felix et al. (2014). In their study, approximately half of the 'BDD
219 group' (17/31) were considered to have a moderate to marked nasal deformity, an exclusion
220 criteria for BDD. Also, whilst high remission rates were reported, it was unclear how
221 remission was defined as all subjects spent at least one hour per day worrying about their
222 defect at follow-up. This would be in line with a BDD diagnosis. Furthermore, the sample
223 consisted of female participants only and it excluded individuals with severe BDD symptoms
224 and those with overt avoidance behaviours, yet again challenging the diagnostic status and
225 the representativeness of their BDD sample. This paper and its findings have been disputed
226 within the field (e.g., Crerand & Phillips, 2014).

227 The above studies have also not indicated whether individuals were receiving other
228 (possibly psychiatric) treatment concomitant with surgery, and therefore it is not possible to
229 determine to what extent improvements in BDD were a direct consequence of cosmetic
230 interventions (Veale et al., 2003, 2014a). Finally, satisfaction ratings were typically obtained

231 using single-item questionnaires (e.g., Felix et al., 2014). Crerand et al. (2010) proposed that
232 positive satisfaction ratings post cosmetic treatments are often time-limited, perhaps due to
233 BDD being a chronic rather than episodic disorder. Surgery may help with one appearance
234 concern but the person may develop new concerns with other features. This potentially
235 provides an explanation for positive satisfaction ratings reported directly after an
236 intervention.

237 In light of these limitations, the evidence that some patients with BDD may achieve a
238 reduction or remission of their symptoms following surgical treatment is preliminary and far
239 from conclusive.

240 **Adverse Events following Cosmetic Treatment in BDD**

241 There are a number of reports of relatively extreme adverse events following
242 cosmetic treatments in individuals with BDD or suspected BDD. A handful of clinical reports,
243 case series, and single case studies (including media reports) highlight violence and
244 aggression perpetuated by patients with suspected BDD towards professionals, with at least
245 four documented cases of surgeons murdered by individuals whose symptoms were
246 consistent with a BDD diagnosis (Cotterill, 1996; Goin & Goin, 1986; Gorney, 2006; Ladee,
247 1966; Leonardo, 2001; Lucas, 2002; McConnell, Lee, Black, & Shriver, 2015; Phillips,
248 McElroy, & Lion, 1992; Phillips et al., 2001; Sarwer, 2002; Wright, 1987; Yazel, 1999). More
249 recently, a case has been documented of a surgeon with suspected BDD who performed
250 surgery on himself (Rafin, Pimstone, & Rapaport, 2011) and McConnell et al. (2015)
251 describe how someone with suspected BDD committed suicide some years after being
252 refused further surgical treatment.

253 It has been reported that occasionally patients with BDD will undergo several
254 surgeries, with potentially irreversible outcomes (Veale, 2000). Others, in a desperate
255 attempt to fix their perceived deformity or to ensure that they receive surgery, subject
256 themselves to 'self-surgery', the consequences of which can be life-threatening (Phillips,

257 2005; Veale, 2000). Veale (2000) found that 9 out of 25 (36%) individuals with BDD
258 attending a BDD clinic had performed “DIY surgery”, for example, stapling facial skin in an
259 attempt to make it more taut.

260 There have been documented cases of patients with BDD who have become suicidal
261 following surgery (e.g., Phillips et al., 2001). However, the same large retrospective study
262 found no overall difference in suicidal ideation or attempts between receivers and non-
263 receivers of cosmetic treatment. From a clinical perspective, having a cosmetic procedure
264 may give hope to an individual with BDD and when this is not fulfilled, they may become
265 more vulnerable and at risk of suicide. Of note, although these reports are widely cited in the
266 field, most are post-hoc reports without assessment of BDD and as such, it cannot be
267 determined whether these adverse outcomes were as a result of BDD, the cosmetic
268 procedure, or other factors that were not assessed.

269 Taken together, reports on extreme adverse outcomes highlight potentially life-
270 threatening complications for individuals with BDD undergoing cosmetic treatments and for
271 professionals operating on them. Of note, however, the above outcomes are largely derived
272 from case descriptions or studies where the diagnosis of individuals was not systematically
273 assessed, limiting the conclusions that can be drawn. It is also possible that some of these
274 outcomes (e.g., suicidality following surgery) reflect the nature and course of the disorder
275 rather than being a direct consequence of cosmetic treatment. Nevertheless, the above
276 reports highlight the need to be aware of self-surgery and the potentially negative outcomes
277 (e.g., aggression, legal disputes, suicidality) that may occur when delivering cosmetic
278 treatments to both adults and young people with BDD.

279

280

Discussion

281

282

In light of the recent debate, this review aimed to summarise the literature on
outcomes for cosmetic treatment for individuals with BDD. A total of 11 studies (six

283 retrospective and five prospective studies) were reviewed, with variations in findings. On the
284 whole, in spite of the paucity of research and the methodological limitations, the weight of
285 the evidence thus far leans toward the conclusion that cosmetic treatment may be an
286 ineffective intervention for the majority of individuals with BDD. This evidence is, however,
287 largely based on retrospective studies looking at adult individuals' recall of perceived
288 outcomes, with the majority of individuals being recruited from psychiatric settings (Crerand
289 et al., 2005, 2010; Phillips et al., 2001; Veale, 2000).

290 Given the potential bias for surgery failures and more severe presentations of BDD in
291 psychiatric settings, large prospective outcome studies are warranted, in which individuals
292 with BDD from the general population (i.e., not in psychiatric care), including young people,
293 are identified pre-cosmetic treatment and followed-up. Investigation of this kind would benefit
294 from the use of standard diagnostic tools / instruments for the proper identification of BDD in
295 individuals which would enable conclusions to be directly applicable to those with BDD.
296 Future prospective studies should also aim to incorporate follow-up data to enable us to
297 establish the stability of any changes to BDD severity/diagnosis following cosmetic
298 treatments. Finally, previous investigations have largely assessed outcomes using single-
299 item self-report questionnaires on improvement or satisfaction, limiting our understanding of
300 the impact of cosmetic treatment for BDD in all its facets. A broader range of outcome
301 measures (e.g., measures of mood, suicidality quality of life) should be included in future
302 studies.

303 A few studies have implicated BDD severity, specific surgical interventions and
304 location / area of concern as important factors influencing outcomes (Felix et al., 2014;
305 Veale, 2000; Veale et al., 2003, 2014a). Future research should seek to replicate these
306 findings and establish other demographic and clinical characteristics that may moderate
307 outcome following cosmetic interventions in BDD. Candidate moderators include
308 expectations of the patient, number of areas of concern, extent of preoccupation, and

309 psychiatric co-morbidity (Gorney, 2010). Given the difficulties with accurate diagnosis of
310 BDD, relying solely on the BDD diagnosis may be too crude a predictor of poor outcome.
311 The threshold for determining a 'perceived or slight defect', which is part of the current
312 definition of BDD, has been raised as a potential pitfall in cosmetic settings. Specifically
313 Picavet et al. (2013) suggest that judgement of a 'slight defect' by practitioners in such
314 settings may end up excluding individuals from a BDD diagnosis with otherwise clear BDD
315 symptomology.

316 **Considerations of Future Research**

317 Whilst there is a clear need for further, methodologically rigorous research on
318 cosmetic procedures in BDD, research in this field raises a number of ethical dilemmas. In
319 particular, one can question whether it is ethical to undertake a cosmetic procedure on an
320 individual with BDD given the potential for a negative outcome. Despite their limitations,
321 there are some studies we have cited here that point to the possibility of carrying out
322 prospective work in this area (e.g., Tignol et al., 2007). The available literature also points to
323 the fact that surgery is not the most frequently sought intervention although all of the
324 prospective studies here were undertaken in a surgical setting. There may be more scope to
325 conduct research within other cosmetic settings where minimally invasive treatments are
326 completed. In either setting, research in this field would require careful risk management
327 procedures.

328 Finally, within Europe, there is an emphasis on patient involvement in research (e.g.,
329 Trivedi & Wykes, 2002). Patients with BDD not only desire cosmetic procedures, they also
330 want credible evidence that such procedures could be ineffective. Utilising the viewpoint of
331 those who have suffered with BDD to discuss the dilemmas raised here could be helpful. We
332 hope these strategies may enable a continued focus on this research agenda in order to
333 better inform and influence clinical practice.

334 **Clinical Implications**

335 Although research regarding outcomes of cosmetic treatments for individuals with
336 BDD is in its infancy, the findings reviewed here do have a number of important clinical
337 implications.

338 First, accurate detection and assessment of BDD in the medical / cosmetic arenas is
339 clearly needed. A large survey of members of the American Society for Aesthetic Surgery
340 and the American Society for Dermatologic Surgery illustrated that, the large majority of
341 practitioners refuse to treat someone if they suspect BDD is present. However, the majority
342 of surgeons (over 80%) reported not realising that they were treating a patient with BDD until
343 after the surgery (Sarwer, 2002; Sarwer, Spitzer, Sobanko, & Beer, 2015).
344 Recommendations for how practitioners in surgical and cosmetic settings might diagnose
345 and manage patients with BDD are available (Crerand et al., 2006; Sarwer & Crerand,
346 2008). A range of screening questionnaires are available for practitioners in both mental
347 health and cosmetic settings to help aid successful diagnosis (Dey et al., 2015; Dufresne,
348 Phillips, Vittorio, & Wilkel, 2001; Phillips et al., 1995; Veale et al., 2012).

349 Accurate diagnosis is only one part of the problem however. Recent surveys suggest
350 practitioners may not consider BDD a contraindication to cosmetic treatment (Sarwer, 2002;
351 Sarwer et al., 2015). This highlights the need for mental health professionals to work closely
352 with practitioners in cosmetic settings in order to raise awareness of BDD, facilitate accurate
353 diagnosis, and increase awareness of the existing evidence regarding outcomes.

354 Once BDD is identified, appropriate risk assessment by a mental health professional
355 is essential and patients can be directed towards evidenced-based treatments, namely
356 cognitive behaviour therapy (CBT) and selective serotonin reuptake inhibitors (SSRIs)
357 (Krebs, Turner, Heyman, & Mataix-Cols, 2012; Mataix-Cols et al., 2015; Phillips & Hollander,
358 2008; Veale et al., 2014b; Wilhelm et al., 2013). In line with national and international
359 guidelines (e.g., National Institute for Health and Care Excellence; NICE, 2005), manuals

360 now exist with guidance on how to engage individuals with BDD in evidence-based
361 treatment, taking into account their desire for cosmetic procedures (Wilhelm et al., 2013).

362 In summary, there is a need to have increased detection and monitoring of BDD and
363 plans for cosmetic treatment in both psychiatric and cosmetic fields with close liaison
364 between professionals in order to complete appropriate screening and risk assessments.
365 The need for professionals from cosmetic and psychiatric backgrounds to work together has
366 been recommended before (e.g., Crerand et al., 2006; Sarwer & Spitzer, 2012). However as
367 mentioned, recent surveys of practitioners in cosmetic settings suggest 40% still do not
368 consider BDD a contraindication for cosmetic treatments (Sarwer et al., 2015). This
369 suggests there is still much work to be done to translate the current research findings into
370 changes within clinical practice.

371 **Conclusion**

372 The majority of adults and over 40% of young people with BDD seek and then
373 receive cosmetic treatments. Although far from conclusive, the available evidence is
374 suggestive of generally poor outcomes of cosmetic interventions in individuals with BDD.
375 Further research is warranted to build robust evidence and shed further light on the debate
376 as to whether BDD is a contraindication for cosmetic treatment. This information will better
377 guide the recommendations practitioners give to individuals on the ground, especially in
378 child and adolescent services where recommendations are currently being made on the
379 basis of just two retrospective studies. In particular, prospective studies of well characterised
380 individuals with BDD undergoing cosmetic procedures with long-term follow-up, using
381 appropriate diagnostic and multidimensional outcome measures are required to determine
382 the efficacy of cosmetic treatments for BDD and the patient-characteristics that influence
383 outcomes. This information will enable the development of clinical guidelines and assist
384 practitioners in giving BDD patients appropriate advice on cosmetic procedures. Finally,
385 collaboration and education across mental health and cosmetic teams is paramount to

386 improve screening, identification, and treatment procedures for these highly distressed and
387 vulnerable individuals.

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Table 1

Summary of Included Studies

Type of Study	SCID	N	Main Outcome Measure	Setting	Assessment Timing
Retrospective					
Phillips & Diaz, 1997	+	188 BDD	1-item improvement scale (CGI ^a)	Psychiatric	Post
Veale, 2000	+	25 BDD	1-item satisfaction scale (0-10), & change in preoccupation & handicap (0-7)	Psychiatric	Post
Phillips et al., 2001	+	289 BDD (39 YP ^b)	1-item improvement scale (CGI)	Psychiatric	Post
Crerand et al., 2005	+	200 BDD	1-item improvement scale (CGI)	Psychiatric	Post
Crerand et al., 2010	+	200 BDD (16 YP)	1-item improvement scale (CGI)	Psychiatric	Post
Woolley & Perry, 2015	-	728 (N = 50 'BDD')	Pain scores, No. re-operation & complications	Oculofacial practice	Post
Prospective					
Veale et al., 2003	-	29, (N = 6 'BDD')	1-item satisfaction scale (0-8), BDDQ ^c	Private cosmetic clinics	Pre-, 3, & 9 months post
Tignol et al., 2007	+	15, (N = 7 'BDD')	1-item satisfaction scale (0-5), SCID-BDD ^d , Sheehan Disability Scale (SDS), MINI ^e ,	Cosmetic surgery clinic	Pre- & 5 years post
Picavet et al., 2013	-	116, (N = 59 'BDD')	YBOCS-BDD-SR ^f	Ear, nose & throat dept.	Pre-, 3, & 12 months post
Felix et al., 2014	-	31 'mild-mod BDD'	1-item satisfaction scale, BDDE ^g , Time spent worrying	University of São Paula	Pre- & 1 year post
Veale et al., 2014a	+	49 (N = 9 BDD)	Genital Appearance Satisfaction (0-33), SCID-BDD	Private & NHS Clinics	Pre-, 3, & 11-42 months post

Note. ^a Clinical Global Impression Scale (Guy, 1976). ^b Young people. ^c Body Dysmorphic Disorder Questionnaire (Phillips, Atala, & Pope, 1995). ^d Structured Clinical Interview for DSM-IV BDD Module (Phillips et al., 1995). ^e Mini International Neuropsychiatric Inventory (Sheehan et al., 1996). ^f Yale-Brown Obsessive Compulsive Scale modified for BDD (Phillips et al., 1997). ^g Body Dysmorphic Disorder Examination (Rosen & Reiter, 1996).