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Prevalence of dissociative disorders in psychiatric in-patients: the impact of study characteristics

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Objective: Prevalence rates for dissociative disorders among psychiatric in-patients vary widely. The aim of this meta-analysis is to offer an explanation for these differences.
Method: Prevalence studies using a clinical diagnostic interview among psychiatric in-patients were included. Hypotheses concerning the impact of blind versus not blind designs, choice of diagnostic instrument and continental background were tested.
Results: Nine studies met the inclusion criteria. In blind studies the prevalence rate for dissociative disorders was significantly lower (but not for DID). Studies using the SCID-D (compared to the DDIS) and European studies had significantly lower prevalence rates for both dissociative disorders as well as for DID.
Conclusion: The choice of diagnostic instrument and cultural differences in interpretation of symptoms are major explanations for differences in prevalence of dissociative disorders and DID. Comparative, blind research using both DDIS and SCID-D in the assessment of dissociative disorders is advised.

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Introduction

The rise in reported cases of dissociative disorders in the United States, in particular dissociative amnesia and dissociative identity disorder (DID), is interpreted by some as a result of the better recognition by clinicians of these diagnoses and by others as a result of overdiagnosis (DSM-IV, 1994, pp. 479, 486). Since validated clinical diagnostic instruments (1, 2) became available several studies, both in North America and Europe, were conducted to assess the prevalence of dissociative disorders in psychiatric in-patients (3–11). Reported prevalence rates vary widely. This variation is explained by some as a indication of insufficient validity of the dissociative disorder diagnosis (12–14). Others indicate that more attention has to be given to operationalization of diagnostic criteria and consequently interpretation of symptoms (11, 15, 16).

This meta-analysis is conducted to test the hypothesis that differences in prevalence rates reported so far are related to differences in independence of assessment (blind versus not-blind assessment), in choice of clinical diagnostic instrument and in cross-cultural differences in interpretation of symptoms. For this analysis we used all prevalence studies based on a standardized clinical diagnostic instrument and assessed the effects of these methodological differences on the prevalence rates found.

Material and methods

The meta-analysis is based on a literature search (Medline) covering the period of December 1991 to January 2000. All prevalence studies were included that used a clinical structured diagnostic instrument to identify patients with a dissociative disorder in a adult psychiatric in-patient population (clinical or day-care). Either the Dissociative Disorder Interview Schedule (DDIS) (1) or the Structured

Clinical Interview for DSM-IV Dissociative Disorders (SCID-D) (2) were used.

Prevalence estimates based on the Dissociative Experience Scale (DES) (17) only were excluded because the DES is meant as a screening tool, rather than a diagnostic instrument. We also excluded for the same reason a study based on the Mini-SCID-D (18). Where both scores on screening test (DES) and clinical diagnostic interview were available we used mean DES scores to compare study population characteristics. Studies were scored for the continent where the study was conducted (North America vs. Europe), diagnostic instrument used (DDIS vs. SCID-D) and study design (whether or not the assessment was performed blind or not for both result of the screening test and other diagnostic information).

Statistics

The overall prevalence rate was calculated by weighting the studies for the number of patients included. Confidence intervals of 95% for prevalence rates found in the available studies were computed based on the Poisson approximation of the binomial distribution (19). To compare the effects of the different conditions we calculated total samples per condition. For example, to analyse the effect of design (blind vs. not-blind interviewing) we calculated the total proportion of dissociative disorder patients and DID patients of the total sample of all blind studies vs. all not-blind studies. To compare the prevalence rates in the different conditions, odds ratios and their 95% confidence intervals were computed. In order to compare in-patient population characteristics, a two tailed *t*-test was used to analyse available DES-scores per condition.

Results

Nine studies met the inclusion criteria (3–11). Table 1 presents an overview of the study characteristics. Prevalence rates in in-patient populations vary between 5.0% and 58.3% for dissociative disorders in general and between 0.5% and 12.0% for DID. The overall prevalence rate of dissociative disorders was 18.9% (95% CI: 16.8–21.2%). The overall prevalence rate of DID was 4.4% (95% CI 3.4%–5.7%).

Independence of assessment

Table 2 shows that in blind studies prevalence rates were significantly lower for dissociative disorders in general (odds ratio 2.93 [2.08–4.11]), but not for DID.

The choice of instrument

Statistically significant differences in prevalence rates of dissociative disorders in general (odds ratio 3.01 [1.79–5.05]) and DID (odds ratio 2.68 [1.14–6.31]) were found between the studies using the DDIS (3–6, 8, 9) and studies using the SCID-D (7, 10, 11) (Table 3). Studies using DDIS found nearly three times more cases of dissociative disorders and DID.

Continental differences

Table 4 shows statistical significant differences in prevalence rates of dissociative disorders in general (odds ratio 5.08 [3.57–7.22]) and DID (odds ratio 1.80 [1.02–3.18]) between studies conducted in North America (3–6, 10) and in Europe (7–9, 11). Reported prevalence rates found in particular for

Table 1. Methodologies and rates (confidence intervals) in studies on prevalence of dissociative disorders and DID among psychiatric in-ptaients

			Prevalence[c] dissociative disorders		Prevalence dissociative identity disorders		
Interview/design[a]	Sample/setting[b]	DES mean (SD)	*n*	% (CI)[c]	*n*	% (CI)[c]	Continent
1. DDIS/not blind							
Ross et al. (1991)	299/A	14.6 (14.2)	62	20.7 (16.1–25.3)	10	3.3 (1.3–5.3)	Am
Horen et al. (1995)[d]	48/T	20.7 (21.0)	7	14.6 (7.2–32.8)	4	8.3 (1.3–18.3)	Am
Latz et al. (1995)	175/A	26.9 (20.0)	102	58.3 (51.0–65.6)	21	12.0 (7.4–18.3)	Am
Modestin et al. (1996)	207/A	13.7 (13.5)	10	5.0 (2.3–8.9)	1	0.5 (0.0–2.6)	Eu
2. DDIS/blind							
Saxe et al. (1993)	110/A	—[f]	15	15.0 (7.6–22.5)	4	4.0 (1.0–9.3)	Am
Tutkun et al. (1998)	166/A	17.8 (14.9)	17	10.2 (6.0–16.3)	11	6.6 (3.3–11.9)[e]	Eu
3. SCID-D/not blind							
Rifkin et al. (1998)	100/A	—	—		1	1.0 (0.0–5.6)	Am
4. SCID-D/blind							
Knudsen et al. (1995)	85/T	16.5 (14.1)	7	8.2 (3.3–17.0)	4	4.7 (1.3–12.0)	Eu
Friedl and Draijer (1999)	122/A	19.9 (18.1)	10	8.2 (3.9–15.1)	2	1.6 (0.2–5.9)	Eu

[a] Blind = blind to DES-score and other research data; [b] A = in-patients consecutive admissions, T = total in-patients and day treatment; [c] confidence interval 95% based on Poisson approximation of binomial distribution (17); [d] Horen et al. (1995) used both DDIS and SCID-D; we chose to report the DDIS data as they were collected in most cases; [e] (not blind) clinical assessment following blind DDIS assessment reduced the prevalence rate for DID to 5.4% (2.5–10.2). [f] —is used to signify not measured or not presented.

Table 2. Odds ratios and their confidence intervals of weighted mean prevalence rates related to design (blind versus not blind); based on nine prevalence studies

	Blind % [n/N]	Not-blind % [n/N]	Odds ratio (not-blind/ blind)	95% Confidence interval
Disssociative disorders				
	10.1 [49/483]	24.8 [181/729]	2.93	[2.08–4.11]*
Dissociative identity disorders				
	4.3 [21/483]	4.5 [37/829]	1.03	[0.59–1.78]

Weighted prevalence rate is defined as the frequency (%) of the total number of identified cases per condition calculated over the total *n* (sum of all sample sizes). * indicates a significant difference in prevalence rate.

dissociative disorders, but also for DID are higher in North America.

Comparison of population characteristics

To analyse whether the populations studied differ in the level of dissociation, we compared the average DES scores across the studies (Table 5). This revealed no differences between blind vs. non-blind designs. North American study populations had significantly higher DES-scores than European study populations ($t = 5.56$; $P < 0.01$). Study populations interviewed by using the DDIS reported slightly lower scores on the DES than populations interviewed by using the SCID-D ($t = 1.64$; $P < 0.05$). After removing the study by Latz, in which rather elevated DES scores were reported, these differences remained significant.

Discussion

In our review of nine studies we found that in more than 1300 psychiatric in-patients the overall prevalence rate for dissociative disorders in general is 18.9%, and for DID 4.4%. Most striking in these figures is the more than 10-fold differences between the prevalence rates reported in individual studies, from 5% to 58% for dissociative disorders and from 0.5% to 12% for DID. We will discuss different explanations for these wide variations.

Table 3. Odds ratios and their confidence intervals of weighted mean prevalence rates, related to instrument (DDIS versus SCID-D); based on nine prevalence studies

	DDIS % [n/N]	SCID-D % [n/N]	Odds ratio (DDIS/ SCID-D)	95% Confidence interval
Dissociative disorders				
	21.2 [213/1005]	8.2 [17/207]	3.01	[1.79–5.05]*
Dissociative identity disorders				
	5.0 [51/1005]	2.3 [7/307]	2.68	[1.14–6.31]*

Weighted prevalence rate is defined as the frequency (%) of the total number of identified cases per condition calculated over the total *n* (sum of all sample sizes). * indicates a significant difference in prevalence rate.

Table 4. Odds ratios and their 95% confidence intervals of weighted mean prevalence rates related to continent (European versus North American studies); based on nine prevalence studies

	Europe % [n/N]	N. America % [n/N]	Odds ratio N. America/ Europe	95% Confidence interval
Dissociative disorders				
	7.6 [44/580]	29.4 [186/632]	5.08	[3.57–7.22]*
Dissociative identity disorders				
	3.1	5.5	1.8	[1.02–3.18]*

Weighted prevalence rate is defined as the frequency (%) of the total number of identified cases per condition calculated over the total *n* (sum of all sample sizes). * indicates a significant difference in prevalence rate.

Design

We postulated that clinical information available to the interviewer using a structured interview would influence his or her judgement, giving way for a biased interpretation. It is to be concluded from Tables 2 and 5 that this effect of blindness of design on the prevalence rates could be confirmed. This conclusion is based on the fact that, according to the DES, the populations were comparable in their level of dissociation, because the self-reported DES scores are not subject to interviewer bias. Therefore, non-blinded designs have a three times higher chance of diagnosing dissociative disorders in general, compared to blinded designs.

This is not the case for DID. This is an interesting finding, because from the point of view that DID results from iatrogenesis (12–14) one would expect the opposite. In our view this result contradicts the hypothesis of iatrogenesis of DID.

The choice of instrument

Studies using the DDIS found higher prevalence rates than studies that used the SCID-D. Remarkably, odds ratios are comparable for

Table 5. DES scores across the studies

	N	Mean DES	Weighted SD
European studies	580	16.6	15.1
American studies	522	19.3	17.1
Blinded studies	373	18.2	15.9
Non-blinded studies	729	17.7	16.1
Studies using the DDIS	895	17.7	15.9
Studies using the SCID-D	207	18.5	16.7

dissociative disorders and DID, whereas mean DES-scores are slightly lower in patients diagnosed with DDIS. This suggests that there is a three-fold chance of being diagnosed as a dissociative disorder or DID if the DDIS is used compared to the use of the SCID-D.

In our opinion several characteristics of the DDIS may lead to overdiagnosis of dissociative disorders. First, the format of the DDIS does not allow to probe on the quality of the dissociative symptoms as thoroughly as the SCID-D, and thus the DDIS is less likely to detect factitious dissociative disorders. In the SCID-D the judgement of the presence and severity of a pathological dissociative symptom is based primarily on the idiosyncratic, subjective description of symptoms by the patient, i.e. what the patient describes in his or her own words. In the DDIS the interviewer depends on information based on closed questions with a yes/no format or a Likert scale (never, occasionally, fairly often, frequently, unsure). Closed questions may lead to erroneous results in highly suggestible patients and could compromise the differentiation between real and factitious DID. Secondly, the DDIS does not distinguish well between dissociative disorders and other psychiatric disorders accompanied by severe dissociative symptoms, such as traumatized patients with a borderline personality disorder. Finally, questions about trauma in the DDIS interview may amplify dissociative symptoms (15). We found support for our conclusion of overdiagnosis based on DDIS assessment in two studies: the Tutkun study reduced the number of DDIS-diagnosed DID patients by adding a clinical confirmation and the Horen study reduced the DDIS-based diagnosis DID in four patients to three by SCID-D confirmation.

Continental differences

There are significant differences in prevalence rates based on structured interviews between the continents, especially for dissociative disorders. The available mean DES-scores of American studies are higher than those found in European studies, suggesting a real difference in occurrence and/or severity of dissociative symptoms.

Odds ratios suggest that there is a five times higher chance for receiving a diagnosis of dissociative disorder for North American patients and a two-fold higher chance for DID. It might be argued that these results are highly influenced by the Latz study, which found a very high rate of dissociative disorders and DID in a population from a State Hospital. (This population is probably highly dissociative according to the DES.) When this study is excluded from analysis, significant differences still exist for dissociative disorders (odds ratio 3.78 [2.55–5.59]) but not for DID (odds ratio 1.15 [0.57–2.21]). Moreover, mean DES-scores are now comparable (for Europe 16.6 and North America 15.4 (not significant)). Therefore, we conclude that differences between the continents are probably due to intercultural differences in interpretation of dissociative symptoms rather than to real differences in occurrence. It is possible that European researchers diagnose dissociative symptoms in patients with another Axis I diagnosis, whereas North American researchers would interpret them as a distinct dissociative disorder. In our own study (11), based on SCID-D, it was remarkable that no patients were found with an isolated depersonalization disorder or a dissociative amnesia or fugue. In this study severe depersonalization symptoms were observed only in patients with other diagnoses such as depression, psychotic or schizophrenic disorders and bipolar disorder. The observed depersonalization symptoms in those patients were of a different quality than those seen in patients with dissociative disorders or traumatized patients. Patients with depression, with a psychotic or schizophrenic disorder and patients with bipolar disorder also reported recurrent symptoms of amnesia. In patients with bipolar disorder, these amnesic episodes were associated with a manic phase. In general, many amnesic episodes were reported within the first few days of admission. The reported memory-problems in depressed patients and patients with a bipolar disorder in a depressive phase differed in quality from the amnesia found in dissociative disorder patients: in the depressed patients the forgotten memories of daily events 'returned' when the patient was informed about what happened. Boon and Draijer (1995) therefore introduced a criterion ('Did you recall this forgotten information, when you found out what happened?') to differentiate the more vague amnesia due to 'absent-mindedness', concentration problems or depersonalization (such as found in depressed or borderline patients) from the more clear-cut amnesic episodes found in dissociative disorder patients. In the latter category of patients the memory is not revived by information on what has happened. This criterion for dissociative amnesia symptoms is based on observations during validation research (15) and needs further testing. DSM-IV (and also the SCID-D and DDIS) does not give criteria for 'ordinary' or pathological forgetfulness and needs improvement at this point. Well-described amnesia criteria could limit overdiagnosis of dissociative disorders, because this symptom is crucial in differential diagnosis.

Study limitations

Comparison of populations. All studies are performed in adult psychiatric in-patients. It is, however, very difficult to assess whether patient characteristics are comparable. Response/non-response analysis was not stated uniformly in each study and in some cases it was not analysed at all.

Clinical interviews are time-consuming, and all studies but one (10) used a procedure to limit the number of interviews. These studies mainly used the DES as a means of increasing the a priori chance for having a dissociative disorder. Only four studies conducted a number of interviews in the control populations (4, 7, 9, 11).

It is widely accepted that DES score correlates with dissociative disorders and DID (16, 20–22), although overlap is considerable and predictive value in individual cases limited. As seven of these nine studies reported DES-scores we used mean DES- scores as indication of comparability of study groups.

Multivariate analysis. Preferably, the impact of the study characteristics should be tested by means of multivariate techniques due to the considerable overlap between, for example, the non-blinded studies and the studies using the DDIS. With the present selection of available studies this was, however, not possible due to the limited number.

Conclusion

In conclusion we found that prevalence rates in in-patient populations for dissociative disorders in general vary widely (between 5% and 58% and for DID between 0.5% and 12%). It is obvious that results were based on different populations and that there could also be differences in design and procedure. Not all these differences could be accounted for in our analysis. Nevertheless, the meta-analysis of these prevalence studies so far suggests that the diagnostic instrument used and different diagnostic traditions in both continents are major factors contributing to differences in prevalence rates for dissociative disorders and DID. Because of its superior quality to differentiate pathological dissociative from non-pathological dissociative symptoms, we think the SCID-D is to be preferred as a diagnostic instrument.

As this is a retrospective analysis in a developing area of psychiatric diagnosis, these conclusions can only be used as hypotheses in future research. A blind comparison of the SCID-D and DDIS is needed as well as a further investigation of the influence of intercultural differences in interpretation of dissociative phenomena on the prevalence rates of dissociative disorders.

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References

1. Ross CA, Heber S, Norton GR, Anderson D, Anderson G, Barchet P. The Dissociative Disorders Interview Schedule: a structured interview. Dissociation 1989;**2**:169–189.
2. Steinberg M. Interviewer's guide to the Structured Clinical Interview for DSM-IV Dissociative Disorders (SCID-D). Washington, DC: American Psychiatric Press, 1993.
3. Ross CA, Anderson G, Fleisher WP, Norton GR. The frequency of multiple personality disorder among psychiatric inpatients. Am J Psychiatry 1991;**148**:1717–1720.
4. Saxe GN, Kolk van der B, Berkowitz R et al. Dissociative disorders in psychiatric inpatients. Am J Psychiatry 1993;**150**: 1037–1042.
5. Horen SA, Leichner PP, Lawson JS. Prevalence of dissociative symptoms and disorders in an adult psychiatric inpatient population in Canada. Can J Psychiatry 1995;**40**: 185–191.
6. Latz TT, Kramer SI, Hughes DL. Multiple personality disorder among female inpatients in a state hospital. Am J Psychiatry 1995;**152**:1343–1348.
7. Knudson H, Haslerud J, Boe T, Draijer N, Boon S. Prevalence of dissociative disorders in a Norwegian general psychiatric department (inpatients and daycare). In: Van der Hart O, Boon S, Draijer N, eds. Proceedings of the Fifth Annual Meeting of the International Society for the Study of Dissociation. Amsterdam: International Society for the Study of Dissociation, 1995:75.
8. Modestin J, Abner G, Junghan M, Erni TH. Dissociative experiences and dissociative disorders in acute psychiatric inpatients. Compr Psychiatry 1996;**36**:355–361.
9. Tutkun H, Sar V, Yargiç LI, Ozpulat T, Yanik M, Kiziltan E. Frequency of dissociative disorders among psychiatric inpatients in a Turkish University Clinic. Am J Psychiatry 1998;**155**:800–805.
10. Rifkin A, Ghisalbert D, Dimatou S, Jin C, Sethi M. Dissociative identity disorder in psychiatric inpatients. Am J Psychiatry 1998;**155**:844–845.
11. Friedl MC, Draijer N. Dissociative disorders in Dutch psychiatric inpatients. Am J Psychiatry 2000;**157**:1012–1013.
12. Fahy TA. The diagnosis of multiple personality disorder: a critical review. Br J Psychiatry 1988;**153**:597–606.
13. Merskey H. The manufacture of personalities: the production of multiple personality disorder. Br J Psychiatry 1992; **160**:327–340.
14. Merskey H. Multiple personality disorder and false memory syndrome (editorial). Br J Psychiatry 1995;**166**:281–283.
15. Boon S, Draijer N. Multiple personality disorder in The Netherlands. A study on reliability and validity of the diagnosis. Amsterdam: Swets & Zeitlinger, 1993.
16. Piper A. Multiple personality disorder. Br J Psychiatry 1994; **164**:600–612.
17. Bernstein EM, Putnam FW. Development, reliability, and validity of a dissociation scale. J Nerv Ment Dis 1986;**174**: 727–735.

18. Lussier RG, Steiner J, Grey A, Hansen C. Prevalence of dissociative disorders in an acute day care hospital population. Psychiatr Serv 1997;**48**:244–247.
19. Pearson ES, Hartley HO. Biometrika tables for statisticians, vol. I, 3rd edn. Cambridge: Cambridge University Press, 1966.
20. Boon S, Draijer N. Screening en diagnostiek van dissociatieve stoornissen [Screening and diagnosing dissociative disorders]. Lisse: Swets & Zeitlinger, 1995.
21. Steinberg M, Rounsaville B, Cicchetti D. Detection of dissociative disorders in psychiatric patients by a screening instrument and a diagnostic interview. Am J Psychiatry 1991;**148**:1050–1054.
22. Carlson EB, Putnam FW, Ross CA et al. Validity of the dissociation experience scale in screening for MPD: a multicenter study. Am J Psychiatry 1993;**150**:1030–1103.
23. Draijer N, Boon S. The validation of the dissociative experiences scale against the criterion of the SCID-D, using receiver operating characteristics (ROC) analysis. Dissociation 1993;**4**:28–37.