JOURNAL OF PSYCHOPATHOLOGY
2019;25:139-148

Original article

U. Albert[1], L. Pellegrini[1], G. Maina[2], A.-R. Atti[1], D. De Ronchi[1], Z. Rhimer[3]

[1] Department of Medicine, Surgery, and Health Sciences, University of Trieste, Italy; [2] Rita Levi Montalcini Department of Neuroscience, University of Torino, Italy; [3] Department of Clinical and Theoretical Mental Health, Kútvölgyi Clinical Center, Semmelweiss University, Budapest, Hungary

Suicide in obsessive-compulsive related disorders: prevalence rates and psychopathological risk factors

Summary

Objectives

To estimate prevalence rates of suicide attempts and suicidal ideation in individuals with a principal diagnosis of obsessive-compulsive related disorders (OCRDs); 2. to identify predictors of suicide risk among subjects with OCRDs (where available).

Methods

The systematic review was conducted by searching PubMed from the date of the first available article to December 31, 2018. The search terms [suicide] OR [suicidality] OR [suicide attempts] OR [suicidal ideation] OR [suicidal thoughts] were combined with the following: [BDD] OR [body dysmorphic disorder]; [HD] OR [hoarding disorder]; [trichotillomania] OR [hair pulling disorder]; [excoriation disorder] OR [skin picking disorder].

Results

In BDD, data concerning lifetime suicide attempts are consistent across studies: mean rate is 21.5% (range 9-30.3%). Mean rate of current suicidal ideation is 37.4% (range 26.5-49.7%) and mean rate of lifetime suicidal ideation is 74.5% (range 53.5-85%). BDD-specific factors such as early onset, severity, poor insight and muscle dysmorphia and comorbid disorders increase the risk of suicide attempts or suicidal ideation. Only 2 studies recruited individuals with DSM-5 HD: suicidality appears to be low, with rates of current suicidal ideation comprised between 5% and 10%, although 19% of individuals attempted suicide during their lifetime. Concerning the grooming disorders, lifetime rates of suicide attempts are low as compared to rates in other OCRDs; approximately 40% of individuals, however, reported lifetime suicidal ideation.

Conclusions

OCRDs taken together may be at risk for suicide attempts and suicidal ideation independently from comorbid disorders (and specifically independently from comorbid OCD); BDD remains the disorder more strongly associated with an increased risk for suicide, followed by HD and then the grooming disorders.

Key words

Suicide attempts • Suicidal ideation • BDD • HD • Trichotillomania • Skin Picking Disorder

Received: March 13, 2019
Accepted: June 20, 2019

Correspondence

Umberto Albert
Department of Medicine, Surgery,
and Health Sciences, University of Trieste,
via G. de Pastrovich 3, 34128 Trieste, Italy
• Tel. +39 040 3997327 • E-mail: ualbert@units.it

Introduction

Recent systematic reviews and meta-analyses confirmed that Obsessive-Compulsive Disorder (OCD), historically considered to be associated with a relatively low risk of suicide, is actually in itself associated with considerable risk for lifetime suicide attempts and suicidal ideation [1 2]. Data from recent large epidemiological studies performed on National Registers, providing data on the longitudinal association between OCD and death by suicide and lifetime suicide attempts over a follow-up of several years [3 4], confirmed that individuals with OCD are at greater risk for committing suicide as compared to the general population.

Less is known about suicidality and other DSM-5 Obsessive-Compulsive Related Disorders (OCRDs); in the *new* chapter, *new* disorders such as Hoarding Disorder (HD) and Skin Picking Disorder (SPD) and disorders once classified elsewhere (Body Dysmorphic Disorder – BDD – previously in the chapter of Somatoform Disorder, and Trichotillomania – TTM – previously classed among the Impulse Control Disorders) have been grouped together with the *nosological organizer* OCD [5]. All disorders included in this chapter share similarities with OCD, although some appear to have a stronger cognitive component – and thus are closer to OCD – while others mainly consist of body-focused repetitive behaviors.

While several issues concerning phenomenological characteristics of these disorders have been studied, less attention has been devoted to suicidality. A recent systematic review and meta-analysis examined the strength and patterns of the association between suicidality and BDD, concluding that BDD is actually associated with increased odds for both suicide attempts and suicidal ideation [6]. No similar studies are available for the other disorders of the OCRDs chapter.

Given the prevalence of these disorders in the general population and the impact in terms of psychosocial impairment associated with these disorders, the investigation of suicidality and the identification of potential socio-demographic and clinical factors that could increase the risk for suicide is, to our opinion, of particular clinical relevance.

The aims of the present systematic review were: 1) to estimate prevalence rates of suicide attempts and suicidal ideation in individuals with a principal diagnosis of obsessive-compulsive related disorders; 2) to identify predictors of suicide risk among subjects with OCRDs (where available).

Methods

Search strategy

The systematic review was conducted using the PRISMA guidelines by searching PubMed from the date of the first available article to December 31, 2018. The search terms [suicide] OR [suicidality] OR [suicide attempts] OR [suicidal ideation] OR [suicidal thoughts] were combined with the following: [BDD] OR [body dysmorphic disorder]; [HD] OR [hoarding disorder]; [trichotillomania] OR [hair pulling disorder]; [excoriation disorder] OR [skin picking disorder].

Article selection and review strategy

Articles were identified and assessed for eligibility by two independent reviewers (UA and LP), who independently decided which identified articles to include according to clinical importance and eligibility criteria. In case of disagreement, a third author (GM) was consulted to mediate consensual decisions. Duplicate studies were excluded. Cross-references from the articles identified were also examined. Unpublished studies, conference abstracts or poster presentations were not included. The database search was restricted to English language papers.

Eligibility criteria

The inclusion criteria for the studies were the following: 1) studies with appropriate definition of the obsessive-compulsive related disorder (diagnosis made through specific structured interviews and/or established international criteria); 2) adolescents and/or adults; 3) cross-sectional or prospective designs; 4) performed in clinical samples or in the general population (epidemiological studies); 5) employed a quantitative measure of suicidality in order to derive prevalence rates of current/lifetime suicide attempts, suicidal ideation and/or family history of suicide attempts/completed suicide; and/or 6) reported an outcome measure of the association between suicidality and OCD (e.g. odds ratios) or examined factors associated with suicidality.

Results

Search results

The flowchart of studies selected and included in the systematic review for BDD is provided in Figure 1. In total, 24 studies were included in the qualitative synthesis (providing data on prevalence rates of suicide attempts, suicidal ideation). Additional 17 studies were retrieved from PubMed search and manual search providing data on suicidality and HD (N = 8), TTM (N = 4) and SPD (N = 5).

Body dysmorphic disorder

Table I reports prevalence rates of suicide attempts and suicidal ideation in individuals with BDD as from clinical studies; 17 studies provided information, although some of the studies included partially overlapping samples. Additional studies included exactly the same sample of Phillips et al. 2005 [7] and thus were excluded from the table (see Appendix 1).

Concerning lifetime suicide attempts, data are consistent across studies: mean rate is 21.5% (range 9-30.3%; median value: 22.4%). Higher rates are reported in individuals with comorbid OCD (OCD+BDD: 40%) [8], in Veterans with comorbid MDD (92% of the sample) (58.3%) [9] and among inpatients (75% had comorbid Substance Use Disorder) (93.8%) [10]. Mean rate of current suicidal ideation is 37.4% (range 26.5-49.7%; median value: 36.9%) and mean rate of lifetime suicidal ideation is 74.5% (range 53.5-85%; median value: 77.9%).

Studies performed in the general population confirmed that BDD is associated with a significantly higher risk of suicide attempts and suicidal ideation as compared to individuals without that diagnosis (Tab. II), although reported prevalence rates somewhat lower than those in clinical settings. When suicide risk was estimated in the general population using specific instruments, such as the

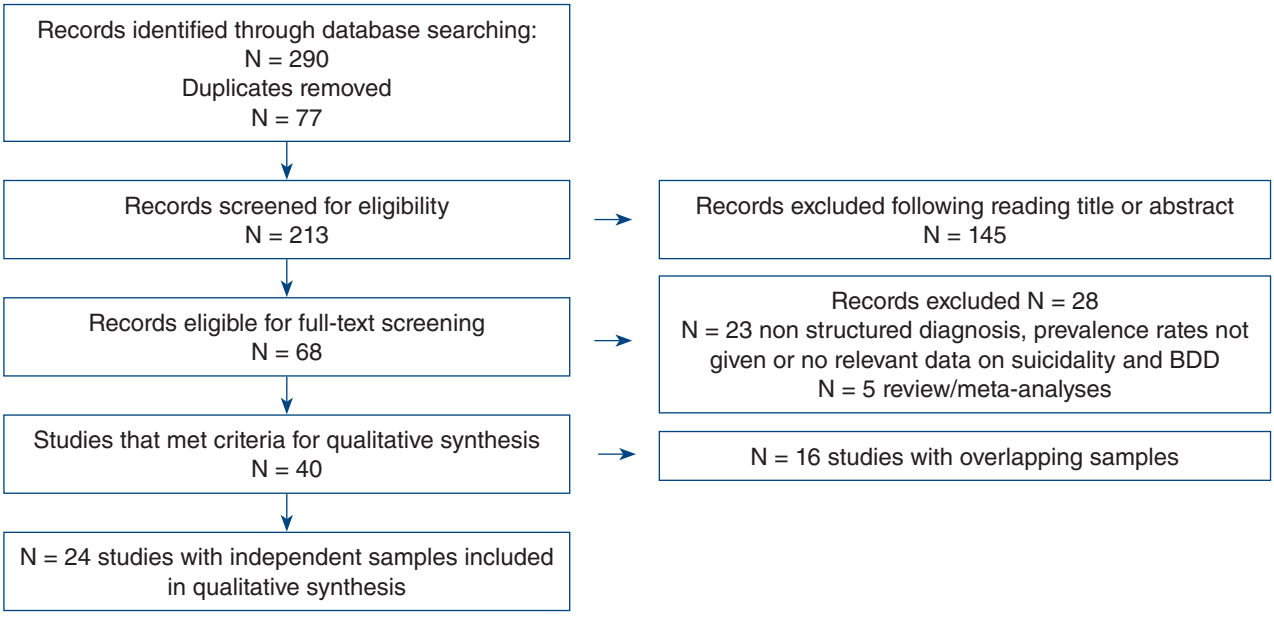

FIGURE 1. *Flow chart showing the selection of BDD studies.*

SBQ-R (Suicide Behaviors Questionnaire Revised) or the ACSS (Acquired Capability Suicide Scale), it was found elevated [11-13].

Twenty-six studies provided information on predictors of suicidality. Table III presents results of the analysis of socio-demographic and clinical factors potentially associated with increased risk for suicide.

Hoarding disorder

We could find only two studies that recruited individuals with DSM-5 criteria HD [14 15]. All the other studies shown in Table IV investigated suicidality in individuals with a diagnosis of OCD and hoarding symptoms (in one study only subjects with hoarding as the primary problem were included, thus suggesting that these individuals could have been diagnosed with HD provided that DSM-5 criteria were available at that moment). Interpretation of data concerning suicidality in HD is then compromised by these limits.

Suicidality in individuals with HD appears to be low, with rates of current suicidal ideation comprised between 5% and 10%, although 19% of individuals attempted suicide during their lifetime [14 15]. Suicidality appears to be higher in samples composed of individuals with OCD and hoarding symptoms (Table IV).

Only one recent study [14] specifically examined factors associated with increased suicide risk in individuals diagnosed with HD according to DSM-5 criteria: severity of HD (as measured by the SI-R total score), hoarding-related impairment (as measured by the ADL-H total score), higher number of psychiatric comorbidities, and specifically MDD and BD, all predicted suicidality [14].

Trichotillomania (hair pulling disorder) and skin picking disorder

Only four studies provided information concerning suicidality in individuals with TTM. These studies, moreover, suffered from the inclusion of few subjects whose diagnosis was made without structured interviews. In one study [16], data concerning suicidality in individuals with OCD and grooming disorders were provided without specifying whether it was TTM or SPD. Table V presents results of our review: lifetime rates of suicide attempts are low (3.7-12%) as compared to rates in other OCRDs; approximately 40% of individuals, however, reported lifetime suicidal ideation. Concerning SPD, five studies provided prevalence rates of suicide attempts and suicidal ideation; however, only two studies included samples made of non-comorbid SPD (Tab. VI). The only study that investigated lifetime suicide attempts rate in individuals with SPD without comorbid disorders found a low prevalence (5.7%) [17]. Approximately 40% of individuals reported lifetime suicidal ideation.

Discussion

Obsessive-compulsive disorder (OCD) has long been considered a disorder which did not carry a notable risk for suicide. Recent meta-analyses and systematized reviews, however, challenged this opinion and found that OCD may actually be considered at risk for suicidal ideation, suicide attempts and committed suicide. A recent systematic review from our research group [2] found a mean prevalence of current suicidal ideation in OCD of 25.9% (median: 15.6%); lifetime suicidal ideation of 44.1% (median: 36.4%) and lifetime suicide attempts of 14.2% (median

TABLE I. *Suicidality in BDD: studies in clinical samples.*

Author	Country	Design	BDD diagnosis	Screening for suicidality	Mode of suicidality	Sample N Mean age % males	Suicidality (%) Suicide attempts	 Suicidal ideation
Veale et al., 1996 [20]	UK	Cross-sectional	BDDE BDD-YBOCS	n/r	Lifetime suicide attempts	50 32.6 (range 19-58) 24	24 (1 completed suicide)	-
Perugi et al., 1997 [21]	Italy	Cross-sectional	DID DSS HSCL-90	BDSS for suicidal ideation	Current suicidal ideation	58 25 (SD 5.9) 59	-	45
Zimmerman & Mattia, 1998 [22]	USA	Cross-sectional	SCID-I	n/r	Lifetime suicide attempts	16 31.6 (SD 10.8) 25	18.8	-
Albertini & Phillips, 1999 [23]	USA	Cross-sectional	SCID-I BDD Form BDD-YBOCS	BDD data form	Lifetime suicidal ideation & lifetime suicide attempts	33 (adolescents) 14.9 (SD 2.2) 9	21	67
Altamura et al., 2001[24]	Italy	Cross-sectional	SCID-I BDD-YBOCS	SCID-I	Current suicidal ideation	30 28.5 (SD 2.3) 13	-	49.7
Grant et al., 2002 [25]	USA	Cross-sectional	BDD-Q Self-report screening measure for BDD SCID-I	SCID-I	Lifetime suicide attempts	AN+BDD: 16 27.4 (SD 9.7) 0	62.5	-
Frare et al., 2004 [26]	Italy	Cross-sectional	SCID-I	ADPI	Current suicidal ideation	BDD: 34 24.7 (SD 5.6) 55.9	-	26.5
						BDD + OCD: 24 16.4 (SD 2.3) 62.5	-	29.1
Phillips et al., 2005 [7]	USA	Cross-sectional	SCID-I BDD-YBOCS	BDD Form	Lifetime suicidal ideation & lifetime suicide attempts	200 32.6 (SD 12.1) 31.5	27.5 (2 completed suicide)	78
Fontanelle et al., 2006 [27]	Brazil	Cross-sectional	SCID-I	Specific questionnaire	Current suicidal ideation & lifetime suicide attempts	20 29.2 (SD 8.6) 45	15	35
Phillips et al., 2007* [8]	USA	Cross-sectional	SCID-I BDD-YBOCS	SCID-I HAM-D	Lifetime suicidal ideation & lifetime suicide attempts	BDD: 45 36.5 (SD 12.7) 62.3	13.3	77.8
						BDD + OCD: 40 36.5 (SD 11.7) 55	40	85
Conroy et al., 2008 [10]	USA	Cross-sectional	BDD-Q SCID-I/P	A brief version of the BDD data form	Lifetime suicidal ideation & lifetime suicidal attempts	16 31.9 (SD 11) 31.2	93.8	100
Philipps & Kelly, 2009 [28]	USA	Prospective	BDD-YBOCS	HAM-D	Current suicidal ideation	67 32.1 (SD: 10.5) 32.3%	-	38.8
Costa et al., 2012 [29]	Brazil	Cross-sectional	SCID-I	Questionnaire assessing suicidality	Lifetime suicidal ideation & lifetime suicide attempts	OCD + BDD: 109 31.3 (SD 10.2) 44	23.8	53.5 (suicidal plans 36.6)
Bjornsson et al., 2013* [30]	Iceland	Cross-sectional	BDD-YBOCS BDD-PSR BDDE	Suicidality items from the HAM-D	Lifetime suicidal ideation & lifetime suicide attempts	Sample 1: 184 16.7 (SD 7.3) 33.15	30.3-14.5#	81-69.4#
						Sample 2: 244 16.7 (7.2) 46.7	29.9-16.7#	83.9-79.7#

(continues)

TABLE I (*follows*). *Suicidality in BDD: studies in clinical samples.*

Author	Country	Design	BDD diagnosis	Screening for suicidality	Mode of suicidality	Sample N Mean age % males	Suicidality (%) Suicide attempts	 Suicidal ideation
Hart et al., 2013* [31]	USA	Cross-sectional	SCID-I BDD-YBOCS BDD form	SCID-I	Lifetime suicidal ideation & lifetime suicide attempts	Sample 1: 160 28.80 (SD 11.04) 41	29.4	78.0
						Sample 2: 115 32.93 (SD 11.83) 30	28.2	74.1
De Brito et al., 2015 [32]	Brazil	Cross-sectional	BDDE Clinical assessment	n/r	Lifetime suicidal ideation & lifetime suicide attempts	300 n/r 14.6	9	18.4
Kelly et al., 2015 [9]	USA	Cross-sectional	BDD-Q SCID-P	n/r	Lifetime suicidal ideation & lifetime suicide attempts	12 49.6 (SD 13.7) 83.3	58.3	66.7

*n/r: not reported; *: partially overlap with Phillips 2005. The additional studies which used exactly the same cohort of participants are included in Appendix (not shown in the table); #: age of onset before 18 – age of onset after 18; BDDE: Body Dysmorphic Disorder Examination; BDD-YBOCS: Yale-Brown Obsessive-Compulsive Scale adapted for BDD; DID: Diagnostic Interview for Body Dysmorphobia; DSS: Body Dysmorphic Symptom Scale; HSCL 90: Hopkins Symptom Checklist 90; SCID-I: Structured Clinical Interview for DSM-IV Axis-I Disorders; BDD-Q: The Body Dysmorphic Disorder Questionnaire; BDD-PSR: Psychiatric Status Rating Scale for Body Dysmorphic Disorder; SCID/P: Structured Clinical Interview for DSM-IV Patient Edition; ADPI: Adult Demographic and Personal Inventory; HAM-D: Hamilton Rating Scale for Depression.*

TABLE II. *Suicidality in BDD: epidemiological studies.*

Authors	Country	Design	BDD diagnosis	Screening for suicidality	Mode of suicidality	N BDD-sample§ Mean age % males	Suicidality Suicide attempts	 Suicidal ideation
Rief et al., 2006 [33]	Germany	Cross-sectional	DSM criteria Clinical assessment SOMS-7	n/r	Current suicidal ideation & lifetime suicide attempts	42 44.3 (SD 17.2) 40	7.2 (1.0 in no-BDD, p < .001)	19.1 (3.4 in no-BDD, p <. 001)
Buhlmann et al., 2010 [34]	Germany	Cross-sectional	DSM criteria	Specific questionnaire	Lifetime suicidal ideation & lifetime suicide attempts	45 48.9 (SD: 17.1) 37.7	22.2 (3.5 in no-BDD, p = 0.02)	31.0 (2.1 in no-BDD, p = 0.02)
Schieber et al., 2015 [35]	Germany	Cross-sectional	DSM-IV and DSM-5 criteria	PHQ-9	Current suicidal ideation	62 42.1 (SD 13.6) 21	-	31.1 (7.3 in no-BDD)
Moolman et al., 2017 [36]	Germany	Cross-sectional	DSM-5 criteria BDSI	Items 10, 16, 17, and 18 from the FKS	Current suicidal ideation	11* n/r 18.2	-	36.4 (8.8 in no-BDD, p < .001)
Shaw et al., 2016 [12]	USA	Cross-sectional	BDD-SS	BDD-SS ACSS	Current suicide risk	235 32.1 (SD 9.9) 43	INQ-burd: 2.71 (SD 1.50) INQ-belong: 3.37 (SD 1.62) ACSS: 8.01 (SD 4.67)	
Weingarden et al., 2016 [13]	USA	Cross-sectional	BDD-Q BDD-YBOCS	SBQ-R	Current suicide risk	114 30.2 (SD 10.9) 8%	SBQ-R: 8.18 (SD 3.70)	
Weingarden et al., 2017 [11]	USA	Cross-sectional	BDD-Q BDD-YBOCS	SBQR BDD-SS	Current suicide risk	184 29.7 (SD 10.1) 7.6	SBQ-R: 9.69 (SD 4.25)	

*§: N of BDD patients from the general population; *: adolescent population; SOMS-7: Somatoform Disorders Screening Symptoms-7; BDSI: Body Dysmorphic Symptoms Inventory; BDD-SS: Body Dysmorphic Disorder Symptoms Scale; BDD-Q: The Body Dysmorphic Disorder Questionnaire; BDD-YBOCS: Yale-Brown Obsessive-Compulsive Scale adapted for BDD; PHQ-9: Patient Health Questionnaire-9; FKL: Fragebogen körperdysmorpher Symptoms; ACSS: Acquired Capability Suicide Scale; SBQ-R: Suicide Behaviors Questionnaire Revised; INQ: Interpersonal Needs Questionnaire - INQ-burd: INQ perceived burdensomeness subscale; INQ-belong: INQ thwarted belongingness subscale.*

TABLE III. *Studies with data on associated factors or predictors of suicidality in body dysmorphic disorder.*

Predictors		Current/lifetime suicidal ideation	Lifetime suicide attempts	Deaths by suicide
Socio-demographic or personal factors	Lifetime academic/occupational/role impairment	Didie et al., 2008 [49] Witte et al., 2012 [50]	Didie et al., 2008 [49] Witte et al., 2012 [50]	Philipps et al. 2005 [7]
	Lifetime/current social and functional impairment	Witte et al., 2012 (lifetime) [50] Philipps et al., 2005 (lifetime and current) [7]	Philipps et al., 2005 (lifetime and current) [7]	-
	Age 20 or younger	Philipps et al., 2006 [51]	-	-
	Being single or divorced	Philipps et al., 2005 [7]	-	-
Disorder-specific (BDD-related) variables	Early onset (< 18 yrs)	Bjornsson et al., 2013 [30]	Bjornsson et al., 2013 [30]	-
	Appearance related symmetry concerns	Hart & Philipps, 2013 [31]	-	-
	BDD-SS Severity	Philipps et al., 2005 [7] Philipps & Menard, 2006 [52] Shaw et al., 2016 [12]	-	Philipps et al. 2005 [7]
	Delusional form of BDD	-	Philipps et al., 2005 [7] Philipps & Menard, 2006 [52]	-
	Muscle dysmorphia	-	Pope et al., 2005 [53]	-
	BDD-related restrictive food intake	-	Witte et al., 2012 [50]	-
	BDD-related excessive exercise (protective)	-	Witte et al., 2012 [50]	-
	Type of plastic surgery performed for correction of apparent defects: rhytidectomy[1]	De Brito et al., 2016 [32]	De Brito et al., 2016 [32]	-
Comorbidities	Comorbid OCD	Frare et al., 2004 [26] Philipps al., 2007 [8]	Philipps et al., 2007 [8]	-
	Comorbid social phobia	Coles et al., 2006 [54]	-	Philipps et al. 2005 [7]
	Comorbid panic attacks	Philipps et al., 2013 [55]	-	-
	Lifetime history of PTSD	-	Phillips et al., 2005 [7] Witte et al., 2012 [50]	-
	History of psychiatric hospitalization	-	Philipps et al., 2005 [7]	-
	Substance/alcohol use disorders	Grant et al., 2005 [56] Witte et al., 2012 [50]	Philipps et al., 2005 [7]	Philipps et al. 2005 [7]
	MDD (current and lifetime)	Philipps et al., 2005 [7] Philipps et al., 2007 [8] Witte et al., 2012 [50] Shaw et al., 2016 [12]	-	Philipps et al. 2005 [7]
	Lifetime bipolar disorder	Philipps et al., 2005 [7]	Philipps et al., 2005 [7]	-
	Comorbid eating disorder	-	Philipps et al., 2005 [7]	-
	Any personality disorder	Philipps et al., 2005 [7]	Philipps et al., 2005 [7]	-
	Borderline personality disorder	Philipps et al., 2005 [7]	Philipps et al., 2005 [7]	-
Emotion-cognitive factors	Childhood trauma (emotional, physical and sexual abuse)[2]	-	Didie et al., 2006 [57]	-
	Shame/defectiveness beliefs	Weingarten et al., 2016 [13]	-	-
	Anxiety (considered as emotion)	Weingarten et al., 2016 [13]	-	-
	Weight concerns	-	Kittler, 2007 [58]	-
	High levels of impulsivity	Phillips & Menard, 2006 [59]	Phillips & Menard, 2006 [59]	-

1) Compared to other types of surgery: abdominoplasty and rhinoplasty; 2) Measured by Childhood Trauma Questionnaire (CTQ).

10.8%). Specific factors are more strongly associated with suicide in OCD patients; the severity of OCD, the unacceptable thoughts symptom dimension (aggressive, sexual, religious obsessions), comorbid Axis I disorder (bipolar disorder or major depressive disorder but also substance use disorder), the severity of comorbid depressive and anxiety symptoms, a previous history of suicide attempts, and some emotion-cognitive factors, such as alexithymia and hopelessness, all increase the risk of having suicidal ideation or attempting suicide [18]. Our systematic review clearly showed that OCD is at a greater suicide risk, compared to the general population. Hence, clinicians should actively inquire about suicidal thoughts and attempts when interviewing a patient with OCD, keeping in mind that risk identification remains a crucial factor for establishing preventive strategies. The recognition that specific risk factors

TABLE IV. *Suicidality in HD (or in OCD subjects with hoarding symptoms).*

Author	Country	Design	Hoarding disorder symptoms diagnosis	Screening for suicidality	Mode of suicidality	Sample N Mean age % males	Suicidality (%) Suicidal attempts	 Suicidal ideation
Balci &Sevincok, 2010 [37]	Turkey	Cross-sectional	YBOCS	SSI	Current suicidal ideation	11* n/r n/r	-	36.4
Matsunaga et al., 2010 [38]	Japan	Cross-sectional	YBOCS	Self-report questionnaire	Lifetime impulsive behaviors (including suicide attempts)	54* 30.8 (SD 8.9) 44.4	41 (*vs* 18 non-hoarders, p < 0.01)	
Alonso et al., 2010 [39]	Spain	Prospective	YBOCS	Beck suicide intent scale	Lifetime suicide attempts	62* n/r n/r	6.45 (*vs* 5.91 in total OCD population)	-
Torres et al., 2011 [40]	Brazil	Cross-sectional	DYBOCS	Specifically created questionnaire	Lifetime and current suicidal ideation, lifetime suicidal plans & lifetime suicide attempts	297* n/r n/r	13.1	11.5 (current) 39.4 (lifetime) 24.2 lifetime suicidal plans
Chakraborty et al., 2012 [41]	UK	Cross-sectional	SI-R	Clinical interview	Current suicidal ideation & lifetime suicide attempts	20# 31.5 (SD 9.98) 50	40	20
Torres et al., 2012 [42]	Brazil	Cross-sectional	DYBOCS	Specific questions	Current and lifetime suicidal ideation, lifetime suicidal plans & lifetime suicide attempts	528 (4 of them only HD)* 35.9 (SD 13.2) 40.2	12.7	12.3 (current) 38.9 (lifetime) 23.7 lifetime suicidal plans
Ayers et al., 2015 [15]	USA	Cross-sectional	DSM-5 criteria UHSS SI-R CIR	n/r	Current suicidal ideation	71 67 (SD 5.8) 31	-	4.69
Archer et al., 2018 [14]	USA	Cross-sectional	SIHD	MINI	Current suicidal ideation & lifetime suicide attempts	313 59 (SD 11.8) 25.9	19	10

**: patients with OCD and hoarding symptoms as measured by the Dimensional YBOCS; #: patients with OCD and hoarding symptoms. In all cases, hoarding was a primary problem, that is, not secondary to other OCD symptoms. YBOCS: Yale Brown Obsessive Compulsive Scale; DYBOCS: Dimensional Yale Brown Obsessive Compulsive Scale; SI-R: Saving Inventory Revised; UHSS: UCLA Hoarding Severity Scale; CIR: Clutter Image Rating Scale; SIHD: The Structured Interview for Hoarding Disorder; SSI: Scale for Suicidal Ideation; MINI: Mini International Neuropsychiatric Interview.*

are associated with suicidal ideation and attempts among individuals with OCD could potentially lead to saving lives in the future.

Less research has been devoted to understanding suicidality among individuals with obsessive-compulsive related disorders; this group of disorders may share with OCD the high risk for suicide attempts and suicidal ideation. However, only for BDD systematic reviews and a meta-analysis are available on the topic [6 19]. This lead us to perform the present systematic review including all papers on suicidality among individuals with OCRDs.

Concerning suicidality among individuals with BDD, our results are consistent with those of a previous systematic review and meta-analysis which, however, included only seventeen studies [6]: a positive and statistically significant association was found between BDD and suicidality (attempts and ideation together, without differentiating between current and lifetime rates): OR = 3.63 (CI 2.62-4.63).

Our systematic review found that approximately 20% of individuals with a primary diagnosis of BDD attempted suicide during their lifetime and 75% had suicidal ideation. Studies performed in the general population confirmed that BDD is in itself at greater risk for suicide as compared to the general population. Suicidality in BDD appears, then, even higher than among patients with OCD. Clinicians, then, should not overlook BDD as being not at risk for suicide and should actively inquire about past suicide attempts and current suicidal ideation in each patient with a diagnosis of BDD, independently from other comorbid disorders eventually present.

However, we found that BDD-specific factors such as early onset, severity, poor insight and muscle dysmorphia and comorbid disorders (mainly MDD, anxiety disorders or OCD) increase the risk of suicide attempts or suicidal ideation, and thus may constitute specific predictors of suicidality to be actively inquired and that clinicians could

TABLE V. *Suicidality in trichotillomania.*

Author	Country	Design	TTM diagnosis	Screening for suicidality	Mode of suicidality	Sample N Mean age % males	Suicidality (%) Suicide attempts	 Suicidal ideation
Streichenwein et al., 1995 [43]	USA	Clinical trial	DSM-IV criteria	n/r	Lifetime suicide attempts	16 39 (SD 12) 12.5	6.3	-
Seedat & Stein, 1998 [44]	South Africa	Cross-sectional	Specific questionnaire DSM-IV criteria YBOCS	Specific questionnaire	Current suicidal ideation & lifetime suicide attempts	27 29.8 (SD 10.7) 37	3.7	44.4
Lejoyeux et al., 2002 [45]	France	Cross-sectional	MIDI	Specific questionnaire	Lifetime suicide attempts	3* 30 (SD 5) 0	66.6	-
Lovato et al., 2012 [16]	Brazil	Cross-sectional	SCID-I DYBOCS	n/r	Current suicidal ideation & lifetime suicide attempts	121** 31.0 (SD 11.8) 27.3	12.0	39.3

*YBOCS: Yale Brown Obsessive Compulsive Scale; MIDI: Minnesota Impulsive Disorders Interview; SCID-I=Structured Clinical Interview for DSM-IV Axis-I Disorders; DYBOCS: Dimensional Yale Brown Obsessive Compulsive Scale; *: patients diagnosed with TTM taken from a sample of depressed patients; **: population with OCD and GD (grooming disorders, either skin-picking disorder or trichotillomania).*

consider when planning treatment and visit schedules. Results of our systematic review are in accordance to those of previous reviews on the same topic [6 19]. It has to be stated, however, that few studies specifically examined potential predictors of suicidality in BDD, and many of those studies are flawed by methodological biases, suggesting caution in the interpretation of these findings.

It has to be noted, moreover, that some of the factors found to increase suicidality among subjects with BDD do also increase suicide risk in individuals with OCD [2]. Risk identification and stratification of risk remain essential components of suicide prevention and should guide the clinical approach to subjects with OCD. Whether and how these risk factors for suicide work together, and whether the specific factors act as moderators or mediators, remains to be fully elucidated.

The evaluation of suicide risk in individuals with HD, Trichotillomania and SPD is hampered by the very low number of studies investigating suicidality specifically in samples of individuals with these DSM-5 disorders. The revision of the classification made by DSM-5 (with the creation of the OCD and related disorders new category and with the new disorders – HD and SPD) surely represented an advance for clinicians and researchers, but unfortunately very few studies at yet investigated whether individuals with these new disorders are at risk for committing suicide. When examining suicide risk and hoarding, moreover, we have still to rely on data gathered from samples of subjects

TABLE VI. *Suicidality in skin picking disorder.*

Author	Country	Design	SPD diagnosis	Screening for suicidality	Mode of suicidality	Sample N Mean age % males	Suicidality (%) Suicide attempts	 Suicidal ideation
Philipps et al., 1995 [46]	USA	Cross-sectional	n/r	n/r	Lifetime suicide attempts	33* - 42.4	33	-
Grant et al., 2006 [47]	USA	Cross-sectional	SCID-I YBOCS	n/r	Lifetime suicide attempts	79* 30.5 (SD 11.3) 17.7	25.3	-
Grant et al., 2010 [17]	USA	Cross-sectional	proposed DSM criteria	n/r	Lifetime suicide attempts	53 34.2 (SD 13.11) 13.2	5.7 (*vs* 13.7 in OCD)	-
Lovato et al., 2012 [16]	Brazil	Cross-sectional	SCID-I DYBOCS	n/r	Current suicidal ideation & lifetime attempts	121** 31.0 (SD 11.8) 27.3	12.0	39.3
Machado et al., 2018 [48]	Brazil	Cross-sectional Epidemiological	SPSQ	PHQ-9	Current suicidal ideation	259 27.8 (8.4) 17.8	-	41.3

**: individuals with BDD and SPD; **: population with OCD and GD (grooming disorders, either skin-picking disorder or trichotillomania); SCID-I: Structured Clinical Interview for DSM-IV Axis-I Disorders; YBOCS: Yale Brown Obsessive Compulsive Scale; DYBOCS: Dimensional Yale Brown Obsessive Compulsive Scale OCD: Obsessive Compulsive Disorder; SPSQ: Skin Picking Stanford Questionnaire; PHQ-9: Patient Health Questionnaire-9.*

with OCD as the primary diagnosis and prominent hoarding symptoms; it is not clear, then, whether suicidality is associated with HD in itself or whether it is associated with the specific subtype of OCD with hoarding symptoms. It is possible that HD, being usually associated with poor insight and then with a long delay from onset to help-seeking, is not at risk for suicide at the beginning of its history, and subsequently becomes associated with a higher risk when comorbid with OCD or MDD, or when the impairment associated with HD is huge. However, this is only a hypothesis that needs to be confirmed.

Concerning the grooming disorders (TTM and SPD), too few studies are available to draw some conclusions; very preliminary data seem to suggest that suicide attempts are low in TTM and SPD as compared to other OCRDs. The inclusion of these disorders among the chapter of OCD and related disorders will for sure draw attention on such neglected disorders, and we will expect that more reliable data on suicidality will appear in the next future.

In conclusion, our present systematic review showed that like in the case of pure OCD [2], 3 OCRDs taken together may be at risk for suicide attempts and suicidal ideation independently from comorbid disorders (and specifically independently from comorbid OCD); BDD remains the disorder more strongly associated with an increased risk for suicide, followed by HD and then the grooming disorders. A greater awareness of such suicide risk should prompt clinicians to actively inquire about past suicide attempts and current suicidal ideation whenever a patient with one of the obsessive-compulsive related disorders presents for a visit.

Conflict of interest

The Authors have no conflict of interest to declare.

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Appendix 1

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How to cite this article: Albert U, Pellegrini L, Maina G, et al. *Suicide in obsessive-compulsive related disorders: prevalence rates and psychopathological risk factors.* Journal of Psychopathology 2019;25:139-48.