

## **Self-injurious Behavior in Patients with Eating Disorders: a Prevalence Study**

Name	Erwin van Huigenbosch
Student number	0473200
Status	Definitive version
Date	09-09-2011
University	University of Utrecht, Clinical Health Science, Nursing Science
Supervisor	Dr. Berno van Meijel
Course instructor	Dr. Harmieke van Os - Medendorp
Institution	Altrecht Eetstoornissen Rintveld, Zeist
Journal	Journal of Nursing Scholarship
Required number of words	unknown
Required reference style	American Psychological Association style (APA)
Number of words:	
Article	4390
Dutch abstract	305
English abstract	307

## **Authors**

Van Huigenbosch, E., Berends, T., Verschueren, S., Dingemans, A., Van Os – Medendorp, H., Van Elburg, A., & Van Meijel, B.

## Samenvatting

**Doel** Het verkrijgen van inzicht in de prevalentie van generieke en additionele vormen van zelfverwondend gedrag bij patiënten met een eetstoornis, en de relaties tussen deze prevalentie en verschillende patiëntkenmerken.

**Onderzoeksdesign** Dit prevalentie onderzoek is gebaseerd op een cross-sectioneel onderzoeksdesign.

**Methoden** 85 patiënten van 16 jaar en ouder met een eetstoornis participeerden in het onderzoek. Patiënten met als primaire diagnose anorexia nervosa, boulimia nervosa, of eetstoornis niet anderszins omschreven (NAO) vormen de doelpopulatie van dit onderzoek. Voor het verzamelen van de data is gebruik gemaakt van de Zelfverwondingsvragenlijst (Self-injury Questionnaire – SIQ).

**Resultaten** Eenenvijftig procent (n = 43) van de patiënten met een eetstoornis heeft zichzelf het afgelopen jaar op ten minste één manier verwond. Slaan en haren trekken zijn door patiënten genoemd als additionele wijzen waarop zij zichzelf verwonden; deze vormen zijn niet specifiek gerelateerd aan eetstoornissen. We hebben geen significante verbanden gevonden tussen de verschillende typen eetstoornissen en de prevalentie van verschillende typen zelfverwondend gedrag. Ook vonden we geen significante verbanden tussen patiëntkenmerken (leeftijd, BMI, duur van de behandeling, duur van de eetstoornis) en de prevalentie van zelfverwondend gedrag in het afgelopen jaar.

**Conclusies** De door ons gevonden prevalentie cijfers komen overeen met vergelijkbare studies in andere westerse landen. Tegen onze verwachting in lijken patiënten met een eetstoornis zichzelf niet anders te verwonden dan niet-eetstoornis patiënten. Onze bevindingen geven aan dat er geen verschil is in de prevalentie van SIB tussen klinische patiënten en poliklinische patiënten met ED. We hebben geen enkel significant verband gevonden tussen de prevalentie van zelfverwondend gedrag enerzijds en patiëntkenmerken of verschillende typen eetstoornissen anderzijds.

**Klinische relevantie** De resultaten van deze studie geven aan dat zelfverwondend gedrag als een comorbide kenmerk van eetstoornissen moet worden gezien. Dat heeft belangrijke gevolgen voor het handelen van verpleegkundigen: o.a. meer bewustzijn van zelfverwondend gedrag en routinematig screenen op zelfverwondend gedrag is nodig.

**Trefwoorden:** Eetstoornis, Anorexia Nervosa, Boulimia Nervosa, Zelfverwondend gedrag, Zelfverwondingsvragenlijst

## Abstract

**Purpose** The purpose of this study is to gain insight into prevalence of generic and additional forms of SIB in patients with ED, and the associations between different patient characteristics and the prevalence of SIB.

**Design** This prevalence study is based on a cross-sectional design.

**Methods** Eighty-five eating disordered patients of 16 years and older participated in this study. Patients with a primary diagnosis of anorexia nervosa, bulimia nervosa, or eating disorder not otherwise specified (NOS) formed the target population of this study. Self-injurious Behavior was assessed using the self-report Self-Injury Questionnaire (SIQ).

**Findings** Fifty-one percent ( $n = 43$ ) of the eating disordered patients performed at least one type of self-injurious behavior the last year. Hitting and hair pulling are reported by patients as additional forms of SIB; these forms are not specifically related to ED. We also did not find significant associations between the different types of eating disorders and occurrence of types of self-injurious behavior. We tested for associations between patient characteristics (age, BMI, treatment duration, disease duration) and prevalence of self-injurious behavior during the last year, but found no significant associations.

**Conclusions** The prevalence figures we found are consistent with similar studies in other western countries. Against our expectations, eating disordered patients do not seem to injure themselves differently than non-eating disordered patients do. Our findings indicate that there is no difference in prevalence of SIB between in- and outpatients with ED. We did not find any significant association between the prevalence of SIB on the one hand, and patient characteristics or different types of eating disorders on the other hand.

**Clinical Relevance** The results of this study strongly confirm the relevance of self-injurious behavior as a comorbid feature of ED. This has important implications for nurses, including the need for more awareness of self-injurious behavior and routine screening for self-injurious behavior.

**Key words:** Eating Disorder, Anorexia Nervosa, Bulimia Nervosa, Self-injurious Behavior, Self-injury questionnaire (SIQ)

A relatively large number of patients with Eating Disorders (ED) injure themselves, often with serious consequences, both physically (e.g. scars, wounds, infections), psychologically (e.g. shame, feelings of guilt, low self esteem) and socially (e.g. social exclusion, loneliness) (Bosman & van Meijel, 2008; McAllister, 2001; Noll, Horowitz, Bonanno, Trickett, & Putnam, 2003). Nurses in (mental) health care will often get in touch with these patients. The reported prevalence of self-injurious behavior (SIB) in ED patients ranges between 25.4% and 55.2%, whereas the occurrence of EDs in SIB patients ranges between 54% and 61% (Claes, Klonsky, Muehlenkamp, Kuppens, & Vandereycken, 2010; Svirko & Hawton, 2007). These figures confirm the strong association between SIB and ED.

## **Background**

The nature of the association between ED and SIB can be interpreted in many different ways. There are strong similarities in the functions of SIB and ED; the need to 'control the body', body dissatisfaction which often implies 'self-punishment', and 'reducing tension' or 'affect regulation' (Bosman & van Meijel, 2008; Claes et al., 2010; Paul, Schroeter, Dahme, & Nutzinger, 2002).

SIB is defined differently in literature. For this study we define SIB as 'a direct, socially unacceptable behavior that causes minor to moderate physical injury, while the individual is in a psychological distressed state but is not attempting suicide' (Claes, Vandereycken, & Vertommen, 2003). SIB can be categorized into impulsive en compulsive behaviors (Favaro & Santonastaso, 1998; Favaro & Santonastaso, 2000; Svirko & Hawton, 2007). Impulsive SIB (e.g. cutting, burning) is episodic, gratifying, and is often triggered by external events. Compulsive SIB (e.g. scratching, severe nail biting) is habitual and repetitive.

This study will focus on three forms of ED; patients with Anorexia Nervosa (AN), patients with Bulimia Nervosa (BN), and patients with Eating Disorder Not Otherwise Specified (ED NOS). Herewith we make use of the classification of ED-types based on the DSM-IV criteria (American Psychiatric Association, 2000). Two types of AN are distinguished: restricting anorexia nervosa (AN-R) and bingeing-purging anorexia nervosa (AN-BP). Patients with the restrictive type maintain their low body weight purely by restricting food intake and increased activity. Those with the bingeing-purging type show binge eating and purging behavior, similar to bulimia nervosa. DSM-IV also distinguished two types of BN: purging bulimia nervosa (BN-P) and non-purging bulimia nervosa (BN-NP). BN is characterized by recurrent and frequent episodes of eating unusually large amounts of food and

feeling a lack of control over these periods. Patients with the purging type of BN show purging behavior after binge-eating. The diagnosis ED NOS is used for patients who do not meet the criteria of a specific type of ED.

In clinical practice nurses have close contact with patients who injure themselves. In general, nurses find it confronting to deal with these patients and they find it difficult to clearly describe their specific role when working with self them. Nurses even feel personally rejected, manipulated and looked down on. This may eventually lead to a loss of empathy, aversion reactions, and countertransference (Bosman & van Meijel, 2008; McAllister, Creedy, Moyle, & Farrugia, 2002). This makes it difficult for nurses to take a professional attitude towards these patients, to develop a good working relationship, and to give them adequate support (McAllister et al., 2002).

It is quite alarming that less than 25% of self-injuring patients are satisfied with nursing care (Warm, Murray, & Fox, 2003). The perspectives on SIB often differ between nurses and patients (Bosman & van Meijel, 2008). The one-sided focus of nurses on symptom reduction and problem solving may lead to misunderstandings and in some cases insufficient and / or poor-quality professional nursing care. Developing a professional and systematic approach in nursing care is therefore necessary to improve quality of care and to improve treatment outcomes. For developing high-quality professional care it is important to have insight into the occurrence of different types of SIB in ED patients. Insight into the generic en additional forms of SIB in ED patients will provide nurses insight in the nature and extent of this behavior. With this knowledge nurses may become more sensitive to SIB in patients with ED and – as a consequence - they will pay more attention to it with more patient-centered and higher quality of care. Structured assessment of SIB is needed to obtain a better insight into the occurrence of specific forms of SIB in individual patients with ED.

There are several studies, which reported about the prevalence of SIB in ED patients (Claes & Vandereycken, 2007a; Favaro & Santonastaso, 2000; Svirko & Hawton, 2007). For these studies standardized self-report questionnaires have been used to collect data. However, in clinical practice ED patients appear to show additional forms of SIB besides the generic forms, which are not included in the questionnaires used for previous studies. Clinical practice has shown that ED patients injure themselves, for example by an extremely hot or cold shower, tightly laced belts, and eating a lot of very hot spices. These forms of SIB are not included and specified in current research, what makes it important to examine these forms in more detail. Possibly, these additional forms of SIB are ED

related or even disease specific. We expect higher prevalence of SIB in patients with ED than currently assumed, because to date, research was focused exclusively on the generic forms of SIB.

### **Problem statement**

A relatively large number of ED patients injure themselves. Clinical practice has shown that ED patients injure themselves in many different ways. Current research focuses on a limited number of generic forms of SIB. There is a gap in knowledge about the prevalence of all forms of SIB in ED patients, and the associations between the prevalence of SIB and the different patient characteristics. More scientific knowledge is needed about the prevalence of generic and additional forms (which could be disease specific) of SIB in ED patients.

### **Aim**

The purpose of this study is to gain insight into prevalence of generic and additional forms of SIB in patients with ED, and the associations between different patient characteristics and the prevalence of SIB. The knowledge obtained will contribute to the improvement of care to patients with ED who injure themselves.

### **Research question**

The following questions guided this study: What is the prevalence of generic and additional forms of SIB in ED patients? And: Is the occurrence of SIB in ED patients related to the different types of ED, age, BMI, treatment setting, treatment duration, or disease duration?

## **Methods**

### **Design**

This descriptive study is based on a cross-sectional design, measuring the different forms of SIB in patients with ED at one particular point in time (Polit & Beck, 2008).

### **Setting**

The study took place in a specialized treatment setting for patients with ED. Both ambulatory and clinical treatment are offered within this setting. Ambulatory treatment is offered both individually and in groups. Treatment is mostly offered multidisciplinary, with involvement of a psychiatrist, psychologist, a dietitian and a community psychiatric nurse. Family and / or partners are always involved in treatment. Some patients come one or more days a week to the clinic for various therapies. A second subgroup that participated in this study consists of patients who were treated in an inpatient setting. The patients of this setting live throughout the Netherlands in both rural and urban areas.

### **Sample**

All patients who met the inclusion criteria (see below) and who were receiving in- or outpatient treatment during the period of data collection, were approached to participate in the study. Thus, we approached as much patients as possible in the setting. Taking into account the expected non-response (approximately 55%) and the expected prevalence of SIB in patients with ED, our aim was to approach at least 400 patients for participation in the study. We expect that about 80 to 100 patients of the total respondents will injure themselves, which would be enough to adequately describe the different forms of SIB.

Inpatients and patients who participated in ambulatory group treatment programs were approached by the researcher for a face-to-face explanation of the study and an invitation to participate in the study. Patients who participated in an individual ambulatory treatment programs received the information and questionnaire by mail.



### *Inclusion criteria*

Patients with a primary diagnosis of ED – i.e. anorexia nervosa, bulimia nervosa, or eating disorder not otherwise specified (NOS) (according to DSM-IV criteria) - formed the target population of this study. Participants should have sufficient command of the Dutch language to fill in the questionnaire. We included patients aged 16 years or older in this study.

### *Exclusion criteria*

Patients were excluded if the psychiatrist judged that a patient was psychologically unable to participate in the study, due to the perceived burden of the study.

## **Instrument**

To assess SIB we used a self-report instrument, i.e. the Dutch version of the Self-Injury Questionnaire (SIQ) (Claes & Vandereycken, 2007b). The Dutch version of the SIQ is validated in Belgium in a sample of 273 female ED patients admitted to two specialized inpatient ED units. Claes et al. (2007) evaluated the internal consistency, the construct validity, and convergent and divergent validity of the SIQ. They concluded that the SIQ is a reliable and valid instrument for assessing SIB (Claes & Vandereycken, 2007b).

The SIQ distinguishes five forms of SIB: scratching, bruising, cutting, burning and biting. Each form of SIB is described separately using the same questions.

Patients were asked whether they have injured themselves in the past month. If so, they were requested to specify how often this had happened, whether they had felt some pain, and what kind of emotional experiences they had before and after the moment of self-injury (e.g. happy, nervous, anxious). Additionally, they had to give some information about the body parts that were injured (e.g. arms and/or hands, head and/or neck), how the SIB was perceived (e.g. as an uncontrollable act, as a planned act) and, why they had injured themselves (e.g. to avoid negative feelings, to get attention from others).

The questionnaire consists of six multiple choice questions and 33 propositions to be scored on a five point Likert scale for each form of SIB. Besides the pre-structured multiple choice questions and propositions, there is provided space to write down unnamed emotional experiences and reasons for SIB.

### *Instrument addendum*

At the end of the questionnaire the patient was given the opportunity to describe any additional form of SIB. Prior to that question several forms of SIB were mentioned as examples, e.g. eating very hot spices, hair pulling, etc. To obtain preliminary data about different forms of SIB in ED patients, professionals (nurses, psychiatrist, psychologist, nurse-practitioner, general practitioner) in ED care were interviewed prior to this prevalence study to enumerate some of the most frequently occurring forms of SIB in ED patients. For each form of SIB participants were asked to complete the same questions as used for the generic forms of SIB.

### **Statistical methods**

Data was analyzed using SPSS version 15. Descriptive statistics were used to describe the prevalence of SIB in our sample. Fisher's exact test was used to test the differences in proportions of SIB between different diagnostic categories and treatment settings (in- and outpatients). Demographic and other background variables (age, BMI, treatment duration, and disease duration) were used to predict the occurrence of SIB in the total sample and in the different subgroups. For this purpose we used logistic regression analysis.

### **Ethical Considerations**

For this study patients were not subjected to procedures or were required to follow specific rules of behavior. But, nevertheless, the completion of the questionnaire could be an additional burden on patients, because of the fact that the questions are very personal and sometimes intrusive. Therefore the study was submitted to the Research Commission of Altrecht Mental Healthcare – this is the institution where the study was carried out - to undergo scientific and medical ethics review. The CWO approved the research protocol and gave permission to implement the study.

All patients were informed about the research in writing and we offered every patient oral explanation and information about the study. All respondents voluntarily agreed to participate in the study and gave written consent.

## Results

### Sample characteristics

We approached 372 patients for participation in the study and received 85 useable questionnaires returned. Eighty-three respondents were female and two patients were male; 90.6% (n = 77) of the sample consisted of outpatients. The mean age was 25.6 years with a SD of 9.3 years. Most of the patients (50.6%; n = 43) suffered from AN-R. Nineteen percent (n = 16) of the patients had a diagnosis of AN-P. Nine patients had a diagnosis of BN, including 5 (5.9%) BN-P patients and 4 (4.7%) BN-NP patients. The remaining 17 (20%) patients reported ED NOS as their psychiatric diagnosis.

More than half of the patients (54.1%; n = 46) reported a secondary diagnosis, with PTSS (10.6%; n = 9), depressive disorder (11.8%; n = 10), and personality disorder NAO (8.2%; n = 7) being the most common secondary diagnosis. For more specific sample characteristics, see table 1. 'Sample Characteristics'.

-----Table 1. Sample Characteristics – here-----

### Prevalence of generic self-injurious behavior

During the last year 47.1% (n = 40) of the 85 ED patients had performed at least one generic type of SIB. ED patients reported the following prevalence of different SIB-acts during the last year: 28.2% (n = 24) reported severe scratching; 25.9% (n = 22) bruising; 36.5% (n = 31) cutting; 10.6% (n = 9) burning; and 17.6% (n = 15) biting.

In the month preceding the study, 35.3% (n = 30) of the ED patients reported at least one generic type of SIB: 63.3% (n = 19) reported severe scratching; 63.3% (n = 19), bruising; 80.0% (n = 24), cutting; 26.7% (n = 8), burning; and 46.7% (n = 14), biting.

We found cutting, scratching and bruising to be the most common types of SIB, followed by biting. During the last year, almost three-quarters of the self-injuring patients injured themselves by cutting. While more than half of this self-injuring group injured themselves by scratching and / or bruising. Burning is the least self-reported type of SIB (n = 9).

### **Prevalence of additional forms of self-injurious behavior**

Patients reported the following additional forms of SIB: hair pulling, hitting, hot showering, head banging, and using tight rubber bands. None of these additional forms of SIB is specifically related to ED or disease specific. These self-reported forms are thus additional to the generic forms of SIB. Only hair pulling and hitting were mentioned more than twice, and therefore we have chosen to describe only the prevalence of these additional forms of SIB.

When hair pulling and hitting are included, 50.6% (n = 43) of the ED patients performed at least one type of SIB the last year. Seven percent (n = 6) of the patients reported hair pulling during the past year; and 4.7% (n = 4) of the patients reported hitting themselves as SIB. Compared with the generic forms of SIB, hair pulling and hitting were relatively less reported by the ED patients.

When including the additional forms of SIB, 37.6% (n = 32) of the ED patients reported at least one type of SIB during the last month before participating: 5.9% (n = 5) reported hair pulling; and 3.5% (n = 3) hitting. See table 2. 'Prevalence of Self-injurious Behavior' for prevalence of SIB specified by type of ED.

-----Table 2. Prevalence of Self-injurious Behavior – here-----

### **Associations between patient characteristics and self-injurious behavior**

We used Fisher's Exact test to test the differences in proportions of SIB between different diagnostic categories. We did not find significant associations between the different types of ED and the occurrence of at least one form of SIB in the year preceding the study (two-sided Fisher's exact-test p = 3.259). Also between the different types of SIB and the different diagnostic ED types, we found no significant associations. We categorized SIB in impulsive and compulsive SIB, but did not find significant associations between the diagnostic subtypes of ED and the occurrence of impulsive or compulsive SIB. We were not able to test for categories based on treatment setting (in- and outpatients), because of the low number of inpatients in our sample.

We investigated the following patient characteristics in relation to the occurrence of SIB by using an independent-samples t-test: age, BMI, treatment duration, and disease duration. To build a logistic model we first tested with univariable analyses for differences between patients who injured themselves the last year in at least one way, and them who did not. The mean age did not differ

significant between patients who injured themselves and them who did not ( $t = 0.950$ ,  $df = 83$ , two-sided  $p = 0.345$ ). The mean BMI ( $t = 1.137$ ,  $df = 80$ , two-sided  $p = 0.259$ ), the mean treatment duration ( $t = 0.187$ ,  $df = 83$ , two-sided  $p = 0.852$ ), and the mean disease duration ( $t = 0.286$ ,  $df = 83$ , two-sided  $p = 0.775$ ), did not differ either between patients who injured themselves and them who did not. We used a maximum p-value of 0.10 for pre-selection for the logistic regression model, and therefore none of the variables could be included in the model.

## Discussion

### *Prevalence of self-injurious behavior in eating disordered patients*

This study describes the prevalence of generic en disease specific SIB in ED patients. Overall about half of the patients performed at least one type of SIB during the last year. Thirty-eight percent (n = 32) of the patients performed at least one type of SIB during the last month before participating. Comparable results were reported by Svirko and Hawton (2007) in their literature review, they found that 25.4% to 55.2% of ED patients performed at least one type of SIB.

More studies (Claes, Vandereycken, & Vertommen, 2004a; Claes, Vandereycken, & Vertommen, 2004b; Favaro & Santonastaso, 2000; Huline-Dickens, 2000) reported comparable prevalence data. All studies report cutting en scratching being the most common types of SIB in ED samples. These results are in line with studies with non-ED patients (Duffy, 2006).

Claes et al. (2010) reported a comparable prevalence of SIB in 177 ED inpatients: 43.5% of the patients injured themselves during the year preceding the study. Twenty-eight percent of these ED patients performed at least one type of SIB during the previous month. We found in our sample with mainly outpatients a slightly higher number of patients who injured themselves the last month before participating, namely 37.6%. The comparison with the findings in ED inpatients of Claes et al. (2010) indicates that there is no significant difference between inpatients and outpatients regarding the prevalence of SIB. But it should be taken into account that our sample probably includes patients with on average severe ED compared with other outpatient samples, because of possible selection bias (see below under 'limitations'). This may mean that in fact the occurrence of SIB differs between in- and outpatients. Verschueren (Verschueren & Van Meijel, 2011) (not published, article still under construction) found that ED patients experience more stress when they are forced to change their eating behaviour; the stress leads to more SIB. Inpatients are often pushed or forced to change their eating behaviour, resulting in more stress and SIB. On the other hand it is possible that outpatients experience more stress by social interaction in their environment and social participation due to their ED.

The findings of this study regarding the prevalence of SIB in ED patients are thus in line with previous, similar studies.

### *Additional self-injurious behavior*

We expected to find additional forms of SIB which could be disease specific types of SIB. Only hair pulling and hitting were relatively frequently mentioned by participants as additional types of SIB. These additional forms of SIB are not specifically related to ED. Other studies have already shown that these types of SIB occur in ED patients (Claes, Vandereycken, & Vertommen, 2004b; Paul et al., 2002). These types of SIB also occur in non-ED patients (Duffy, 2006). Favazza et al. (1988) found that 30% of the non-ED self-injuring respondents (n = 250) used self-hitting, and 10% hair pulling to injure themselves. Our own results and other research (Favazza & Conterio, 1988) indicate that ED patients injure themselves in the same way as non-ED patients do. This conclusion conflicts with the data obtained in preliminary interviews with ED professionals, who indicated that in clinical practice different, probably disease specific, forms of SIB occur. It is unclear whether the results of this study are correct, or that patients are unable to define the additional forms of SIB.

### *Associations between patient characteristics and types of self-injurious behavior*

We did not find significant associations between the different diagnostic types of ED and the occurrence of at least one form of SIB in the year preceding the study. This is partly due to a very small group of BN patients in our sample. Our failure to find significant differences in prevalence of SIB among the different ED types, is consistent with the results of other studies (Claes et al., 2003; Claes et al., 2004b; Claes & Vandereycken, 2007a). We also found no significant difference among the different ED types regarding to the classification of impulsive and compulsive SIB. Favaro en Santonastaso (1998, 2000) and Claes et al. (2004a) did find evidence for the association between impulsive and compulsive SIB and the different types of ED. These different findings may due to the different sample sizes; the samples in which significant evidence was found were much larger.

We did not find any significant association between patient characteristics and the prevalence of SIB.

### *Limitations*

The study has important limitations that have to be considered. First of all it is possible that the prevalence of SIB is actually lower, because patients who don't injure themselves might be tempted to fill in the questionnaire. To prevent for this form of bias, we explicit underscored orally and in writing that also non-injuring ED patients were invited to participate in the study.

Also, of concern is the potential bias caused by the different ways of approaching respondents. Patients with low-frequent treatment contact maybe underrepresented in the sample, because they received only a written invitation to participate in the study, while patients with more intensive treatment contact were invited both orally and in writing. The sickest patients with more intensive care show more SIB (Solano, Fernandez-Aranda, aitken, lopez, & Vallejo, 2005). So, possibly the different ways of approaching respondents caused selection bias, resulting in overestimation of the prevalence of SIB in our sample. We did not investigate the non-response. Similar studies did not report about selection bias or non-response research.

At least the main limitation is that the BN group in our sample is small and cannot be considered representative of all subjects with BN.

#### *Generalisability*

On average, the patients in our sample probably have a severe ED. This is due to the selection bias, and because all patients were recruited in a specialized ED setting. This limits the generalisability of the findings of this study.



## Conclusions

Our findings showed evidence that SIB is a significant clinical problem in patients with ED. About half of the ED patients performed at least one type of SIB the year preceding the study. The prevalence figures we found are consistent with similar studies in other western countries.

Contrary to our expectations, we did not find significant data indicating the occurrence of disease-specific types of SIB in ED patients. Hair pulling en hitting were reported as additional forms of SIB, but cannot be seen as disease-specific types of SIB. Hair pulling and hitting were reported relatively less, compared with the other types of SIB. ED patients seem to injure themselves in the same way as non-ED patients do.

Our findings about prevalence of SIB are comparable with the findings in studies with inpatient samples. That indicates that there is no difference in prevalence of SIB between in- and outpatients with ED. Due to the low number of inpatients in our sample, we were not able to test the differences in proportions of SIB between treatment settings in our sample.

We did not find any significant association between the prevalence of SIB and the diagnostic subtypes of SIB. The distinction between compulsive and impulsive SIB did not significantly appear in our sample. We also found that age, BMI, disease duration, and treatment duration do not predict the occurrence of SIB in ED patients.

## Recommendations

The findings of this study have implications for nurses and other healthcare workers. The results of this study strongly confirm the relevance of SIB as a comorbid feature of ED. This, firstly, points the necessity of awareness and sensitivity of nurses for the high prevalence of SIB in ED patients. Secondly, besides more sensitivity it is important that SIB becomes a common topic of conversation during the intensive contact between nurses and patients. Open communication about SIB can help nurses and patients to get a shared common view on SIB, which is important in treatment of SIB (Bosman & van Meijel, 2008). Thirdly, a routine screening for SIB in ED patients is needed for a clear understanding of SIB in each ED patient. At least, nurses should realize and consider the effect of their regular interventions in ED patients on SIB. For example; changing eating behavior can make of lot stress in ED patients. Stress, in turn, influences SIB. Nurses have to communicate with patients about ways of reducing stress caused by changing eating behavior, because the risk for SIB is increasing when changing eating behavior.

Given the high comorbidity of SIB and ED, it is necessary that treatment for SIB is integrated in ED treatment. Further more, a standardized questionnaire for ED patients to asses SIB should be developed, because the current self-reporting questionnaires take no account of the ED specific aspects that may influence SIB (e.g. the moment of SIB in relation to the moment of eating).

We recommend further research on larger BN samples for better examination of associations between types of ED and the prevalence of SIB. Furthermore research on samples with enough in- and outpatients is necessary, to investigate the influence of hospitalization on the occurrence of SIB. At least, for further research we recommend one way of approaching all respondents to prevent for selection bias.

## **Acknowledgement**

The study was funded by INHolland University of Applied Sciences, Research Group Mental Health Nursing, located in Amsterdam. The authors wish to thank all participating patients and involved staff of the ED treatment setting for their constructive contribution to the study.

## References

- American Psychiatric Association. (2000). *Diagnostic and statistical manual of mental disorders* (Revised 4th ed. ed.). Washington, DC: American Psychiatric Association.
- Bosman, M., & van Meijel, B. (2008). Perspectives of mental health professionals and patients on self-injury in psychiatry: a literature review. *Archives of Psychiatric Nursing, 22*(4), 180-189. doi:10.1016/j.apnu.2007.07.006
- Claes, L., Klonsky, E. D., Muehlenkamp, J., Kuppens, P., & Vandereycken, W. (2010). The affect-regulation function of nonsuicidal self-injury in eating-disordered patients: which affect states are regulated? *Comprehensive Psychiatry, 51*(4), 386-392. doi:10.1016/j.comppsy.2009.09.001
- Claes, L., & Vandereycken, W. (2007a). Is there a link between traumatic experiences and self-injurious behaviors in eating-disordered patients? *Eating Disorders, 15*(4), 305-315. doi:10.1080/10640260701454329
- Claes, L., & Vandereycken, W. (2007b). The self-injury questionnaire-treatment related (SIQ-TR): Construction, reliability, and validity in a sample of female eating disorder patients. *Psychological tests and testing research trends* (pp. 111-139). New York: Nova Science Publishers.
- Claes, L., Vandereycken, W., & Vertommen, H. (2003). Eating disordered patients with and without self-injurious behaviours: A comparison of psychopathological features. *European Eating Disorders Review : The Journal of the Eating Disorders Association Review, 11*, 379-396.
- Claes, L., Vandereycken, W., & Vertommen, H. (2004a). Family environment of eating disordered patients with and without self-injurious behaviors. *European Psychiatry : The Journal of the Association of European Psychiatrists, 19*(8), 494-498. doi:10.1016/j.eurpsy.2004.09.001
- Claes, L., Vandereycken, W., & Vertommen, H. (2004b). Personality traits in eating-disordered patients with and without self-injurious behaviors. *Journal of Personality Disorders, 18*(4), 399-404. doi:10.1521/pedi.18.4.399.40346
- Duffy, F. D. (2006). Self-injury. *Psychiatry, 5*(8), 363-369.
- Favaro, A., & Santonastaso, P. (1998). Impulsive and compulsive self-injurious behavior in bulimia nervosa: prevalence and psychological correlates. *The Journal of Nervous and Mental Disease, 186*(3), 157-165.
- Favaro, A., & Santonastaso, P. (2000). Self-injurious behavior in anorexia nervosa. *The Journal of Nervous and Mental Disease, 188*(8), 537-542.

- Favazza, A. R., & Conterio, K. (1988). The plight of chronic self-mutilators. *Community Mental Health Journal, 24*(1), 22-30.
- Huline-Dickens, S. (2000). Anorexia nervosa: some connections with the religious attitude. *The British Journal of Medical Psychology, 73* ( Pt 1)(Pt 1), 67-76.
- McAllister, M. M. (2001). In harm's way: a postmodern narrative inquiry. *Journal of Psychiatric and Mental Health Nursing, 8*(5), 391-397.
- McAllister, M. M., Creedy, D., Moyle, W., & Farrugia, C. (2002). *Nurses' attitudes towards clients who self-harm*. *Journal of Advanced Nursing*.
- Noll, J. G., Horowitz, L. A., Bonanno, G. A., Trickett, P. K., & Putnam, F. W. (2003). Revictimization and self-harm in females who experienced childhood sexual abuse: results from a prospective study. *Journal of Interpersonal Violence, 18*(12), 1452-1471. doi:10.1177/0886260503258035
- Paul, T., Schroeter, K., Dahme, B., & Nutzinger, D. O. (2002). Self-injurious behavior in women with eating disorders. *The American Journal of Psychiatry, 159*(3), 408-411.
- Polit, F., & Beck, C. T. (2008). *Nursing Research: Principles and Methods*. Philadelphia: Lippincott Williams & Wilkins.
- Solano, R., Fernandez-Aranda, F., aitken, A., lopez, C., & Vallejo, J. (2005). Self-injurious Behavior in people with Eating Disorders. *European Eating Disorders Review*(13), 3-10.
- Svirko, E., & Hawton, K. (2007). Self-injurious behavior and eating disorders: the extent and nature of the association. *Suicide & Life-Threatening Behavior, 37*(4), 409-421.  
doi:10.1521/suli.2007.37.4.409
- Verschueren, S., & Van Meijel, B. (2011). Self-injurious Behavior in Anorexia Nervosa: a phenomenological study. (Not published, under construction)
- Warm, A., Murray, C., & Fox, J. (2003). Why do people self-harm? *Psychology, Health & Medicine, 8*(1), 71. Retrieved from  
<http://search.ebscohost.com/login.aspx?direct=true&db=afh&AN=9427045&site=ehost-live>

## Tables

**Table 1. Sample characteristics**

<b>Variable</b>	<b>Total (n = 85)</b>	<b>AN-R (n = 43)</b>	<b>AN-P (n = 16)</b>	<b>BN-P (n = 5)</b>	<b>BN-NP (n = 4)</b>	<b>ED NOS (n = 17)</b>
<b>Age (yr), mean (SD)</b>	25.6 (9.3)	22.9 (5.9)	27.6 (10.1)	35 (7.1)	31.3 (15.3)	26.3 (12.2)
<b>Gender, n (%)</b>						
Woman	83 (97.6%)	43 (100%)	16 (100%)	5 (100%)	4 (100%)	15 (88.2%)
<b>BMI, mean (SD)</b>	18.9 (4)	18 (2.2)	18.6 (7.1)	21.7 (3.6)	20.9 (1.8)	20.1 (4.1)
<b>Disease duration (yr), mean (SD)</b>	8.6 (7.6)	7,8 (4,9)	10,3 (10,7)	14,1 (9,6)	16 (16.1)	5.5 (4.5)
<b>Treatment duration (yr), mean (SD)</b>	3.6 (3.7)	4.2 (2.7)	3.9 (6.4)	3.2 (4.4)	2.4 (2.4)	2.1 (1.8)
<b>Psychiatric Comorbidity, n(%)</b>						
No secondary diagnosis	46 (54.1%)					
Personality disorder NOS	7 (8.2%)					
Borderline Personality Disorder	4 (4.7%)					
PTSS	9 (10.6%)					
Anxiety disorder	4 (4.7%)					
Panic disorder	1 (1.2%)					
Depression	10 (1.8%)					
Attention Deficit Hyperactivity disorder	1 (1.2%)					
Asperger's disorder	2 (2.4%)					
Alcohol addiction	1 (1.2%)					
<b>Inpatient / outpatient, n(%)</b>						
Inpatient	8 (9.4%)					
Outpatient	77 (90.6%)					
<b>Living situation, n(%)</b>						
Alone	27 (31.8%)					
With partner or friend(s)	21 (24.7%)					
With parents	35 (41.2%)					
Sheltered living	2 (2.4%)					

*AN-R = Anorexia nervosa restrictive type, AN-P = Anorexia nervosa purging type, BN-P = Bulimia nervosa purging type, BN-NP = Bulimia nervosa non-purging type, ED NOS = Eating disorder not otherwise specified*

**Table 2.** Prevalence of Self-injurious Behavior during the last year

<b>Variable</b>	<b>AN-R (n = 43)</b>	<b>AN-P (n = 16)</b>	<b>BN-P (n = 5)</b>	<b>BN-NP (n = 4)</b>	<b>ED NOS (n = 17)</b>	<b>Total (n = 85)</b>
<b>Total SIB, n (%)*</b>	21 (48.9%)	8 (50%)	1 (20%)	2 (50%)	11 (64.7%)	43 (50.6%)
<b>Impulsive SIB, n</b>						
Bruising	11	5	0	0	6	22
Cutting	15	6	1	0	9	31
Burning	3	2	0	0	4	9
<b>Compulsive SIB, n</b>						
Scratching	11	4	1	2	6	24
Biting	8	3	1	0	3	15
<b>Additional SIB, n</b>						
Hair pulling	4	0	0	0	2	6
Hitting	3	0	0	0	1	4

\* At least one type of self-injurious behavior (SIB) present during the last year

*AN-R = Anorexia nervosa restrictive type, AN-P = Anorexia nervosa purging type, BN-P = Bulimia nervosa purging type, BN-NP = Bulimia nervosa non-purging type, ED NOS = Eating disorder not otherwise specified*