

SYMPTOMS OF EATING DISORDERS IN YOUNG WOMEN WITH AND WITHOUT SELF-HARMING BEHAVIOUR

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Abstract: The paper addresses self-harming behaviour and the prevalence of eating disorders in females in adolescence and young adulthood. It aims to identify the difference between the total score and the score of the individual symptoms of eating disorders in young women with and without self-harming behaviour. The study sample consists of 60 women (ED) aged 15 – 26 (mean age = 18.4 years) who suffer from an eating disorder, of which N = 30 (50%) exhibit self-harming behaviour. The participants were tested using a modified SHI (Self-Harm Inventory) questionnaire to identify SH, and the EDI-2 (Eating Disorders Inventory) to establish the total score and individual symptoms of ED. SH participants with ED scored statistically significantly higher in six subscales and the total EDI-2 score than non-SH participants with ED (sig_s 0.000). The results of the data analysis of the study sample clearly demonstrate that those participants who SH have more pronounced symptomatology of ED.

Keywords: eating disorders, self-harm, symptoms, differences, women.

1 Introduction

Eating disorders (ED) are serious mental illnesses with characteristic signs and symptoms. One of the symptoms is an excessive desire to reach, and subsequently maintain, a low body weight through various detox mechanisms such as, vomiting, repulsion and/or excessive exercise (Morris & Twaddle, 2007; Dittmer, Jacobi, & Voderholzer, 2018). An inability to achieve the target weight then results in depressive tendencies, anxiety, feelings of worthlessness or a fear of losing control and attractiveness (Sharma, 2018; Morrison, 2014). In bulimia nervosa (BN), feelings of disappointment that stem from binge eating lead to activities that aim to prevent an increase in body weight (Fialova & Krch, 2012), e.g. through vomiting, taking diuretics or laxatives (Mehler & Rylander, 2015). The majority of ED cases occur in the adolescent population (Fialova & Krch, 2012) and among young adults (the highest prevalence is at an age of approximately 21 – Ward, Rodriguez, Wright, Austin, & Long 2019), for whom it is characteristic (inter alia) to find an obsessive need for external perfection.

Self-harm (SH) has no exact definition, which leads to complications in comparing related studies. One reason for this might be that this type of behaviour has not been recognised as a clinical syndrome (Kriegelova, 2008) and as such, its definition and diagnostics are not unified. Generally, SH is defined as behaviour that leads to intentional self-harm and self-destruction (Favazza, 1999), but definitions differ in what is considered to be the aim of this harm. The concept of Non-Suicidal Self-Injury (NSSI), in the Diagnostic and Statistical Manual of Mental Disorders, fifth edition (DSM-5) only takes into consideration those behaviours, which directly and visibly harm the bodily tissues of an individual (burning, cutting, hitting oneself etc.) (DSM-5, 2013). On the other hand, the International Statistical Classification of Diseases and Related Health Problems, tenth revision (ICD-10) also includes indirect and hidden forms of self-harm in the categories of Intentional Self-Harm (categories: X60 – X84) (abuse of medicines, alcohol abuse, hurting oneself by falling/jumping etc.) (ICD-10, 2016), and within other approaches, SH further includes mental self-harm (torturing oneself with self-defeating thoughts, engaging in emotionally abusive relationships etc.) (Sansone & Sansone, 2010).

Thus, SH, if defined broadly, may include behaviour with symptoms that overlap those of ED. Intentional starvation and the abuse of laxatives aiming to harm oneself are one of the indirect physical forms of SH (Demuth & Demuthova, 2019).

Other parallels between SH and ED appear in terms of control. SH tends to be a maladaptive coping strategy, a reaction to a mishandled situation, and the SH individuals often report that only through SH do they feel in control of what they are doing. It helps them to compensate for the loss of control over those aspects that are producing their psychological distress (Demuthova & Demuth, 2019, Petermann, Nitkowski, 2015). In the same way, the obsession over body weight and weight control found in ED is frequently an attempt to compensate for an inability to regulate or to control the life situation of the individual (Froreich, Vartanian, Grisham, & Touyz, 2016). Both ED and SH help in emotion regulation and thus are used as coping mechanisms (Smithuis et al., 2018). Within the context of the composition of the research sample, ventilation of emotions is specifically important, as it is typically a female maladaptive coping strategy (Mickova 2017).

In addition to the parallels in the symptoms of SH and ED, it is important to point out the differences, bearing in mind that they are two separate clinical diagnoses (although SH is not a clearly defined nosological unit). The key difference is motivation – for ED, the dominant motivation is to reach and maintain a desired weight, in the case of SH, starvation, laxative abuse and other types of behaviour (that also occur in ED) are only tools used to hurt oneself and cause pain (physical or mental), and their impact on body weight is not the primary goal. Specific studies that have observed the mutual interactions between these two diagnoses have revealed interesting links. Apparently, the prevalence of SH behaviour varies dependent on the type of ED (Claes, Vanderycken, & Vertommen, 2001, 2003, Favaro & Santanastaso, 2002, Peebles, Wilson, & Lock, 2011); the prevalence of SH is typically higher among individuals with anorexia nervosa (AN) (Claes, Vanderycken, & Vertommen, 2001), and patients with ED who SH have a statistically significant longer history of treatment for their ED than those who do not (Smithuis et al., 2018) etc.

2 Objective

Considering the links that exist between ED and SH in terms of their co-morbidity, the mechanisms by which they affect mental health etc., it is important that for effective differential diagnostics, intervention and treatment, we clarify the areas and manner of their mutual interactions. The objective of our study is to detect the differences in the total score as well as the score of the individual symptoms of ED in SH and non-SH participants. In consideration of the prior research in this area (Muehlenkamt et al., 2009; Claes, Nederkoorn, Vandereycken, Guerrieri, & Vertommen, 2006; Claes, Vanderycken, & Vertommen, 2001, 2003; Favaro & Santanastaso, 2002; Fialová & Krch, 2012; Peebles, Wilson, & Lock, 2011; Paul et al., 2002), we formulated the following hypothesis and research question:

H: There are statistically significant differences in the total ED score between self-harming and non-self-harming participants.

RQ: Are there any statistically significant differences in the individual ED symptoms between self-harming and non-self-harming participants?

3 Methods

3.1 Participants and Procedure

The study sample was formed through intentional selection. The criteria for inclusion in the study were sex (female), age (15 – 29) and that the individual was receiving outpatient treatment as a consequence of a diagnosis of an ED. The patients completed a questionnaire which aimed to establish the presence of SH. From the results 30 self-harming women (SH group) and 30 non-self-harming women (non-SH group) were

selected at random. The groups were comparable with regard to age, gender, diagnoses, location and profession. Table 1 shows the basic data of these two groups.

The mean age of the study sample was 18.4. The study sample included patients suffering from anorexia nervosa (65%) and bulimia nervosa (35%).

Table 1: Basic characteristics of SH and non-SH group

	SH group	Non-SH group
Age (mean)	15 – 26 (18.07)	15 – 25 (17.93)
Diagnosis (%)	AN (60%) BN (40%)	AN (70%) BN (30%)
Region	Western and central Slovakia	Eastern and central Slovakia
Occupation	Student or young graduate job	Student

The questionnaire battery was individually administered to the participants after receiving consent (or the consent of their guardian), and the data collection was standardised and anonymous. The participants were free to withdraw from the research project at any time.

3.2 Measures and Statistical Analysis

A modified Self-Harm Inventory (SHI), as published by the authors, R. A. Sansone & L. A. Sansone (2010), was used in order to identify SH behaviour in the study group. The translation, back-translation and translation quality evaluation were provided by independent evaluators. The Slovak version of the questionnaire includes 20 forms of SH (for the list, see Demuthova & Demuth, 2020). SHI is a self-rating questionnaire, in which the respondents report the frequency of occurrence of a specific SH behaviour on a 4-degree scale (from “never” to “often”). A previous study (see e.g. Demuthova & Doktorova, 2018) has confirmed the relatively high-quality internal consistency of this methodology (Cronbach’s $\alpha = 0.809$).

The presence of ED symptoms, their extent and the total ED score were measured using the Eating Disorder Inventory (EDI-2). The second version of the questionnaire was used for this study. Unlike the original version (Garner, Olmstead & Polivy, 1983), it includes both the original eight scales of Body Dissatisfaction (BD), Bulimia (B), Drive for Thinness (DT), Ineffectiveness (I), Interpersonal Distrust (ID), Interoceptive Awareness (IA), Perfectionism (P) and Maturity Fears (MF), plus three others: Asceticism (A), Impulse Regulation (IR) and Social Insecurity (SI) (Garner, 1991). EDI-2 is a self-assessment checklist with questions that are answered from a choice on a 6-point scale (ranging from “always” to “never”). The score for each sub-scale can be calculated along with the overall EDI-2 score. The translation, back-translation and translation quality evaluation were conducted by independent evaluators.

The data was processed using the SPSS 22 statistical analysis software; the statistical significance threshold for each data analysis was set to 0.05. Considering the fact that the questionnaires are not standardised to our population, it was necessary to carry out reliability tests using Cronbach’s alpha test. In the SHI questionnaire, the internal consistency was $\alpha = 0.85$; the individual EDI-2 scales varied from 0.769 to 0.869, which corresponds to a good level of reliability (Rojkova, 2019). In order to select the appropriate tests to be used to verify the hypothesis and answer the research question, it was necessary to test for a normal value distribution in the observed variables. The significance values from the Shapiro-Wilk test were ≤ 0.05 ; hence a non-parametric Mann-Whitney U test was used for the statistical analyses.

4 Results

The Mann-Whitney U test for two independent data sets, testing the hypothesis:

“There are statistically significant differences in the total ED score between self-harming and non-self-harming participants”
The test confirmed the formulated assumption. H1 is proven based on the presence of statistically significant differences (see Table 2) in the total EDI-2 score ($U = 145.500$; $Z = -4.509$; Sig. 0.000) between the SH and non-SH group of participants.

Table 2: Comparison of the total EDI-2 score in the SH and non-SH group

	Group	N	Mean rank	Mann-Whitney U test
EDI-2 score	SH	30	40.65	$U = 145.500$ $Z = -4.509$ Sig. = 0.000***
	Non-SH	30	20.35	
	Total	60		

*** $p \leq 0.001$

For the research question:

“Are there any statistically significant differences between self-harming and non-self-harming participants in the individual ED symptoms?”

statistically significant differences were identified in nine EDI-2 subscales: BD, DT, I, ID, IA, MF, A, IR and SI (see Table 3).

Table 3: Comparison of the scores of individual symptoms from EDI-2 in the SH and non-SH group

EDI	Group	N	Mean rank	Mann-Whitney U test	Asymp. sig. (2-tailed)
BD	SH	30	41.18	$U = 129.500$	0.000***
	Non-SH	30	19.82	$Z = -4.751$	
B	SH	30	32.38	$U = 393.500$	0.402
	Non-SH	30	28.38	$Z = -0.839$	
DT	SH	30	41.73	$U = 145.500$	0.000***
	Non-SH	30	19.27	$Z = -4.509$	
I	SH	30	38.68	$U = 204.500$	0.000***
	Non-SH	30	22.32	$Z = -3.641$	
ID	SH	30	42.15	$U = 100.000$	0.000***
	Non-SH	30	18.85	$Z = -5.176$	
IA	SH	30	40.70	$U = 144.000$	0.000***
	Non-SH	30	20.30	$Z = -4.563$	
P	SH	30	29.38	$U = 416.000$	0.619
	Non-SH	30	31.62	$Z = -0.498$	
MF	SH	30	36.93	$U = 257.000$	0,004**
	Non-SH	30	24.07	$Z = -2.866$	
A	SH	30	44.65	$U = 25.500$	0.000***
	Non-SH	30	16.35	$Z = -6.289$	
IR	SH	30	25.71	$U = 145.500$	0.000***
	Non-SH	30	40.84	$Z = -4.509$	
SI	SH	30	26.33	$U = 218,500$	0,001***
	Non-SH	30	39.50	$Z = -3.402$	

Note: BD = Body Dissatisfaction; B = Bulimia; DT = Drive for Thinness; I = Ineffectiveness; ID = Interpersonal Distrust; IA = Interoceptive Awareness; P = Perfectionism; MF = Maturity Fears; A = Asceticism; IR = Impulse Regulation; Si = Social Insecurity

** $p \leq 0.005$

*** $p \leq 0.001$

For most of the EDI-2 symptoms observed, the SH group scored higher than the non-SH group, even for the B subscale, where the cross-group differences were not statistically significant. The only exceptions were in three subscales – IR and SI (with a statistically significant difference between the

groups) and P (without a statistically significant difference), in which the SH group scored lower than the non-SH group.

4 Discussion

ED are complex mental disorders, which have an adverse impact on the mental, somatic, and social wellbeing of the affected person (Boyd et al., 2017). Moreover, they often co-occur with other mental disorders; in the context of comorbidity with AN, DSM-5 lists bipolar disorder, depression, anxiety disorders, obsessive-compulsive disorder (in the restrictive type) and addictive substance abuse (in the case of purging). People with BN tend to suffer from more than one mental disorder, often from several and the co-morbidity is not restricted to a specific subgroup but appears over the whole scale of mental disorders (DSM-5, 2013).

Several studies (Peebles, Wilson, & Lock, 2011; Muehlenkamp et al., 2009) have suggested there might be a link between ED and SH – for instance, Claes, Nederkoorn, Vandereycken, Guerrieri, & Vertommen (2006) reported that approximately one third of ED sufferers directly or indirectly self-harm several times a month. Our study, focusing on women diagnosed with an ED, revealed a more serious prevalence of this type of disorder (a higher total score and higher scores on the individual subscales of the Eating Disorder Inventory) in the group that reported SH. It is possible that SH individuals are used to discomfort, which they trigger through various activities that cause SH, and thus are willing to go further and hence their ED is more severe than in non-SH individuals. A more accurate interpretation of our findings is offered by a deeper insight into the individual ED symptoms where the SH group scored statistically significantly higher. These included BD, DT, I, ID, IA, MF and A.

Body Dissatisfaction (BD) is an indicator of dissatisfaction with one's own body, with one's physical appearance, and in EDI, it is characterised by items such as: "I think my buttocks are too large", "I think that my stomach is too big", etc. Considering that we do not know the causal relationship between SH and BD, the greater extent of this dissatisfaction in the SH group may be interpreted in several ways. Self-harm of one's own body decreases its aesthetic value (wounds, scars, . . .), which is why participants with SH may view their bodies more critically than the non-SH ED participants. A low level of satisfaction with one's own body may therefore be a consequence of self-harming behaviour (Benzel, 2019). However, an inverse link is also plausible – participants with high levels of BD do not appreciate their bodies and consequently have no boundaries when it comes to damaging it. Participants with a higher level of body satisfaction would probably be less willing to "mutilate" their bodies. In this context, it might be beneficial to observe the differences in the forms of SH – it is possible that participants with higher levels of body satisfaction prefer indirect and less visible forms of SH, or even possibly mental forms of SH. Future research is needed to analyse the causality of the links outlined above in order to reveal their true nature. But it is also highly likely that there is no causal correlation between ED and SH and they only co-occur in parallel as comorbid diseases and mutually support each other through a tendency to indulge in high-risk behaviours (whether that be in the form of ED or SH).

We may also make similar assumptions in regard to the significant difference found in the DT (Drive for Thinness) subscale between the SH and non-SH groups. Drive for Thinness directly correlates with Body Dissatisfaction (Morisson, 2014) – the pathological forms of weight loss are a consequence of dissatisfaction with one's own body. However, the problem is that radical weight loss normally does not lead to an increase in body satisfaction. On the other hand, muscle mass and tissues lose flexibility, the WHR ratio, considered a measure of attractiveness, (its optimal value is 0.7 – Platek & Singh, 2010) increases, and the body loses its female curves. For this reason, radical weight loss does not result in a higher level of satisfaction with one's own body which (in a vicious

circle) triggers a further increase in weight loss activities or excessive exercise. A possible explanation for the higher level of DT in SH adolescents and young women (as opposed to the participants without any SH behaviour) may be similar to that in the case of BD – SH behaviour may, for example, move the limit of DT, since the SH individual is more able to bear the side effects of DT as they are already used to greater levels of discomfort from their SH activities; hence, their ED activity may also be more intense. In a similar way, certain symptoms of SH (intentional starvation or excessive exercise) may be preferred by participants with ED and consequently reinforce the extent of the ED.

The higher Ineffectiveness (I) score in the SH group may be interpreted as the result of two mechanisms. The first is that self-harming is the result of an ineffective strategy used to cope with mental burdens and is a maladaptive mechanism (Demuthova & Spasovski, 2020). Thus, it may be assumed that it occurs in individuals who are incapable of dealing with their difficulties in an effective and adaptive manner. For this reason, the I score may be higher in ED participants with SH. Another possible interpretation is that SH behaviour leads to severe deterioration in the state of health (both mental and physical), which affects the individual's performance (mental and physical) as well as effectiveness, which is ultimately reflected in a higher level of I.

Increased ID in SH participants is probably the result of either a basal mind-set with a lack of trust towards others, which motivates them to seek solutions to their problems through SH (and not, for example, by reaching out to others), or it may be a consequence of negative experiences that SH participants have had with the reactions of others. SH behaviour is often misunderstood and this results in a negative reaction from others and is wrongly interpreted as an effort to draw attention to oneself (Klonsky, Victor, & Saffer, 2014). Such a reaction from those around them may lead to an increase in ID, which was found in our sample of participants with ED.

Interoceptive Awareness (IA) represents the ability to perceive and integrate visceral signals relating to bodily states (e.g. hunger, intestinal tension, heartbeat, respiration, pain...) (Khalsa & Lapidus 2016). The existence and subsequent interpretation of these sensations provide a sense of one's physical self and play a crucial role in emotional processing to help guide one's behaviour (Craig, 2002). This subscale is considered highly sensitive with regard to ED; interoceptive issues, out of all EDI subscales, are deemed to be the best predictor of ED (Clausen, Roseninge, Friborg, & Rokkedal, 2011). Previous studies have also found that interoceptive awareness, along with three specific eating disorder subscales, allows discrimination between patients with eating disorder and psychiatric issues (Nevonen, Clinton, & Norring, 2006; Schoemaker, Verbraak, Breteler, & van der Staak, 1997). The IA of individuals with ED is dysfunctional on both levels – perceptual and behavioural. Case reports emphasise vague feelings of fullness or the failure to recognise bodily states as key characteristics reported by ED patients (Khalsa & Lapidus, 2016). On a behavioural level, they may, for example, ignore the feeling of hunger (anorexia) or fullness (bulimia), fatigue and exhaustion (excessive exercise). The link with SH in this regard is clear – SH individuals also ignore the warning signs (pain) from their bodies while practising self-harm, in the clinical picture, there are often deficiencies in understanding of emotions and in emotion regulation (Andover & Morris, 2014), overall the relationship with one's own body is damaged (Black, Garratt, Beccaria, Mildred, & Kwan, 2019). A higher level of IA in SH participants is therefore understandable.

Maturity Fears (MF) are considered to be a major (subconscious) element in the aetiology of ED (Holland, Bodell, & Keel, 2013). However, they are not normally linked to SH; they do not occur as key characteristics in the symptomatology of SH. The studies hitherto that have observed the correlation between SH and ED have failed to demonstrate that the occurrence of MF with the addition of SH would

change significantly (see e.g. Gomez-Exposito et al., 2016; Claes et al., 2018). However, our study showed that ED patients with SH had significantly worse MF symptoms than those without SH. Hence, it is possible in these cases that SH is a part of the symptomatology of a broader problem in adolescence, where both SH and ED may occur. Increased complications may result in a higher prevalence of both variables, which could explain the higher MF in individuals with SH. Further research is needed which might reveal the specificities in the study sample and provide possible explanations for the higher prevalence of MF in SH individuals.

The final ED subscale that had a statistically significantly higher prevalence in the SH group was Asceticism (A). According to Garner (2020) Asceticism reflects a tendency for self-discipline, self-denial, self-restraint, self-sacrifice and control of bodily urges. The tendencies to suppress one's own needs and to be too hard on oneself are typical traits of SH individuals, thus the higher level of A in this group is understandable.

Yet, the SH group of participants with ED also statistically significantly differed from the non-SH group in other EDI-2 subscales, with lower scores. These subscales were Impulse Regulation (IR) and Social Insecurity (SI). Impulsivity is an important construct in non-suicidal self-injury (Glenn & Klonsky, 2010). The correlation between impulsivity and SH occurs on two levels: on one hand, individuals who have difficulty controlling their impulses when distressed may select NSSI as a strategy to reduce the negative affect (Allen, Fox, Schatten, & Hooley, 2019), but on the other hand, it is also true that a lower level of impulse control in SH individuals leads to more frequent SH behaviour. In this context (based on a meta-analysis of 4,496 scientific articles), J. Lockwood, D. Daley, E. Townsend, & K. Sayal (2017) reached the interesting conclusion that mood-based impulsivity is related to the initiation of self-harm, while the cognitive facets of impulsivity are associated with the maintenance of self-harm.

Social Insecurity (SI) is also a crucial component in the ED symptomatology (Garner, 1991). Its presence among patients may be interpreted in several ways. Firstly, the broad range of ED behaviours (vomiting, excessive exercise, hiding food, purging...) require intentional isolation and that such behaviour should be hidden from others; secondly, the reactions of others to ED behaviour provokes the patients' tendency to isolate themselves; however, it was also shown that there are even more basal mechanisms based on atypical brain activity (disturbed orbitofrontal cortex activity), which underlie the lack of insight and social isolation that is characteristic of patients with ED (Katayama et al., 2014). The increased level of SI in ED is therefore in line with the characteristics and clinical picture of this disorder. It is not quite clear why the presence of SH in participants with ED decreases SI to a statistically significant degree. Based on the prevalence of SH in the observed population (studies report up to 45% – Demuthova & Demuth, 2020), it may be assumed that such wide-spread behaviour may be a source of social support, especially among peers. Counter-intuitively, SH may be a platform for social contact and to make an individual more acceptable to others, unlike "pure" ED. This interpretation is partially supported by studies that suggest that social aspects have a major impact in triggering and maintaining SH behaviour (see e.g. Jacob, Evans, & Scourfield, 2017; Memon, Sharma, Mohite, & Jain, 2018).

4 Conclusion

The results of the study reveal that the group of participants with ED and SH behaviours exhibited significantly stronger ED symptomatology in virtually all of the observed EDI-2 subscales, as well as in the total score. The most obvious interpretation of these results would be the synergic effect of these two clinical conditions, not excluding their mutual causality, which would have to be verified in future research.

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The authors declare there are no potential conflicts of interest with respect to the research, authorship, and/or publication of this article.

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Primary Paper Section: A

Secondary Paper Section: AN