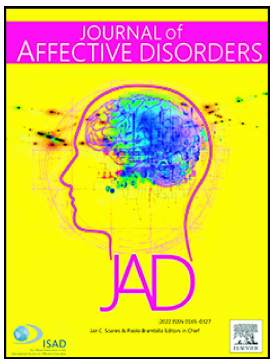

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Suicidal thoughts and behaviours in body dysmorphic disorder: prevalence and correlates in a sample of mental health service users in the UK

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Abstract

Background: Previous research indicates an association of body dysmorphic disorder (BDD) with suicidal thoughts and behaviours, but has largely relied on small cohorts drawn from specialist clinics.

Methods: Anonymised health-records from the South London and Maudsley NHS Foundation Trust between 2007 and 2019 were systematically searched using the Clinical Record Interactive Search data system.

Results: 298 patients diagnosed with BDD between age 12 and 65 years were identified. 206 (69%) had experienced lifetime suicidal ideation. 149 (50%) had recorded lifetime acts of self-harm or suicide attempts, most commonly involving cutting and self-poisoning. Rates of self-harm/suicide attempts were similar in those diagnosed before or after 18 years. Comorbid depression was associated with suicidal ideation (OR: 4.26 95%CI 2.07–9.72). Additionally, comorbid depression, OCD and anxiety were all associated with self-harm/suicide attempts (OR: 1.94 95%CI 1.15–3.31, OR: 1.99 95%CI 1.09–3.73, and OR: 1.93 95%CI 1.09–3.45, respectively). The presence of two or more psychiatric comorbidities was associated with a significantly elevated likelihood of suicidal ideation (OR: 7.06 95%CI 2.80–21.7) and self-harm/suicide attempts (OR: 4.62 95%CI 2.32–9.62).

Limitations: It is likely that BDD was under-diagnosed in the cohort, and those identified may not be representative. Additionally, the frequency and detail with which suicidal thoughts and behaviours were assessed varied and may also represent underestimates.

Conclusions: Suicidal ideation and self-harm/suicide attempts are common among individuals with BDD accessing mental health services. Psychiatric comorbidity and suicidal ideation should be assessed in all BDD patients.

Keywords: Body dysmorphic disorder; body dysmorphia; suicidality; self-harm; suicidal ideation.

Introduction

Body dysmorphic disorder (BDD) is a psychiatric condition characterised by a persistent preoccupation with non-existent or slight defects in physical appearance, typically accompanied by time consuming repetitive behaviours in response to the physical concern (American Psychiatric Association, 2013). It is associated with high levels of distress and impairments in social and occupational functioning (Didie et al., 2008; K. A. Phillips et al., 2005).

The prevalence of BDD is estimated to be approximately 2% in the general population (Buhlmann et al., 2010; Veale et al., 2016) but has been found to be 3 to 4 times higher in those accessing mental health services (Veale et al., 2016) and 4 to 5 times higher in those attending dermatology clinics or seeking cosmetic surgery (Altamura et al., 2001; de Brito et al., 2016; Herbst and Jemec, 2020; Veale et al., 2016). Despite this, BDD is often under-recognised or misdiagnosed in clinical practice, in both inpatient (Veale et al., 2015) and outpatient (Zimmerman and Mattia, 1998) mental health settings.

Concerns about risk to self are often a precipitating factor in a person's presentation to mental health services (McManus et al., 2016). These risks commonly include non-suicidal and suicidal self-harm, which can be considered as two ends of a continuum with shared aetiological factors (Lim et al., 2022). There is a growing awareness of the association of BDD with suicidal thoughts and behaviours, including suicidal ideation, self-harm, and suicide attempts. A 2016 meta-analysis found a four-fold increased likelihood of suicidal ideation and an almost three-fold increased likelihood of suicide attempts amongst those with BDD, relative to controls (Angelakis et al., 2016). However, previous studies examining suicidal thoughts and behaviours in BDD have been methodologically diverse with a high degree of variability in reported results. Most have involved cohorts recruited from specialised clinical populations (Altamura et al., 2001; Conceição Costa et al., 2012; Kelly et al., 2015) and study cohorts which may not be representative (K. Phillips et al., 2005; Phillips and Menard, 2006), or modestly sized community-based samples containing few BDD cases which may therefore be lacking sufficient statistical power (Buhlmann et al., 2010; Möllmann et al., 2017; Rief et al., 2006). Furthermore, whilst the prevalence of self-harm and suicide attempts has frequently been reported in these studies, less attention has been given to the methods used in such acts. Finally, most studies use cohorts of participants aged ≥18 years despite some evidence that adolescent-onset BDD is associated with higher rates of suicidal thoughts and behaviours (Bjornsson et al., 2013; Krebs et al., 2022; Phillips et al., 2006; Rautio et al., 2022).

The current study aimed to address several of the gaps and limitations in previous research relating to suicidal thoughts and behaviours and BDD. Specifically, we aimed to estimate the prevalence of suicidal thoughts and behaviours amongst people with a diagnosis of BDD who had accessed a large mental health Trust offering a broad range of services in London, United Kingdom. In addition, we examined the methods of self-harm used and the clinical correlates of suicidal thoughts and behaviours.

Methods

Procedure

The Clinical Record Interactive Search (CRIS) system (Stewart et al., 2009) was used to extract data from anonymised records of patients who had had contact with the South London and Maudsley NHS Foundation Trust (SLaM) in the UK. This system enables researchers to search the anonymised records of nearly all patients who have been in contact with SLaM services since 2006 (Perera et al., 2016). CRIS was approved as an anonymised data resource for secondary analysis by Oxfordshire Research Ethics Committee (08/H0606/71+5), and all projects using CRIS are reviewed and approved by a dedicated oversight committee.

To identity patients with BDD, a search was conducted using the following criteria: 1) the ICD-10 code F45.2 was recorded in the diagnosis field *and* 2) the terms “body dysmorph*” or “BDD” were present anywhere in the clinical record. These criteria were used to avoid the inclusion of cases of hypochondriacal disorder which are also coded as F45.2.

Clinical records for the period 1 January 2007 to 31 May 2019 were searched. The total number of individual records searched was 348,402. Each record represents a unique individual. A total of 298 BDD cases were identified. To ensure cases with BDD were being correctly identified, one of the authors (MA), a psychiatrist, reviewed all correspondence or progress notes containing the terms “body dysmorph*” or “BDD” in the first 60 identified cases. 59 cases (98%) had a clearly evidenced

BDD diagnosis recorded, while one case record was strongly suggestive of BDD, but not definite. Given the very high rate of accuracy identified in the first 60 cases the rest of the cohort were not manually reviewed to confirm diagnoses. No cases were excluded.

For each identified case data regarding ethnicity, sex, and age at recorded BDD diagnosis, were extracted using CRIS from structured fields within the record. The number and duration of previous inpatient admissions, prescribed medications, and any co-morbid psychiatric diagnoses recorded during the observation period were also extracted from structured fields using CRIS.

Anonymised clinical notes for each identified BDD case were searched using CRIS to identify any entries in the correspondence and progress notes that contained the terms 'self-harm*' or 'suicid*'. All entries containing these terms were reviewed by two of the authors (MA and MC), both psychiatrists, to identify any lifetime occurrences of suicidal ideation, self-harm, and/or suicide attempts, and methods of self-harm and/or suicide attempts. The first 50 cases were reviewed jointly by both clinicians to ensure consistency of approach.

Given the theoretical and practical challenges of definitively characterising the degree of suicidal intent in relation to acts of self-harm from clinical notes, instances of both self-harm and suicide attempts were combined as one category in all analyses.

Statistical Analysis

Statistical analysis was conducted using RStudio. Univariable logistic regression was used to calculate the crude odds ratio (OR) and 95% confidence intervals (95%CI) of the association between sample characteristics and the occurrence of suicidal ideation and the occurrence of self-harm and/or suicide attempts. Multivariable logistic regression was used to calculate adjusted odds ratios (aOR) between sample characteristics and the occurrence of suicidal ideation and the occurrence of self-harm and/or suicide attempts. Separate multivariable analyses were used to examine associations of suicidal ideation and self-harm and/or suicide attempts with type and number of co-morbid mental

health diagnoses.

Results

Sample Characteristics

A total of 298 people with a diagnosis of BDD were identified. A summary of sample characteristics is shown in Table 1. The average age at recorded diagnosis was 25.6 years and 176 (59%) were females.

175 people (59%) had a recorded psychiatric co-morbidity in addition to BDD. The most common co-morbidities were depression (n=89; 30%), obsessive compulsive disorder (n=59; 20%), and other anxiety disorders (n=71; 24%). Further details of other recorded co-morbidities are presented in a supplementary table (Table S1). 55 people (19%) had two or more co-morbid psychiatric diagnoses in addition to BDD. Most people in the sample (n=195; 65%) had been prescribed psychotropic medications, and 93 (31%) had a history of one or more inpatient psychiatric admissions.

Characteristics were similar between people diagnosed aged <18 years and those diagnosed aged ≥18 years. Only the M:F ratio was significantly different, with a higher proportion of females in the <18 years group compared to the ≥18 years group.

Occurrence of Suicidal Thoughts and Behaviours

Most cases (n=206; 69%) had recorded experiences of suicidal ideation and 149 (50%) had recorded evidence of acts of self-harm and/or suicide attempts. Rates of both suicidal ideation and self-harm and/or suicide attempts were similar in those diagnosed before or after 18 years of age.

Methods used in acts of self-harm and suicide attempts were identifiable in 143 cases and are presented in Table 2. Methods were varied with the most prevalent being cutting (n=72; 24%) and self-poisoning (n=63; 21%). Acts of self-harm specifically driven by dissatisfaction with their appearance (e.g. self-surgery) were also identified in the cohort (n=6; 2%).

Predictors of Suicidal Thoughts and Behaviours

Suicidal ideation

Univariable logistic regression (Table 3) demonstrated that age, sex, and ethnicity were not associated with suicidal ideation. However, the presence of a co-morbid psychiatric diagnosis in addition to BDD was significantly associated with a history of suicidal ideation. In terms of specific types of co-morbidity, depression was statistically significant, but other specific co-morbidities did not reach significance. People with one psychiatric co-morbidity in addition to BDD were more than twice as likely to have experienced suicidal ideation than those with BDD only (OR: 2.46; 95%CI 1.38-4.47). Those with two or more co-morbidities in addition to BDD were almost 7 times more likely to have experienced suicidal ideation (OR: 6.77; 95%CI 2.71-20.6).

Depression, the presence of one co-morbidity, and the presence of two or more co-morbidities remained significantly associated with suicidal ideation after the influence of other variables (age, sex, and ethnicity) were controlled for using multivariable analyses (Tables 4 and 5).

Self-harm and suicide attempts

Univariable analysis (Table 3) demonstrated that neither age nor ethnicity were significantly associated with self-harm and/or suicide attempts among those with BDD. However, females with BDD were significantly more likely than males to have documented self-harm and/or suicide attempts. Additionally, co-morbid depression, co-morbid OCD, and co-morbid anxiety disorders were also associated with self-harm and/or suicide attempts. People with one co-morbidity in addition to BDD were almost twice as likely to report a history of self-harm and/or suicide attempts (OR: 1.85; 95%CI 1.11-3.10), while those with two or more co-morbidities were more than four times as likely (OR: 4.46; 95%CI 2.26-9.18).

The corresponding multivariable analyses continued to demonstrate a statistically significant association with self-harm and/or suicide attempts for variables including co-morbid depression,

OCD, and other anxiety disorders (Table 4). Multivariable analysis using number of co-morbidities demonstrated the presence of two or more comorbidities continued to be significantly associated with an occurrence of self-harm or suicide attempts (Table 5).

The number of people who died by suicide was <10. Exact numbers are unable to be reported due to being potentially identifiable.

Discussion

The current study is the largest study to date that has examined the prevalence and correlates of suicidal thoughts and behaviours in a sample of individuals with a diagnosis of BDD. It is also the first study to report specifically on methods of self-harm and suicide attempts within a cohort of people with BDD. The results demonstrate high rates of lifetime suicidal thoughts and behaviours within the cohort, with rates of suicidal ideation (69%) and self-harm and/or suicide attempts (50%) at the higher end of the ranges reported in a previous meta-analysis (Angelakis et al., 2016) and significantly higher than those reported in general UK population survey studies (McManus et al., 2016). The rates of suicidal thoughts and behaviours are also notably higher than those reported in closely linked conditions such as OCD (Angelakis et al., 2015) and comparable to rates seen in other psychiatric conditions that are recognised as carrying a high risk of suicidal thoughts and behaviours, such as depression and bipolar disorder (Haw et al., 2001; Singhal et al., 2014). Although we are not able to report numbers of suicides within our cohort, the link between a history of self-harm and death by suicide at a later point is well established (Cooper et al., 2005; Hawton et al., 2015) with international figures suggesting that 3.9% of those presenting to hospital following a non-fatal episode of self-harm will die by suicide within 5 years (Carroll et al., 2014).

Substantial rates of psychiatric co-morbidity were identified among the BDD patients in the current cohort, with depression being the most common. This is in keeping with the existing literature which reports high rates of co-morbidity, including depression, in BDD (Mufaddel et al., 2013). A co-morbid

diagnosis of depression was associated with significantly elevated rates of suicidal ideation and self-harm and/or suicide attempts and may therefore be a key risk factor. This finding supports those from previous studies demonstrating that those with BDD and co-morbid depression have been shown to have greater overall levels of morbidity and suicidality (Phillips et al., 2007; Witte et al., 2012). Greater overall symptom severity and functional impairment has also been noted previously in those where BDD is a co-morbidity of OCD (Conceição Costa et al., 2012) and of anorexia nervosa (Grant et al., 2002).

In our study the link between overall psychiatric morbidity in BDD patients and increased suicidal thoughts and behaviours is also reflected in the finding that multiple co-morbidities were more strongly associated with suicidal ideation and self-harm and/or suicide attempts than having one co-morbidity. These findings could suggest that a cumulative burden from the presence of multiple difficulties contributes to higher rates of suicidal thoughts and behaviours. Other factors, such as biases in diagnostic practices and higher genetic liability, may provide alternative explanations.

Age at recorded diagnosis was not a significant factor in predicting suicidal thoughts and behaviours and there were very similar rates of suicidal ideation and self-harm and/or suicide attempts in those aged <18 years at diagnosis compared to those aged ≥18 years. This is in contrast to previous studies where there is some evidence suggesting higher rates of suicide attempts in adolescent-onset BDD (Bjornsson et al., 2013; Phillips et al., 2006). This likely reflects differences in study design, but may also reflect issues with the under-recognition of BDD in clinical settings leading to many of those who have experienced symptom onset earlier in life only being formally diagnosed with BDD after the age of 18.

To date there has been little reported on the methods of self-harm and attempted suicide in people with a diagnosis of BDD. Our study noted there were a small number of instances of self-harm directed specifically at preoccupying aspects of body image concern, a phenomenon also noted previously in the literature (Veale, 2000). However, we primarily found that the methods of self-

harm were varied, but in keeping with patterns of self-harm seen in those presenting to hospital in England (Bergen et al., 2010), with cutting and self-poisoning being the most prominent.. This may suggest that self-harm in BDD is not a separate phenomenon, but larger scale studies specifically examining this area would help to provide a more substantial evidence base and extend our current findings.

Strengths and limitations

Our study had several strengths. First, it represents the largest cohort of patients with a diagnosis of BDD in which suicidal thoughts and behaviours have been examined, the number of BDD cases in previous clinical samples having ranged from 11 to 200 (Angelakis et al., 2016). Second, given the cohort was drawn from patients who had accessed mental health services via SLaM, a large mental health trust providing the vast majority of secondary mental health services for the geographical area it covers, it should be representative of the range of severity and complexity of BDD patients seen in clinical practice in the UK. Third, using clinicians to review clinical notes relating to suicidal thoughts and behaviours means those events are likely to be accurately characterised.

Our study also contained some potential limitations. First, although the use of CRIS has proved to be an effective way of accurately identifying patients with BDD from their anonymised clinical notes, the absence of systematic screening and the reliance of the search on accurate coding of patients in order to identify them means it is unclear how many people with a diagnosis of BDD were not included in our cohort. This is particularly pertinent to BDD, which is under-detected and often misdiagnosed, for example as social anxiety disorder or depression. Of note, given 348,402 case records were searched by CRIS, and given it is unlikely that significant numbers of BDD cases would have accessed treatment external to SLaM, a cohort of 298 BDD cases is far smaller that would be expected based on prevalence estimates. Reliance of accurate diagnostic coding within the clinical record also means there is likely to be a degree of underreporting of various co-morbidities. Similarly, although SLaM clinicians are required to ask about and record risk at initial assessment, the

frequency and detail with which suicidal thoughts and behaviours is assessed during episodes of care varies greatly, such that they may also not always be identified and some details, such as the frequency of acts of self-harm, could not be systematically examined. Additionally, the use of CRIS did not allow effective collection of some data which may potentially impact on suicidal thoughts and behaviours, such as symptom severity or measures of functional impairment. Finally, the current study did not use a comparison group and so the question of whether BDD is independently related to suicidal thoughts and behaviours could not be examined.

Clinical and research implications

Our finding that psychiatric co-morbidity, and especially depression, appears to be a significant risk factor for suicidal thoughts and behaviours in BDD highlights the importance of taking a proactive approach to the early identification of co-morbidities to inform formulation and treatment plans for these patients. Identification and treatment of co-morbidity is likely to be a key factor in effectively reducing the risk to self in this patient group. Although the optimal approach for integrating the treatment of co-morbid conditions with the treatment of BDD requires further research, there is evidence that BDD has significant longitudinal associations with depression, with improvements in depression predicting BDD remission and improvements in BDD predicting depression remission (Phillips and Stout, 2006).

Clinicians should be mindful that suicidal thoughts and behaviours are common in those with BDD and this should be carefully considered within the assessment, formulation, and management of people with this condition. Determining the rate of suicide in people with BDD would require larger sample sizes but, based on the findings of elevated suicidal thoughts and behaviours in BDD in our study and the wider literature, we would hypothesise it is significantly elevated in comparison to the general population and broadly comparable to other severe psychiatric conditions.

Although the risk of suicidal thoughts and behaviours in people with BDD is increasingly clear, few studies have investigated the mechanisms underpinning the relationship between BDD and suicidal thoughts and behaviours. Additionally, the degree to which BDD is independently related to suicidal thoughts and behaviours, or whether the association is mediated primarily by other factors, remains unclear.. Results of a twin study using a Swedish cohort indicated that a large proportion of the association between BDD and suicidal thoughts and behaviours reflects a shared genetic liability, but also highlighted the significance of environmental mechanisms (Krebs et al., 2022). The latter is consistent with the hypothesis that suicidal thoughts and behaviours may partly arise as a functional consequence of the psychosocial burden of BDD, including the feelings of shame and hopelessness, social withdrawal and impairment, and depressive symptoms often observed in people with BDD (Shaw et al., 2016; Weingarden et al., 2017, 2016; Witte et al., 2012). Further research examining the role of specific factors relating to BDD in the development of suicidal thoughts and behaviours would be helpful in informing the development of evidence-based interventions.

However, interventions can only be provided if people with BDD are accurately identified when presenting to healthcare settings. The risk of BDD being overlooked or misdiagnosed in clinical assessments (Veale et al., 2015; Zimmerman and Mattia, 1998) will create missed opportunities for treating a condition associated with high rates of suicidal thoughts and behaviours. Improved awareness and screening for BDD across settings, especially in settings where patients present with self-harm or suicidal ideation, may create opportunities for earlier and more effective treatments and improve outcomes for this group of patients.

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References

Altamura, C., Paluello, M.M., Mundo, E., Medda, S., Mannu, P., 2001. Clinical and subclinical body dysmorphic disorder. Eur. Arch. Psychiatry Clin. Neurosci. 251, 105–108. https://doi.org/10.1007/s004060170042

American Psychiatric Association, 2013. Diagnostic and Statistical Manual of Mental Disorders, 5th ed. American Psychiatric Publishing.

Angelakis, I., Gooding, P., Tarrier, N., Panagioti, M., 2015. Suicidality in obsessive compulsive disorder (OCD): A systematic review and meta-analysis. Clin. Psychol. Rev. 39, 1–15. https://doi.org/10.1016/j.cpr.2015.03.002

Angelakis, I., Gooding, P.A., Panagioti, M., 2016. Suicidality in body dysmorphic disorder (BDD): A systematic review with meta-analysis. Clin. Psychol. Rev. 49, 55–66. https://doi.org/10.1016/j.cpr.2016.08.002

Bergen, H., Hawton, K., Waters, K., Cooper, J., Kapur, N., 2010. Epidemiology and trends in non-fatal self-harm in three centres in England: 2000–2007. Br. J. Psychiatry 197, 493–498. https://doi.org/10.1192/bjp.bp.110.077651

Bjornsson, A.S., Didie, E.R., Grant, J.E., Menard, W., Stalker, E., Phillips, K.A., 2013. Age at onset and clinical correlates in body dysmorphic disorder. Compr. Psychiatry 54, 893–903. https://doi.org/10.1016/j.comppsych.2013.03.019

Buhlmann, U., Glaesmer, H., Mewes, R., Fama, J.M., Wilhelm, S., Brähler, E., Rief, W., 2010. Updates on the prevalence of body dysmorphic disorder: A population-based survey. Psychiatry Res. 178, 171–175. https://doi.org/10.1016/j.psychres.2009.05.002

Carroll, R., Metcalfe, C., Gunnell, D., 2014. Hospital Presenting Self-Harm and Risk of Fatal and Non-Fatal Repetition: Systematic Review and Meta-Analysis. PLoS One 9, e89944.

https://doi.org/10.1371/journal.pone.0089944

Conceição Costa, D.L., Chagas Assunção, M., Arzeno Ferrão, Y., Archetti Conrado, L., Hajaj Gonzalez, C., Franklin Fontenelle, L., Fossaluza, V., Constantino Miguel, E., Rodrigues Torres, A., Gedanke Shavitt, R., 2012. Body dysmorphic disorder in patients with obsessive-compulsive disorder: Prevalence and clinical correlates. Depress. Anxiety 29, 966–975. https://doi.org/10.1002/da.21980

Cooper, J., Kapur, N., Webb, R., Lawlor, M., Guthrie, E., Mackway-Jones, K., Appleby, L., 2005. Suicide After Deliberate Self-Harm: A 4-Year Cohort Study. Am. J. Psychiatry 162, 297–303. https://doi.org/10.1176/appi.ajp.162.2.297

de Brito, M.J.A., Nahas, F.X., Cordás, T.A., Tavares, H., Ferreira, L.M., 2016. Body Dysmorphic Disorder in Patients Seeking Abdominoplasty, Rhinoplasty, and Rhytidectomy. Plast. Reconstr. Surg. 137, 462–471. https://doi.org/10.1097/01.prs.0000475753.33215.8f

Didie, E.R., Menard, W., Stern, A.P., Phillips, K.A., 2008. Occupational functioning and impairment in adults with body dysmorphic disorder. Compr. Psychiatry 49, 561–569. https://doi.org/10.1016/j.comppsych.2008.04.003

Grant, J.E., Kim, S.W., Eckert, E.D., 2002. Body dysmorphic disorder in patients with anorexia nervosa: Prevalence, clinical features, and delusionality of body image. Int. J. Eat. Disord. 32, 291–300. https://doi.org/10.1002/eat.10091

Haw, C., Hawton, K., Houston, K., Townsend, E., 2001. Psychiatric and personality disorders in deliberate self-harm patients. Br. J. Psychiatry 178, 48–54. https://doi.org/10.1192/bjp.178.1.48

Hawton, K., Bergen, H., Cooper, J., Turnbull, P., Waters, K., Ness, J., Kapur, N., 2015. Suicide following self-harm: Findings from the Multicentre Study of self-harm in England, 2000–2012. J. Affect.

Disord. 175, 147–151. https://doi.org/10.1016/j.jad.2014.12.062

Herbst, I., Jemec, G.B.E., 2020. Body Dysmorphic Disorder in Dermatology: a Systematic Review. Psychiatr. Q. 91, 1003–1010. https://doi.org/10.1007/s11126-020-09757-y

Kelly, M.M., Zhang, J., Phillips, K.A., 2015. The prevalence of body dysmorphic disorder and its clinical correlates in a VA primary care behavioral health clinic. Psychiatry Res. 228, 162–165. https://doi.org/10.1016/j.psychres.2015.04.007

Krebs, G., Fernández de la Cruz, L., Rijsdijk, F. V., Rautio, D., Enander, J., Rück, C., Lichtenstein, P., Lundström, S., Larsson, H., Eley, T.C., Mataix-Cols, D., 2022. The association between body dysmorphic symptoms and suicidality among adolescents and young adults: a genetically informative study. Psychol. Med. 52, 1268–1276. https://doi.org/10.1017/S0033291720002998

Lim, K.X., Krebs, G., Rimfeld, K., Pingault, J.-B., Rijsdijk, F.V., 2022. Investigating the genetic and environmental aetiologies of non-suicidal and suicidal self-harm: a twin study. Psychol. Med. 52, 3391–3401. https://doi.org/10.1017/S0033291721000040

McManus, S., Bebbington, P., Jenkins, R., Brugha, T., 2016. Mental health and wellbeing in England: Adult Psychiatric Morbidity Survey 2014. Leeds.

Möllmann, A., Dietel, F.A., Hunger, A., Buhlmann, U., 2017. Prevalence of body dysmorphic disorder and associated features in German adolescents: A self-report survey. Psychiatry Res. 254, 263–267. https://doi.org/10.1016/j.psychres.2017.04.063

Mufaddel, A., Osman, O.T., Almugaddam, F., Jafferany, M., 2013. A Review of Body Dysmorphic Disorder and Its Presentation in Different Clinical Settings. Prim. Care Companion CNS Disord. https://doi.org/10.4088/PCC.12r01464

Perera, G., Broadbent, M., Callard, F., Chang, C.-K., Downs, J., Dutta, R., Fernandes, A., Hayes, R.D., Henderson, M., Jackson, R., Jewell, A., Kadra, G., Little, R., Pritchard, M., Shetty, H., Tulloch, A.,

Stewart, R., 2016. Cohort profile of the South London and Maudsley NHS Foundation Trust Biomedical Research Centre (SLaM BRC) Case Register: current status and recent enhancement of an Electronic Mental Health Record-derived data resource. BMJ Open 6, e008721. https://doi.org/10.1136/bmjopen-2015-008721

Phillips, K., Coles, M., Menard, W., Yen, S., Fay, C., Weisberg, R., 2005. Suicidal Ideation and Suicide Attempts in Body Dysmorphic Disorder. J. Clin. Psychiatry 66, 717–725.

Phillips, K., Stout, R., 2006. Associations in the longitudinal course of body dysmorphic disorder with major depression, obsessive–compulsive disorder, and social phobia. J. Psychiatr. Res. 40, 360–369. https://doi.org/10.1016/j.jpsychires.2005.10.001

Phillips, K.A., Didie, E.R., Menard, W., 2007. Clinical features and correlates of major depressive disorder in individuals with body dysmorphic disorder. J. Affect. Disord. 97, 129–135. https://doi.org/10.1016/j.jad.2006.06.006

Phillips, K.A., Didie, E.R., Menard, W., Pagano, M.E., Fay, C., Weisberg, R.B., 2006. Clinical features of body dysmorphic disorder in adolescents and adults. Psychiatry Res. 141, 305–314. https://doi.org/10.1016/j.psychres.2005.09.014

Phillips, K.A., Menard, W., 2006. Suicidality in Body Dysmorphic Disorder: A Prospective Study. Am. J. Psychiatry 163, 1280–1282.

Phillips, K.A., Menard, W., Fay, C., Pagano, M.E., 2005. Psychosocial functioning and quality of life in body dysmorphic disorder. Compr. Psychiatry 46, 254–260. https://doi.org/10.1016/j.comppsych.2004.10.004

Rautio, D., Jassi, A., Krebs, G., Andrén, P., Monzani, B., Gumpert, M., Lewis, A., Peile, L., Sevilla-Cermeño, L., Jansson-Fröjmark, M., Lundgren, T., Hillborg, M., Silverberg-Morse, M., Clark, B., Fernández de la Cruz, L., Mataix-Cols, D., 2022. Clinical characteristics of 172 children and

adolescents with body dysmorphic disorder. Eur. Child Adolesc. Psychiatry 31, 133–144. https://doi.org/10.1007/s00787-020-01677-3

Rief, W., Buhlmann, U., Wilhelm, S., Borkenhagen, A., Brahler, E., 2006. The prevalence of body dysmorphic disorder: a population-based survey. Psychol. Med. 36, 877–885. https://doi.org/10.1017/S0033291706007264

Shaw, A.M., Arditte Hall, K.A., Rosenfield, E., Timpano, K.R., 2016. Body dysmorphic disorder symptoms and risk for suicide: The role of depression. Body Image 19, 169–174. https://doi.org/10.1016/j.bodyim.2016.09.007

Singhal, A., Ross, J., Seminog, O., Hawton, K., Goldacre, M.J., 2014. Risk of self-harm and suicide in people with specific psychiatric and physical disorders: comparisons between disorders using English national record linkage. J. R. Soc. Med. 107, 194–204. https://doi.org/10.1177/0141076814522033

Stewart, R., Soremekun, M., Perera, G., Broadbent, M., Callard, F., Denis, M., Hotopf, M., Thornicroft, G., Lovestone, S., 2009. The South London and Maudsley NHS Foundation Trust Biomedical Research Centre (SLAM BRC) case register: development and descriptive data. BMC Psychiatry 9, 51. https://doi.org/10.1186/1471-244X-9-51

Veale, D., 2000. Outcome of cosmetic surgery and 'DIY' surgery in patients with body dysmorphic disorder. Psychiatr. Bull. 24, 218–221. https://doi.org/10.1192/pb.24.6.218

Veale, D., Akyüz, E.U., Hodsoll, J., 2015. Prevalence of body dysmorphic disorder on a psychiatric inpatient ward and the value of a screening question. Psychiatry Res. 230, 383–386. https://doi.org/10.1016/j.psychres.2015.09.023

Veale, D., Gledhill, L.J., Christodoulou, P., Hodsoll, J., 2016. Body dysmorphic disorder in different settings: A systematic review and estimated weighted prevalence. Body Image 18, 168–186.

https://doi.org/10.1016/j.bodyim.2016.07.003

Weingarden, H., Renshaw, K.D., Davidson, E., Wilhelm, S., 2017. Relative relationships of general shame and body shame with body dysmorphic phenomenology and psychosocial outcomes. J. Obsessive. Compuls. Relat. Disord. 14, 1–6. https://doi.org/10.1016/j.jocrd.2017.04.003

Weingarden, H., Renshaw, K.D., Wilhelm, S., Tangney, J.P., DiMauro, J., 2016. Anxiety and Shame as Risk Factors for Depression, Suicidality, and Functional Impairment in Body Dysmorphic Disorder and Obsessive Compulsive Disorder. J. Nerv. Ment. Dis. 204, 832–839. https://doi.org/10.1097/NMD.0000000000000498

Witte, T.K., Didie, E.R., Menard, W., Phillips, K.A., 2012. The Relationship between Body Dysmorphic Disorder Behaviors and the Acquired Capability for Suicide. Suicide Life-Threatening Behav. 42, 318–331. https://doi.org/10.1111/j.1943-278X.2012.00093.x

Zimmerman, M., Mattia, J.I., 1998. Body dysmorphic disorder in psychiatric outpatients: Recognition, prevalence, comorbidity, demographic, and clinical correlates. Compr. Psychiatry 39, 265–270. https://doi.org/10.1016/S0010-440X(98)90034-7

Table 1: Sample characteristics

Age at recorded BDD diagnosis	All ages (n=298)	Under 18 years (n=112)	18 years and over (n=186)
Age at recorded BDD diagnosis in years (mean +/- SD)	25.6 (11.0)	16.2 (1.3)	31.2 (10.4)
% male	41	27	49
M:F ratio	1:1.45	1:2.61	1:1.04
Ethnicity, *n (%)*			
- White	222 (74)	88 (79)	134 (72)
- Black	20 (7)	7 (6)	13 (7)
- Mixed/other	51 (17)	15 (13)	36 (19)
- No data	5 (2)	2 (2)	3 (2)
Co-morbidity, *n (%)*			
- None	123 (41)	45 (40)	78 (42)
- Depression	89 (30)	32 (29)	57 (31)
- OCD	59 (20)	20 (18)	39 (21)
- Anxiety disorder (other)	71 (24)	20 (18)	51 (27)
- Other	27 (9)	9 (8)	18 (10)
Any psychiatric admission, *n (%)*	93 (31)	13 (12)	80 (43)
Of those admitted			
- Ave number of admissions	1.9	1.5	2.0
- Range	1-11	1-3	1-11
Medication, *n (%)*			
- Any medication	195 (65)	80 (71)	114 (61)
- Antipsychotic (AP)	62 (21)	22 (20)	40 (22)
- Antidepressant (AD)	190 (64)	79 (70)	111 (60)
- AD + AP	60 (20)	21 (19)	39 (21)
- Anxiolytic/hypnotic	45 (15)	10 (8.9)	35 (19)
- Mood stabiliser	5 (1.7)	1 (0.9)	4 (2.2)
Suicidal thoughts and behaviours, *n (%)*			
- Suicidal ideation	206 (69)	75 (67)	131 (70)
- Self-harm and/or suicide attempt	149 (50)	57 (51)	92 (49)

Table 2: Methods of self-harm or suicide attempts

Method of self-harm or suicide attempt	**n (%)**
Cutting	72 (24)
Self-poisoning	63 (21)
Ligaturing	9 (3)
Burning	6 (2)
Other	27 (9)

Table 3: Associations of demographic and clinical variables with suicidal ideation, and suicide attempts/self-harm (univariable analyses using logistic regression)

		Suicidal ideation		Self-harm and/or suicide attempts	
Variable	**n (%)**	**Suicidal ideation, n (%)**	**OR (95% CI)**	**Suicide attempt/self-harm, n (%)**	**OR (95% CI)**
Age (mean +/- SD)	25.6 (11.0)	206 (69)	1.00 (0.97, 1.02)	149 (50)	0.98 (0.96, 1.00)
Sex					
- Male	122 (38)	80 (66)	Ref	52 (43)	Ref
- Female	176 (62)	126 (72)	1.34 (0.78, 2.29)	97 (55)	1.65 (1.04, 2.64)*
Ethnicity					
- White	222 (75)	152 (68)	Ref	109 (49)	Ref
- Black	20 (6.7)	14 (70)	0.86 (0.33, 2.53)	12 (60)	1.56 (0.62, 4.11)
- Mixed/other	51 (17)	37 (73)	0.55 (0.09, 4.28)	25 (49)	1.00 (0.54, 1.84)
- Not Stated	5 (1.7)	3 (60)	-	3 (60)	-
Depression					
- Yes	89 (30)	77 (87)	4.31 (2.13, 9.72)***	56 (63)	2.12 (1.28, 3.55)**
- No	209 (70)	129 (62)	Ref	93 (44)	Ref
OCD					
- Yes	59 (20)	48 (81)	1.74 (0.88, 3.72)	38 (64)	2.09 (1.17, 3.82)**
- No	239 (80)	158 (66)	Ref	111 (46)	Ref
Anxiety disorder (other)	71 (24)	56 (79)	1.60 (0.85, 3.18)	45 (63)	2.05 (1.19, 3.58)**
- Yes	227 (76)	150 (66)	Ref	104 (46)	Ref
- No					
Other comorbidity					
- Yes	27 (9.1)	24 (89)	3.12 (1.05, 13.4)	17 (63)	1.79 (0.80, 4.19)
- No	271 (91)	182 (67)	Ref	132 (45)	Ref
Any comorbidity					
- Yes	175 (59)	141 (80)	2.40 (1.50, 3.86)***	103 (59)	2.40 (1.50, 3.86)***
- No	123 (41)	65 (53)	Ref	46 (37)	Ref
Number of comorbidities					
- Zero	123 (41)	65 (53)	Ref	46 (37)	Ref
- One	120 (40)	91 (75)	2.46 (1.38, 4.47)**	63 (53)	1.85 (1.11, 3.10)**
- Two plus	55 (19)	50 (91)	6.77 (2.71, 20.7)***	40 (73)	4.46 (2.26, 9.18)***

OR = Unadjusted odds ratio; Ref = reference group in regression model; * = p-value <0.05; ** = p-value <0.005; *** = p-value <0.001

Odds ratios were not calculated for the ethnicity not stated group due to the small sample size of this group

Table 4: Association of comorbid diagnoses with suicide attempts/self-harm and with suicidal ideation (multivariable analyses adjusting for age, sex, and ethnicity using logistic regression)

	Suicidal ideation	**Self-harm and/or suicide attempt**
Variable	**aOR (95% CI)**	**aOR (95% CI)**
Depression	4.26 (2.07, 9.72)***	1.94 (1.15, 3.31)*
OCD	1.62 (0.78, 3.58)	1.99 (1.09, 3.73)*
Anxiety	1.44 (0.73, 2.95)	1.93 (1.09, 3.45)*
Other	3.34 (1.05, 15.0)	1.65 (0.70, 4.05)
No comorbidity	Ref	Ref

aOR: Adjusted odds ratio; Ref = reference group in regression model; * = p-value <0.05; ** = p-value <0.005; *** = p-value <0.001

Table 5: Association of number of comorbidities with self-harm/suicide attempt and suicidal ideation (multivariable analyses adjusting for age, sex, and ethnicity using logistic regression)

	Suicidal ideation	**Suicide attempt/self-harm**
Variable	**aOR (95% CI)**	**aOR (95% CI)**
No comorbidity	Ref	Ref
One comorbidity	2.38 (1.32, 4.37)**	1.67 (0.99, 2.83)
Two or more comorbidities	7.06 (2.80, 21.7)***	4.62 (2.32, 9.62)***

aOR: Adjusted odds ratio; Ref = reference group in regression model; * = p-value <0.05; ** = p-value <0.005; *** = p-value <0.001

Author contributions

Mark Addison: methodology, formal analysis, investigation, writing - original draft **Anthony James:** conceptualization, methodology, writing - review and editing, supervision **Rohan Borschmann:** writing - original draft and review and editing **Marta Costa:** investigation **Amita Jassi:** writing - review and editing **Georgina Krebs:** methodology, writing - review and editing, supervision

Highlights

- Suicidal thoughts and behaviours are frequently observed in people with Body Dysmorphic Disorder (BDD)
- Co-morbidity significantly increases the risk of suicidality in people with BDD
- Multiple co-morbidities are associated with a particularly high risk of suicidality
- Methods of self-harm in BDD are similar to those seen in other psychiatric conditions