

Review Article

Epidemiology of Dissociative Disorders: An Overview

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General psychiatric assessment instruments do not cover DSM-IV dissociative disorders. Many large-scale epidemiological studies led to biased results due to this deficit in their methodology. Nevertheless, screening studies using diagnostic tools designed to assess dissociative disorders yielded lifetime prevalence rates around 10% in clinical populations and in the community. Special populations such as psychiatric emergency ward applicants, drug addicts, and women in prostitution demonstrated the highest rates. Data derived from epidemiological studies also support clinical findings about the relationship between childhood adverse experiences and dissociative disorders. Thus, dissociative disorders constitute a hidden and neglected public health problem. Better and early recognition of dissociative disorders would increase awareness about childhood traumata in the community and support prevention of them alongside their clinical consequences.

1. Introduction

Dissociation is defined as a disruption in the usually integrated functions of consciousness, memory, identity, or perception of the environment [1]. Dissociative disorders constitute a group of clinical syndromes covering disturbances attributed to one or more of these domains. Dissociation may be sudden or gradual, transient, or chronic. Being the most chronic and complex type of dissociative disorders, dissociative identity disorder (DID) constitutes an overarching syndrome covering all dissociative phenomena. Depersonalization disorder, dissociative amnesia, and dissociative fugue are further categories of dissociative disorders. Dissociative conditions which do not fit diagnostic criteria of these specific categories are diagnosed as having dissociative disorder not otherwise specified (DDNOS).

Although not specified as such in official classification systems, the concept of chronic complex dissociative disorder deserves a rather detailed description here, because it is a significant category for epidemiological studies in particular. Due to the tight definition of DID in DSM-IV [1], a larger group of subjects who are close to DID in their symptomatology are being diagnosed as having the type-1 of the dissociative disorder not otherwise specified (DDNOS-1). The latter group is consisted of the subjects who have identity alteration without dissociative amnesia or whose

identity alteration is too mild to fit the diagnostic criterion of DID. In fact, the difference between two categories is a matter of severity but not a qualitative one. Thus, DID and DDNOS-1 constitute the chronic complex dissociative disorders.

Most of the published clinical case series are focused on chronic and complex forms of dissociative disorders. Data collected in diverse geographic locations such as North America [2], Puerto Rico [3], Western Europe [4], Turkey [5], and Australia [6] underline the consistency in clinical symptoms of dissociative disorders. These clinical case series have also documented that dissociative patients report highest frequencies of childhood psychological trauma among all psychiatric disorders. Childhood sexual (57.1%–90.2%), emotional (57.1%), and physical (62.9%–82.4%) abuse and neglect (62.9%) are among them (2–6).

Beside constituting a diagnostic category on its own, dissociative symptoms may accompany almost all psychiatric disorders [7] including borderline personality disorder [8, 9], conversion disorder [10], and obsessive compulsive disorder [11]. In those cases, dissociation is usually correlated with childhood trauma history, suicidality, self-mutilative behavior, and elevated general psychiatric comorbidity regardless of the main diagnosis [7]. Dissociative subtypes have been proposed for psychiatric disorders such as PTSD [8] and schizophrenia [12, 13]. On the other hand, for some of these psychiatric disorders, comorbid dissociation may also

TABLE 1: Dissociative disorder prevalence studies in the general psychiatric settings (DDIS: dissociative disorders interview schedule, SCID-D: structured clinical interview for dissociative disorders).

Study	Inclusion rate	Number of subjects approached	Diagnostic instrument	Cutoff on DES	Dissociative Identity disorder	All dissociative disorders	DES Score		
							Mean	SD	>DES ^(b)
Inpatient unit									
Tutkun et al. [25]	63.6%	166	DDIS	30	5.4% ^(a)	10.2% ^(a)	17.8	14.9	14.5%
Modestin et al. [27]	—	207	DDIS	—	0.4%	5.0%	13.7	13.5	12.0%
Gast et al. [33]	—	115	SCID-D	20	0.9%	4.3%	—	—	21.7%
Friedl and Draijer [26]	50.4%	122	SCID-D	25	2.0%	8.0%	20.0	18.1	29.5%
Ginzburg et al. [34]	84.0%	120	SCID-D	—	0.8%	12.0%	20.9	18.7	—
Saxe et al. [23]	64.0%	172	DDIS	25	4.0%	13.0%	—	—	15.0%
Ross et al. [22]	61.8%	484	DDIS	20	5.4%	20.7%	14.6	14.2	30.1%
Lipsanen et al. [28]	—	39	DDIS	—	—	21.0%	—	—	—
Ross et al. [31]	51.6%	407	DDIS	—	7.5%	40.8%	—	—	—
Outpatient Unit									
Sar et al. [24]	81.5%	150	DDIS	30	2.0% ^(a)	12.0% ^(a)	15.3	14.0	15.3%
Sar et al. [8]	79.5%	240	SCID-D	25	2.5%	13.8%	20.0	18.9	27.9%
Foote et al. [32]	—	82	DDIS	—	6.0%	29.0%	—	—	—
Lipsanen et al. [28]	—	39	DDIS	—	—	14.0%	—	—	—
Emergency Ward									
Sar et al. [29]	44.3%	43	SCID-D	25	14.0%	34.9%	23.4	19.3	39.5%

^(a) Clinically confirmed diagnosis, ^(b) Percentage of patients with a dissociative experiences scale (DES) score above cutoff point.

be considered as a concurrent diagnosis depending on the complexity of the prevailing dissociative symptom pattern.

Diagnostic interviews assessing general psychiatric psychopathology such as structured clinical interview for DSM-IV [SCID] and composite international diagnostic interview (CIDI) have been lacking sections suitable to screen dissociative disorders [14, 15]. Thus, many large scale general psychiatric epidemiological studies using general psychiatric instruments failed to catch dissociative disorders appropriately and have led to biased reports in this context [16–18]. Studies using assessment instruments screening dissociation and dissociative disorders have been conducted to fill this gap. Self-rating measures such as dissociative experiences scale (DES) [19] and structured or semi-structured diagnostic interviews such as dissociative disorders interview schedule (DDIS), [20] and structured clinical interview for dissociative disorders (SCID-D) [21] are the most widely used among them. This paper is concerned with an overview of results obtained by epidemiological studies using instruments able to screen dissociative disorders.

2. Prevalence in Clinical Settings

Several studies conducted on consecutive series of inpatients and outpatients in general psychiatric settings in diverse countries yielded results depending on the hinterland of the particular institution (Table 1). Two studies in North America demonstrated that 13.0–20.7 % of psychiatric inpatients had a dissociative disorder [22, 23]. Studies on dissociative

disorders in Istanbul, Turkey, yielded a prevalence slightly above 10% among psychiatric inpatients and outpatients [8, 24, 25]. Although still considerable, these rates were lower in the Netherlands [26], Germany [18], and Switzerland [27] among inpatients, that is, between 4.3%–8.0%. A Finnish study [28] reported higher rates for psychiatric outpatients (14.0%) and inpatients (21.0%). Emergency admissions of a university psychiatric clinic in Istanbul, Turkey yielded the highest rate in the country: 35.7% [29]. In a study from Zurich, Switzerland, among severely impaired psychiatric outpatients, prevalence of all dissociative disorders were 25.0% [30]. Two recent studies on inpatient and outpatient psychiatric units in North America reported higher rates than those of the previous studies [31, 32].

The rates obtained in various countries and studies show a considerable variance possibly due to differences in study characteristics as well. According to one analysis, in blind studies, the prevalence rate for dissociative disorders overall is significantly lower (but not for DID) [35]. Studies using the semistructured instrument SCID-D (compared to the fully structured DDIS) and European studies have significantly lower prevalence rates for both dissociative disorders as well as for DID. The choice of diagnostic instrument and cultural differences in interpretation of symptoms seem to be major explanations for differences in prevalence of dissociative disorders and DID [35].

Overall, the prevalence of dissociative disorders in inpatient and outpatient psychiatric settings seems to be around 10%, while approximately half of them (5%) has

TABLE 2: Dissociative disorder prevalence studies in the community (DDIS: dissociative disorders interview schedule, SCID-D: structured clinical interview for dissociative disorders).

Study	Number of subjects	Diagnostic instrument	Cutoff on DES	Dissociative identity disorder	All dissociative disorders	DES Score		
						Mean	SD	>DES ^(b)
Akyüz et al. [37]	994	DDIS	17	0.4 ^(a)	1.7% ^(a)	6.7	6.1	6.2%
Sar et al. [38]	628	DDIS	—	1.1	18.3%	—	—	—
Johnson et al. [39]	658	SCID-D	—	1.5	8.6%	—	—	—
Ross [36]	454	DDIS	—	3.1	11.2%	10.8	—	—

^(a) Clinically confirmed diagnosis, only 25.% of the selected subjects examined.

^(b) Percentage of patients with a dissociative experiences scale (DES) score above cutoff point.

DID, the most severe type of dissociative disorders. These findings suggest that individuals with dissociative disorders do not only constitute a considerable proportion of hospitalized psychiatric patients, but also apply to institutions as emergency cases requiring crisis intervention. However, their presence is not limited to acute care units, even a relatively large number of patients with dissociative disorders can be found among clinical populations with most severe psychiatric conditions.

3. Community Studies

Application to a psychiatric institution is usually due to severe impairment caused by the disorder. However, the real burden of a disorder to the community can be determined by studies conducted on nonclinical settings (Table 2). A screening study on a representative sample ($N = 484$) in Manitoba, Canada, using the DDIS yielded 11.2% prevalence for all DSM-III-R dissociative disorders [36]. Two large-scale studies were conducted in the general population of Sivas City, Turkey, supported these findings gathered in North America. The first one was conducted on a representative sample of 994 participants from both genders [37]. Approximately 3/4 of the probands dropped-out who were selected for a second and third diagnostic interview due to their elevated DES scores. Despite of this high loss in data, 0.4% of the original sample was diagnosed as having clinically confirmed DID. The second study in Sivas City, Turkey was conducted on a representative female sample of 648 participants in the same city using a structured diagnostic interview, that is, the DDIS [38]. The overall prevalence of dissociative disorders was 18.3%. 1.1% of the population had DID. However, the largest group was DDNOS (8.3%). Conditions based primarily on the presence of distinct personality states (i.e., DID and DDNOS-1) built up a prevalence of 5.2% for chronic complex dissociative disorders.

In the second Sivas City study, only one proband (0.2%) had dissociative fugue as a solitary phenomenon; when present, it was usually part of a more complex dissociative disorder (DID or DDNOS). 7.3% of the population reported having had dissociative amnesia at least once throughout their life. The prevalence of depersonalization disorder was 1.4% which was close to the rates (1%-2%) obtained by a literature review [40].

Due to the practical reasons, there are also epidemiological studies utilizing pathognomonic symptoms or self-rating scales rather than full diagnostic interviews. In a recent North American study conducted in the community (New York, $N = 658$), the prevalence was 8.6% for all DSM-IV dissociative disorders observed in the past year [39]. Items selected from DES-Taxon which are considered as the most pathognomonic dissociative experiences [41] and four items selected from SCID-D (two items about dissociative amnesia and two items about DID) were utilized in this study; that is, the whole set of a diagnostic instrument could not be administered. A further study [42] documented that 6.3% of the general population suffered from three or more frequently occurring dissociative symptoms possibly representing a dissociative disorder. In The Netherlands, 378 subjects from a non-clinical population were screened using the dissociation questionnaire (DIS-Q), a self-rating scale of European origin [43, 44]. 2.1% of the participants had a score above the cutoff point (score of 2.5), and 0.5 % had a score comparable to those of patients with dissociative disorders (scores of 3.0 or higher). Overall, studies based on screening by self-rating instruments yielded lower rates than those obtained by structured diagnostic instruments. However, as self-rating instruments are designed to assess severity of dissociation only and they do not screen diagnostic criteria of dissociative disorders, extrapolation of diagnostic prevalences from cut-off levels in total scores may only considered as collateral evidence supporting data collected by structured diagnostic interviews.

4. Special Populations

Some populations are known to be at high risk for dissociative disorders (Table 3). Substance users are among them. Although substances can cause dissociative experiences themselves, patients with dissociative disorders may become substance dependent as well. Among consecutive inpatients admitted to a dependency treatment unit of a large state mental hospital in Istanbul, Turkey, the lifetime prevalence of DSM-IV dissociative disorders was 17.2% [45]. These rates were 9.0% for alcohol dependency only [46] and 26.0% for patients with chemical dependency [47]. Those rates were between 15.0% and 39.0% [48–50] for patients with chemical dependency in North America. As

TABLE 3: Dissociative disorder prevalence studies in special populations (DDIS: dissociative disorders interview schedule, SCID-D: structured clinical interview for dissociative disorders).

Study	Number of subjects	Diagnostic instrument	Cutoff on DES	Dissociative identity disorder	All dissociative disorders	DES score		
						Mean	SD	> DES ^(a)
Substance Dependents								
Ross et al. [48]	100	—	—	—	39.0%	—	—	—
Dunn et al. [49]	100	—	—	—	15.0%	—	—	—
Karadag et al. [45]	215	SCID-D	30	2.8%	17.2%	24.5%	17.5	36.7%
Schäfer et al. [51]	459	—	—	—	—	12.3%	10.7	—
Women in Prostitution								
Ross et al. [52]	20	DDIS	—	5.0%	55.0%	13.2	—	—
Yargic et al. [53]	50	DDIS	—	18.0%	—	19.5	—	—
Cooper [54]	33	—	—	—	—	32.6	—	—
Farley and Kelly [55]	37	—	30	—	—	24.1	—	22.0%
Exotic dancers								
Ross et al. [52]	20	DDIS	—	35.0%	80.0%	17.6	—	—

^(a) Percentage of patients with a dissociative experiences scale (DES) score above cutoff point.

shown also by a multicenter study in Germany, dissociative disorder comorbidity is higher among subjects with chemical dependency than those with alcohol dependency [51].

Dissociative disorders may also lead to criminal acts. In Germany, a screening study was conducted on 51 male criminal offenders admitted to a medicolegal institution by the court so as to understand diminished or lack of responsibility for the offence due to psychiatric disorder, including a large group of persons with substance-use disorders [56]. Using the SCID-D, a high prevalence of dissociative symptoms and disorders (23.5%), mostly DDNOS, was demonstrated. 22.6% of the group had a DES score 20.0 or higher. In Turkey [57], 26.8% of 108 male prisoners in a regular correctional center had a DES score 20 or above. This rate was 18.5% for DES scores 30 or above which is known to be the cut-off level for chronic dissociative disorders [58]. Nevertheless, according to the SCID-D, 15.7% of the subjects had a dissociative disorder, that is, either DDNOS or dissociative amnesia.

Exotic dancers and women in prostitution have also been demonstrated as risk groups for dissociative disorders [52–55, 59]. This seem to be due to the highly traumatic background of the probands. Studies on adolescents also yielded dissociation scores higher than those obtained in adult populations [60, 61]. This may occur due to elevated tendency to dissociation in early years of life.

5. Correlates of Dissociative Disorders

Dissociation and dissociative disorders have relationships with several components of mental health both in terms of diverse diagnostic categories as well as general variables such as childhood trauma and suicidality. An exhaustive review of all these relationships exceeds the boundaries of this paper; however, as they have implications for psychiatric epidemiol-

ogy, composing a limited section on correlates of dissociative disorders seems to be warranted for further orientation.

5.1. Somatosensory Dissociation (Conversion Symptoms).

Dissociation may also affect somatosensory functions leading to physical symptoms which cannot be attributed to a general medical condition. Most recently, somatoform dissociation has been proposed as a concept to cover conversion symptoms and other bodily phenomena with a dissociative origin [62]. In fact, pseudoneurological symptoms of conversion disorder may be attributed to a disruption in somatosensory functions, as they occur for other mental capacities in dissociative disorders [63]. Nevertheless, conversion and dissociative disorders were traditionally classified as types or variants of a single disorder, that is, hysterical neurosis. In the DSM-III [64] and its subsequent versions, dissociative disorders have been considered a separate group. The latest version of the International Classification of Diseases, the ICD-10, [65], however, includes all manifestations of the traditional hysterical neurosis under the rubric of dissociative disorders in accordance with the findings of modern studies that have resurrected evidence for the relationship between somatoform symptoms and dissociation [66]. Thus, epidemiological studies covering conversion symptoms may provide data illuminating the prevalence of dissociative disorders further.

In a screening study conducted in a primary health care center in semirural area near Ankara, Turkey, the prevalence of conversion symptoms (i.e., somatoform dissociation) in the preceding month was 27.2%, and the lifetime rate increased to 48.2% [67]. This phenomenon is exactly in accordance with the high prevalence rates obtained for dissociative disorders in Turkey. A two-year followup study in Sivas City, Turkey, demonstrated that 47.4% of patients

diagnosed as having conversion disorder previously had a DSM-IV dissociative disorder on the first axis, that is, an overt “psychological” dissociative condition [10]. This figure was 30.5% in a screening study conducted among inpatients with conversion disorder in Elazig City, Turkey [68]. Most of the DID patients in Turkey have a conversion symptom, pseudoseizures in particular [69]. Dissociative disorder comorbidity is a significant predictor of a more complex pattern among patients who apply with a conversion symptom, that is, higher general psychiatric comorbidity including somatization disorder, dysthymic disorder, major depression, and borderline personality disorder, with self-destructive behavior and suicide attempts [10].

5.2. Gender Differences in Prevalences. In a Dutch study [43] in the community, of the eight high-scorers, 7 were women. Thus, 2.9% of the women and 0.7% of the men has scores above the 2.5 cutoff—a ratio of 4 to 1. In Sivas, Turkey, although there was no difference in average DES scores between genders, there were two times more women than men among high scorers [37]. On the other hand, in a large general psychiatric population in Germany [70], there were no significant gender differences in the distribution of high dissociators. A Finnish study [60] found no difference between boys and girls on dissociation scores in a community sample of adolescents. The difference between studies on gender distribution among high-scorers in the community can be interpreted by cultural factors including those affecting prevalences of childhood trauma.

5.3. Childhood Psychological Trauma. Epidemiological studies also documented the relationship between dissociative disorders and childhood trauma, an association clinicians and researchers are familiar with [32, 71, 72]. A screening study conducted on consecutively admitted psychiatric outpatients yielded elevated rates for sexual (27.8%), physical (50.0%), and emotional (72.2%) abuse and neglect (83.3%) among dissociative patients in comparison to nondissociative controls [24]. In the inpatient psychiatric unit of the same institution, these rates were 58.8%, 82.4%, 70.6%, and 58.8%, respectively [25]. Apparently, patients with childhood sexual and/or physical abuse were hospitalized more readily pointing to a more crisis-prone and severe general condition. On the other hand, dissociative outpatients and dissociative subjects identified in non-clinical settings report emotional abuse and neglect predominantly [24, 38]. Nevertheless, in a Turkish study in the community, subjects with dissociative or conversion disorder (somatic dissociation) reported significantly higher levels of childhood traumata than the remaining participants [38, 69]. In a case series and also in the community, conversion disorder patients with a concurrent dissociative disorder reported childhood traumata more frequently than those without [10, 69].

5.4. Suicidality and Self-Mutilative Behavior. While their rate of completed suicide is reported as 1%-2%, patients with dissociative disorders both frequently attempt suicide and also self-mutilate without having suicidal intention much

more frequently [73]. Epidemiological studies conducted on adolescent [61] and adult [38] non-clinical populations also support this observation reported in clinical studies largely.

5.5. Psychiatric Comorbidity. Patients with dissociative disorders have relatively high number of comorbid diagnoses which may prevent clinicians from recognizing the dissociative disorder in the overall picture [34]. A screening study on college students [9] documented a large overlap between dissociative disorders and borderline personality disorder. Similar observations have been made on a large community sample of women about conversion symptoms, major depression, and dissociative disorders [69]. In the general population, probands with a high level of dissociative experiences not only had elevated rates of childhood sexual and physical abuse, but also the rate of current psychiatric disorder was four times as high as the respective rates of other subjects [42]. Thus, dissociation may be a component of another psychiatric syndrome leading to treatment resistance such as observed in patients with a “dissociative depression” which is a depressive façade masking trauma-related dissociative psychopathology rather than constituting a primary mood disorder [74].

6. Conclusions

Overall, independent studies from various countries clearly demonstrate that dissociative disorders constitute a common mental health problem not only in clinical practice but also in the community as well. The lack of dissociative disorder sections in commonly used general psychiatric screening instruments has led to the omission of dissociative disorders in large-scale epidemiological studies for many decades. Although studies using specific instruments have begun to correct this perception, the inclusion of dissociative disorders in general psychiatric screening studies is crucial for prevention of false negative diagnosis in future research, will facilitate better differential diagnosis between dissociative and other psychiatric disorders, and also help to gather detailed information about true comorbidities.

Alongside study design (no blind versus blind interview), utilized instruments (structured versus semistructured), and cultural interpretation of symptoms [35], the variance between rates obtained in various settings may be related to differences in treatment seeking behavior and in mental health delivery systems as well. The relatively high prevalence of DDNOS both in clinical settings and in the community points out to the necessity for a revision in the DSM-IV dissociative disorders section allowing more cases to be placed in a specific diagnostic category. Such a revision should broaden the current definition of DID to cover some of the cases with DSM-IV DDNOS-1 rather than leaving them categorized as “atypical” conditions. Broadening the definition of criterion A of DID (disruption of identity taken as main feature of the disorder and experience of possession added as a variant of distinct personality states) and deletion of the criterion B (which was making an accent on taking control of a personality state) as proposed for the DSM-5

diagnostic criteria would serve in this direction [75]. The introduction of conversion symptoms as a specifier for DID has been another helpful measure taken in DSM-5 proposal possibly increasing the sensitivity of clinicians in catching DID patients in various cultures [69]. The inclusion of acute and transient dissociative conditions as two additional types (type 6 and type 7 as nonpsychotic and psychotic variants) of DDNOS in the current proposal of DSM-5 creates also a useful niche for a sizeable proportion of patients in many cultures which was lacking in the DDNOS section of the DSM-IV [76].

Last but not least, due to their link to early-life stress in the form of childhood abuse and neglect, better recognition of dissociative disorders would be of historical value for all humanity including global awareness about and prevention of adverse childhood experiences and their lifelong clinical consequences.

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