

## ORIGINAL PAPER

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**Involuntary vs. voluntary hospital admission****A systematic literature review on outcome diversity**

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**Abstract** This article systematically reviews the literature on the outcome of acute hospitalization for adult general psychiatric patients admitted involuntarily as compared to patients admitted voluntarily. Inclusion and exclusion criteria qualified 41 out of 3,227 references found in Medline and PSYINDEXplus literature searches for this review. The authors independently rated these articles on six pre-defined indicators of research quality, carried out statistical comparisons *ex-post facto* where not reported, and computed for each adequate result the effect size index *d* for the comparison of means, and the *Phi*- or contingency coefficient for cross-tabulated data. Methodological quality of the studies, coming mostly from North American and European countries, showed significant variation and was higher concerning service-related than clinical or subjective outcomes. Main deficits appeared in sample size estimation, lack of clear follow-up time-points, and the absence of standardized instruments used to assess clinical outcomes. Length of stay, readmission risk, and risk of involuntary readmission were at least equal or greater for involuntary patients. Involuntary patients showed no increased mortality, but did have higher suicide rates than voluntary patients. Further, involuntary patients demonstrated lower levels of social functioning, and equal levels of general psychopathology and treatment compliance; they were

more dissatisfied with treatment and more frequently felt that hospitalization was not justified. Future methodologically-sound studies exploring this topic should focus on patient populations not represented here. Further research should also clarify if the legal admission status is sufficiently valid for differentiating the outcome of acute hospitalization.

**Key words** involuntary hospital admission · acute hospitalization · adult general psychiatry · outcome · literature review

**Introduction**

Involuntary hospital admission of general psychiatric patients is one of the most contested topics in mental health care. It faces increasing criticism, particularly from the human rights perspective voiced by users of mental health services and prominent political bodies such as the Council of Europe [14, 58].

A broad and robust base of empirical knowledge on this element of service provision does not exist, however. Cross-culturally confirmed findings focus on epidemiological aspects [41, 48] and on the characteristics of patients [2, 32, 45] subjected to this practice. In contrast, data on potential (long-term) effects of involuntary (hospital) treatment are rather scarce. The first of recent systematic reviews on outcomes of involuntary hospital admission [21] reported findings from no more than 18 studies, 15 of which were assessed as being of low or medium quality. Results demonstrated that most involuntarily-admitted patients showed substantial clinical improvement, and that a significant number of patients did not feel retrospectively that the admission was justified and/or beneficial.

To our knowledge, the literature on differences in outcomes of involuntarily-admitted patients as com-

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pared to voluntarily-admitted patients has not been systematically assessed thus far, however. Therefore, this review aims to bridge this gap by answering the following question: What is the outcome of general psychiatric inpatient care for patients admitted involuntarily compared to patients admitted voluntarily?

## Method

### Inclusion and exclusion criteria of the studies

In this review, we included studies that (a) assessed outcomes of involuntary admission and subsequent treatment and outcomes of voluntary admission and subsequent treatment; (b) made a statistical comparison between both groups or reported each group's results separately so that a statistical comparison could be computed *ex-post facto*; (c) were conducted on general psychiatric wards; (d) used either admissions or patients (not wards or hospitals) as unit of assessment; (e) were published in 1980 or later; (f) were published in either English or German; and (g) reported data on one or several of the following outcomes [13]: Service-related outcome domains assessing length of stay, readmission rate, or legal status of readmission; clinical and observer-based outcome domains assessing mortality, suicide, social functioning, or psychopathology (incl. post-traumatic stress symptoms and insight into illness), treatment compliance, or medication compliance; subjective outcome domains assessing treatment satisfaction, perceived need/justification for admission, or perceived coercion.

Qualitative methodology [22] was not a criterion for study exclusion, but we identified no qualitative study fulfilling inclusion criterion (b).

We excluded studies that (h) assessed patients from addiction, eating disorder, forensic, geriatric or child and youth psychiatric wards; (i) measured potential outcomes only at the time of admission, i.e. implemented a cross-sectional instead of a longitudinal design; or (j) recorded the patients' legal status later than at admission or compared groups according to legal status as perceived by patients.

### Selection of studies

Two Internet literature searches were conducted on 9 March 2006. The first search was performed in Medline via the Reference Manager 10 software and resulted in 2,363 references. The search terms were:

	All fields	{involuntar\*} OR {coerc\*} OR {compulsor\*} OR {forced}
AND	All fields	{admission} OR {detention} OR {commit\*} OR {treatment}
AND	All fields	{psychiatr\*} OR {mental\*}
AND	Publication date	1980:2005
NOT	Keywords	{child\*} OR {geriatric\*} OR {dement\*} OR {anorexia} OR {bulimia} OR {eating} OR {prison\*} OR {criminal\*} OR {parole\*} OR {animal\*}

The second search was done in the German PSYNDEXplus - Lit.& AV 1977-2005/12 database, resulting in 864 references, with the following search terms:

	zwang* or willen or unfreiwillig* or freiwillig* or polizei* or richter* or gericht*	in Terms Anywhere
AND	aufnahme or zurueckhaltung or einweisung or behandlung	in Terms Anywhere
AND	psychiatr*	in Terms Anywhere

One author (MG) examined the resulting list of 3,227 references and abstracts and eliminated 3,023 publications that clearly did not match the above-mentioned criteria. Using the remaining list of 182

English and 22 German articles, each author independently evaluated the full texts against the study's inclusion and exclusion criteria. This process resulted in the exclusion of another 159 articles; 37 English and eight German articles were consonantly rated as relevant.

Using the citations given within these 45 articles, another nine articles were identified as potentially relevant, obtained and evaluated. Finally, in conducting a detailed assessment of the studies' methodological aspects, eight English and five German publications were excluded either by not fulfilling all of the inclusion criteria or by fulfilling at least one of the exclusion criteria.

### Study quality assessment

All three authors independently rated the 41 articles included [1, 3–9, 12, 15–17, 20, 23–31, 33, 34, 36–40, 43, 44, 46, 47, 50–57] on six pre-defined dimensions indicating the quality of the reported research: (a) the clarity of inclusion and exclusion criteria (0 = no information for both groups; .5 = information only for one of the two groups; 1 = information for both groups); (b) the attrition rate related to all eligible subjects (0 = ≥50%; .5 = 25–50%; 1 = <25%); (c) sample size at follow-up (0 = <50 in both groups; .5 = <50 in one group and >50 in the other group; 1 = >50 in both groups); (d) the definition of follow-up periods (0 = wide variations in follow-up; 1 = all subjects assessed at an equivalent time-point); (e) the assessment instruments (0 = not published; 1 = published or assessment of objective data such as length of stay or readmission); (f) the study's design (0 = study did not focus on the association between legal status at admission and outcome, but provided data; 1 = study mainly intended to assess the association between legal status at admission and outcome).

Disagreements about the quality ratings were resolved by group discussion. For several outcome domains, some ratings were defined by the authors: always one point on dimensions (a), (b), (d) and (e) for suicide, on dimensions (d) and (e) for length of stay as well as on dimension (e) for readmission and legal status of readmission.

### Statistical analyses

If studies reported data in a manner that allowed for statistical comparisons, but did not report corresponding results of statistical analyses, we computed such tests *ex-post facto*. This applies to several studies that presented cross-tabulated data which we used for conducting  $\chi^2$ -tests.

Furthermore, in order to allow for a better interpretation of the studies' findings, we computed, wherever applicable, the effect size index *d* for the comparison of means, and the *Phi*-coefficient or the Contingency Coefficient (*C*) for cross-tabulated data. Given the heterogeneity of the studies, e.g. in terms of assessment instruments, sample characteristics, and time-points of assessment, we did not conduct meta-analyses.

## Results

### Methodological aspects of the studies reviewed

Nearly all studies were carried out in Western and Northern European countries [3, 4, 12, 17, 20, 23–25, 29, 31, 33, 39, 40, 50–54, 56, 57], the United States [1, 6, 8, 9, 15, 26–28, 34, 36–38, 43, 47], Canada [5, 30, 46] and Australia [16, 44]. The most common sites were general psychiatric hospitals [6, 8, 17, 20, 23, 31, 33, 34, 36, 39, 44, 46, 50, 51, 53, 54, 56] and psychiatric units of general [1, 4, 5, 16, 24, 25, 27, 29,

33, 37, 38, 43, 44, 52, 55] or university [3, 9, 12, 24, 26, 40] hospitals; a few studies were implemented in more specialized inpatient care settings such as acute observation [30], or schizophrenia units [28]. Most studies included unselected patient groups [3–9, 12, 15–17, 30, 34, 36, 38, 40, 43, 44, 46, 47, 52, 53, 56]. Eleven studies defined inclusion criteria resulting in a limitation of the diagnostic spectrum to psychotic [20, 29, 51, 55] or schizophrenic disorders [1, 7, 28, 33, 37, 39, 54]; another three studies excluded patients with the main diagnosis of substance-abuse disorders [23–25]. Explicit definitions of the patients' age range were provided by eight studies [17, 23–25, 29, 36, 37, 51], excluding patients younger than 17 [23] or 18 [15, 17, 24, 25, 29, 37, 51] years of age, and patients older than 60 [15, 17, 23–25, 29, 37, 51], 64, [29, 37], 65, [15, 51], 69, [24, 25] or 70 years [23] of age. Two studies focused on racial aspects, including only Indochinese patients [26] or “black and white acute admissions” [27]. The (initial) size of the study samples varied by a factor of 90 in the involuntary groups [7, 51], and by a factor of 395 in the voluntary groups [1, 7, 26]. Studies that assessed service-related outcome domains tended to recruit larger samples. If reported, attrition rates for the vastly different time-points of clinical assessment—covering a period between admission [23, 24, 34, 47, 51] up to 17 years after admission [7]—varied significantly, ranging between 70% [31] and 0% [51] for the initial assessment, and between 89% [31] and 0% [51] for follow-up assessments. While the collection of data on service-related outcome domains could make use of hospital documentation systems or patients' files, and thus appeared to be standardized, this was not the case for clinical outcome domains. Assessment of psychopathological symptoms and social functioning was mostly performed with a narrow range of broadly-used standardized survey instruments; on the contrary, none of the five studies that assessed aspects of compliance [24, 28, 39, 52, 55], and only three [31, 39, 50] of the nine studies that assessed subjective outcome domains [3, 9, 12, 24, 25, 31, 39, 50, 57] used standardized instruments. Further, the studies used different measures of improvement such as percentage change in scores [47] or scale-score differences [20, 24, 28, 51] between varying time-points of measurement.

Because all of the outlined methodological aspects are included in the indicators of research quality of the studies, these ratings (QR)—as shown in the results section<sup>1</sup>—not only vary significantly across the studies, but also for individual studies if different

outcome domains were assessed with different methodological approaches.

## ■ Service-related outcome domains

### Length of stay (LOS)

LOS varied widely across the 17 studies informing about this issue (Table 1). In general, studies showed that LOS for patients admitted involuntarily was at least as long as or longer than for patients admitted voluntarily.

This conclusion comes from nine studies that found a longer LOS for involuntary patients with effect sizes ranging from small to medium; only six of the nine studies, however, reported statistically significant differences.

On the other hand, four studies found an unanticipated longer LOS for voluntarily admitted patients than for involuntary patients that proved to be statistically significant in two studies only. However, both studies showed specific characteristics: Lindsey et al. [27] excluded patients with a LOS longer than 90 days, and Okin [36] categorized the LOS and did not study the mean LOS but the median.

Finally, three studies stated that they found no differences in LOS but did not present data on the LOS from either group [38, 51, 52].

### Readmission rates (RR)

Studies on RR (Table 2) covered very different observation periods ranging from 30 days to 17 years; further, they included very different groups of patients, i.e. patients admitted for the first time as well as patients with a varying number of previous hospitalizations. All together, findings showed that the likelihood of patients admitted involuntarily being readmitted was at least as high as or higher than for patients admitted voluntarily. No study found a higher RR for voluntarily-admitted patients, five studies found a significantly higher RR for involuntary patients and the remaining five studies found no differences between the two groups.

### Legal status of readmissions (LSR)

Fennig et al. [7] (QR: 5.0 pts.), McEvoy et al. [28] (QR: 3.0 pts.), Munk-Jørgensen et al. [33] (QR: 4.0 pts.), and Szmukler et al. [52] (QR: 4.5 pts.) evaluated the LSR, three of these studies including only patients with schizophrenia. Using different follow-up periods ranging from 1 to 17 years, they unanimously found a higher risk of being involuntarily readmitted in patients with involuntary index-admission. Effect size indices either could not be calculated [33, 52] or

<sup>1</sup>Detailed results of the studies on outcome domains are presented in tables if more than five studies had assessed the respective domain. Results on outcome domains addressed by a smaller number of studies are reported in the text.

Table 1 Studies on LOS

Ref- No.	Pub.- Year	Country of origin	Study population	Setting	Design <sup>a</sup>	N	Attrition rate	Inclusion/ exclusion criteria	Quality rating	Findings <sup>b</sup>
<i>Studies that found a longer LOS for involuntarily admitted patients</i>										
30	1990	Canada	895 unselected patients, most suffering from mania, schizophrenia and delusional disorder or atypical psychosis	Acute Observation Unit at a university-affiliated general hospital	Ar	N <sub>vol</sub> = 472 N <sub>inv</sub> = 423	0%	NA	5.0	LOS <sub>vol</sub> = 5.5 (4.7) LOS <sub>inv</sub> = 7.4 (5.6) $d = .37, p = <.01$
4	1991	Germany	628 unselected patients; most involuntarily admitted patients suffered from schizophrenia (58%), most voluntarily admitted patients from substance abuse disorders (30%) and schizophrenia (20%)	Central Hospital Bremen	Ar	N <sub>vol</sub> = 300 N <sub>inv</sub> = 328	23% for involuntarily admitted patients	NA	5.5	LOS <sub>vol</sub> = 57.2 LOS <sub>inv</sub> = 78.5 $d =$ not computed due to lack of information, $p < .05$ Note: 12% of the involuntarily admitted patients and only 7% of the voluntarily admitted patients left hospital within less than 24 h.
47	1997	USA	1,053 unselected, severely ill, and indigent inpatients	Both locked and voluntary inpatient units at a public hospital	Br	N <sub>vol</sub> = 221 N <sub>inv</sub> = 832	No data reported	NA	4.5	LOS was significantly correlated with legal status at admission ( $r = .33; p < .01$ ).
16	2000	Australia	402 unselected patients; most involuntary patients suffered from schizophrenia (53%), most voluntary patients from affective disorders (57%)	20-bed acute psychiatric inpatient unit at a public hospital	Bp	N <sub>vol</sub> = 266 N <sub>inv</sub> = 136	0%	NA	5.0	LOS <sub>vol</sub> = 10.7 (12.3) LOS <sub>inv</sub> = 17.5 (16.6) $d = .47, p < .01$
39	2003	Germany	83 patients, all with schizophrenia or schizoaffective disorder	General psychiatric hospital	Ap	N <sub>vol</sub> = 33 N <sub>inv</sub> = 50	18.6%	Study limited to patients with schizophrenia at admission	5.5	LOS <sub>vol</sub> = 48.2 (26.4) LOS <sub>inv</sub> = 68.9 (36.9) $d = .65, p < .05$
53	2004	Finland	1,541 unselected patients, about 50% of whom were suffering from psychotic disorders	5 psychiatric hospitals	Br	N <sub>vol</sub> = 1126 N <sub>inv</sub> = 415	0%	NA	5.0	LOS <sub>vol</sub> = 22.1 (32.8) LOS <sub>inv</sub> = 49.4 (54.5) $d = .61, p = .0001$
<i>Studies that found no significant differences on LOS of involuntarily admitted patients as compared to voluntarily admitted patients</i>										
52	1981	UK	250 unselected patients, most with schizophrenia, depression or "undiagnosed major mental disorders"	3 hospitals serving the Borough of Camden/London	Ap	N <sub>vol</sub> = 100 N <sub>inv</sub> = 150	No data reported	NA	4.5	LOS was grouped in "less than 1 week" and "1 week to 1 month". With respect to this categorization, groups did not differ in LOS. ( $\chi^2 =$ not computed due to lack of information)
56	1982	Germany	250 unselected adult patients, most with a mix of mental disorders	Mental State Hospital Hamburg	Ar	N <sub>vol</sub> = 110 N <sub>inv</sub> = 140	No data reported	NA	4.0	LOS <sub>vol</sub> = 87.4 (95.9) LOS <sub>inv</sub> = 67.9 (101.2) $d = .20, ns$
38	1988	USA	97 unselected patients; no information on diagnoses provided	Psychiatric unit of an urban community hospital	Ar	N <sub>vol</sub> = 48 N <sub>inv</sub> = 49	100%	NA	4.5	No group-specific data on LOS provided ( $p =$ not computed due to lack of information, ns).

Table 1 Continued

Ref- No.	Pub- Year	Country of origin	Study population	Setting	Design <sup>a</sup>	N	Attrition rate	Inclusion/ exclusion criteria	Quality rating	Findings <sup>b</sup>
1	1989	USA	40 male patients with schizophrenia	15-bed mixed voluntary/involuntary unit at a general community hospital	Ar	$N_{vol} = 20$ $N_{inv} = 20$	0%	Study limited to male patients with schizophrenia	5.0	$LOS_{vol} = 21.6$ (15.4) $LOS_{inv} = 26.3$ (17.6) $d = .28$ , ns
26	1993	USA	42 Indochinese patients; most with schizophrenia or mood disorders	Inpatient services at Oregon Health Sciences University	Ap	$N_{vol} = 20$ $N_{inv} = 22$	0%	Study limited to Indochinese patients	5.0	$LOS_{vol} = 10.7$ (6.7) $LOS_{inv} = 13.5$ (10.4) $d = .33$ , ns
34	1996	USA	220 unselected patients; most with substance-related disorders, schizophrenic and schizoaffective disorders and mood disorders	Hospital housing general psychiatric inpatient services plus a long-term treatment program for dually diagnosed patients.	Bp	$N_{vol} = 55$ $N_{inv} = 165$	0%	NA	5.0	LOS was 30.9 (27.6) and not significantly correlated with legal status at admission ( $r = .08$ )
40	1999	Denmark	95 unselected patients; most with schizophrenia, schizotypal, and delusional disorders	5 closed psychiatric wards at Aarhus University Hospital	Ap	$N_{vol} = 48$ $N_{inv} = 47$	21%	NA	5.0	$LOS_{vol} = 43$ $LOS_{inv} = 53$ $d =$ not computed due to lack of information, ns
17	2002	Norway	223 patients; most with schizophrenia or mood disorders	4 acute wards at 2 psychiatric hospitals	Bp	$N_{vol} = 73$ $N_{inv} = 150$	42%	Study included patients aged 18-60 and excluded "patients who were unable to communicate"	4.5	$LOS_{vol} = 37$ (40.1) $LOS_{inv} = 30$ (30.6) $d = -20$ , ns
51	2004	Germany	88 adult patients with schizophrenia and delusional disorders	320-bed psychiatric hospital	Ap	$N_{vol} = 75$ $N_{inv} = 13$	0%	Study included patients aged 18-65 with schizophrenia or delusional disorder	5.5	LOS ranged from 1 to 247 days ( $M = 36.2$ ; $SD = 33.6$ ) and "[groups] did not differ in LOS" ( $d =$ not computed due to lack of information, ns)
<i>Studies that found a longer LOS for voluntarily admitted patients</i>										
36	1986	USA	197 unselected patients; most with schizophrenia	7 state hospitals	Ap	$N_{vol} = 92$ $N_{inv} = 105$	1%	NA	6.0	$LOS_{vol}$ Median = 23.1 $LOS_{inv}$ Median = 11.7 $d =$ not computed due to lack of information, $p < .05$
27	1989	USA	227 patients acutely admitted, i.e. with a stay of less than 90 days	12 general psychiatric units in public facilities	Ap	$N_{vol} = 178$ $N_{inv} = 49$	0%	Study included "black and white acute admissions"	5.5	$LOS_{vol} = 32.0$ (24.1) $LOS_{inv} = 23.4$ (20.0) $d = .39$ , $p < .05$

Note. An asterisk \* indicates that the statistical test was computed *ex-post facto* by the authors of this review. The effect size index  $d$ , the  $\Phi$ -coefficient  $\phi$ , and the  $C$ -coefficient were without exception calculated by the authors of this review, too.

<sup>a</sup> Ap = prospective study with the main intention to assess the association between legal status at admission and outcome; Ar = retrospective study with the main intention to assess the association between legal status at admission and outcome; Bp = prospective study that did not focus on the association between legal status at admission and outcome, but provided data; Br = retrospective study that did not focus on the association between legal status at admission and outcome, but provided data

<sup>b</sup> LOS is given in days



**Table 2** Studies on readmission rates

Ref. No.	Pub. Year	Country	Study population	Setting	Design <sup>a</sup>	N	Attrition rate	Inclusion/exclusion criteria	Follow-up period	Quality rating	Findings
<i>Studies that found significant differences between voluntary and involuntary patients</i>											
52	1981	UK	250 unselected patients, most with schizophrenia, depression or "undiagnosed major mental disorders"	3 hospitals serving the Borough of Camden/ London	Ap	$N_{vol} = 100$ $N_{inv} = 150$	No data reported	NA	1 year from initial admission	4.5	61% of the involuntary patients and 42% of the voluntary patients had at least 1 readmission ( $\phi = .19$ , $p < .01$ ).
15	2001	USA	487 patients, most with schizophrenia	No information provided	Br	$N_{vol} = 205$ $N_{inv} = 282$	1.4%	Study included first-admitted patients aged 18–65	30 days following discharge	5.0	85% of those readmitted within 30 days were originally involuntarily admitted ( $\phi = .70$ , $p < .05$ ).
6	2003	USA	943 unselected patients	Harris County Psychiatric Clinic	Br	No data provided	0%	NA	5 years from initial admission	4.5	Legal status was significantly related to readmission ( $\phi = .09$ , $p < .01$ ). Involuntary patients required more readmissions ( $1.9 \pm 1.7$ ) than voluntary patients ( $1.6 \pm 1.4$ ; $d = .19$ , $p =$ no information).
<i>Studies that found no significant differences between voluntary and involuntary patients</i>											
28	1989	USA	52 patients suffering from schizophrenia or schizoaffective disorder	Inpatient Schizophrenia Unit	Ap	$N_{vol} = 28$ $N_{inv} = 24$	27%	Study included patients who met criteria for schizophrenia or schizoaffective disorder and had a LOS of >14 days	2½–3½ years following discharge	3.0	67% of involuntary patients and 43% of voluntary patients were readmitted during follow-up ( $\phi = .24$ , ns <sup>*</sup> ).
26	1993	USA	42 Indochinese patients, most with schizophrenia or mood disorders	Inpatient services at Oregon Health Sciences University	Ap	$N_{vol} = 20$ $N_{inv} = 22$	10%	Study limited to Indochinese patients	2–4 years after index hospitalization	4.0	50% of the involuntary patients and 55% of the voluntary patients were readmitted within the follow-up period ( $\phi = .05$ , ns).
47	1997	USA	1,053 unselected, severely ill, and indigent inpatients	Both locked and voluntary inpatient units at a public hospital	Br	$N_{vol} = 221$ $N_{inv} = 832$	No data reported	NA	18 months from initial admission	4.5	Legal status at admission was correlated with rehospitalization to the same facility ( $r = -.15$ , $p < .01$ ), but not entered into a multivariate regression analysis predicting such rehospitalization. Groups did not differ in terms of number of total admissions, with 4.2 (4.2) admissions for involuntary patients and 4.3 (4.6) admissions for voluntary patients ( $d = .04$ , ns).
7	1999	Israel	9,081 unselected patients	All psychiatric facilities in Israel	Ar	$N_{vol} = 7,909$ $N_{inv} = 1,172$	0%	Study included non-forensic first-time admitted patients with schizophrenia	3–17 years following first admission	5.0	20% of the involuntary patients and 30% of the voluntary patients were readmitted within the follow-up period ( $\phi = .11$ , $p = .06^*$ ).
37	1999	USA	262 patients	Inpatient units of New York general hospitals	Bp	$N_{vol} = 117$ $N_{inv} = 145$	17%	Study included patients aged 18–64 with schizophrenia or schizoaffective disorder and a LOS < 120 days	Within 3 months of hospital discharge	4.5	48% of the involuntary patients and 52% of the voluntary patients were readmitted within the follow-up period ( $\phi = .04$ , ns).
39	2003	Germany	83 patients, all with schizophrenia or schizoaffective disorder	General psychiatric hospital	Ap	$N_{vol} = 29$ $N_{inv} = 48$	24.5%	Study limited to patients with schizophrenia at admission	18 months after discharge	5.0	48% of the involuntary patients and 52% of the voluntary patients were readmitted within the follow-up period ( $\phi = .04$ , ns).

Note. An asterisk \* indicates that the statistical test was computed *ex-post facto* by the authors of this review. The effect size index  $d$ , the  $\Phi$ -coefficient  $\phi$ , and the C-coefficient were without exception calculated by the authors of this review, too

<sup>a</sup> Ap = prospective study with the main intention to assess the association between legal status at admission and outcome; Br = retrospective study with the main intention to assess the association between legal status at admission and outcome; Bp = prospective study that did not focus on the association between legal status at admission and outcome, but provided data

ranged between  $\Phi = .21$  ( $p = .000$ ) [7] and  $\Phi = .42$  ( $p = .003$ ) [28].

## ■ Clinical and observer-based outcome domains

### Mortality

In an unselected U.S.-sample, Crisanti and Love [5] (QR: 4.0 pts.) found that, within a maximum 9-year follow-up, involuntary patients did not appear to be at greater risk for mortality compared to voluntary patients—58 of 1,064 patients died in the involuntary group, and 49 of 1,007 patients died in the voluntary group ( $\Phi = .013$ , ns).

### Suicide

Gale et al. [8] (QR: 3.0 pts.), Read et al. [44] (QR: 5.0 pts.), and Roy and Draper [46] (QR: 4.0 pts.) provided data on suicides among involuntary and voluntary inpatients. All three studies found that involuntarily-admitted patients were significantly overrepresented in the suicide group compared to the control group, with effect size indices not computed [8] or ranging from  $\Phi = .27$  ( $p = .02$ ) [46] to  $\Phi = .33$  ( $p = .009$ ) [44]. Within the suicide groups, the rates of involuntary patients varied from 52% [8] to 78% [44].

### Social functioning

The four studies that compared admission assessments or assessments two weeks after admission showed inconsistent findings: Two studies found significant differences [23, 28] in that voluntary patients showed less impairment, whereas the two other studies [20, 51] found no differences between the two groups.

Concerning social functioning three weeks after admission or at discharge, the review suggests a lower level of impairment for voluntary patients, given that two studies found significant differences in this direction [23, 28]. In fact, another study [34] reported no correlation between legal status at admission and social functioning at discharge. Because the correlation coefficient was controlled for the admission assessment, this indicates that groups did not differ in terms of improvement from admission to discharge status, a finding that was also reported in the two other studies on that topic [24, 51].

Finally, concerning follow-up assessments, two studies found no differences 6–9 months after admission [20, 23], whereas another study found a better level of social functioning for voluntary patients one year after admission [52].

In summary (Table 3), involuntarily-admitted patients showed either a comparable or a lower level of social functioning both at admission and at discharge,

but their improvement was in the same range as for voluntarily-admitted patients.

### Psychopathology

Seven studies—most including patients with psychotic (schizophrenic) disorders—assessed psychopathological symptoms, focusing either on general psychopathological symptoms [20, 28, 47, 51, 52] or on specific features like insight into illness [47, 54] or post-traumatic stress symptoms [29] (Table 3).

Concerning general psychopathological symptoms at admission or up to two weeks after admission, three studies [20, 28, 51] found only small and non-significant differences between the patient groups. For assessment at discharge, two studies [28, 51] showed no differences between the patient groups. Further, two studies [28, 51] analyzing improvement from admission until discharge did not report group differences in reduction of total score on the Brief Psychiatric Rating Scale (BPRS) or the Positive and Negative Syndrome Scale (PANSS). Finally, a study that assessed general psychopathology six months after discharge [20] did not find significant group differences.

Two studies assessed insight into illness at or shortly after admission. The one that used a published questionnaire [28] did not find a statistically significant difference between groups, whereas the other study that used a single-item instrument [54] found that involuntary patients showed less insight than voluntary patients. At discharge the former study [28] found much higher insight in voluntary patients, whereas the latter [54] found no differences. In contrast, a third study [47] found higher insight in involuntary patients. Finally, concerning change in insight from admission to discharge, one study reported improvement of insight ratings in involuntary patients [54], whereas another study established this finding for the group of voluntary patients [28].

One small study on treatment-related traumatic symptoms [29] showed the anticipated difference with more severe symptoms of involuntary patients eight weeks after admission, but not one week after admission.

In general, results suggest no group differences in terms of general psychopathology, significant differences in terms of traumatic stress related to treatment experiences, and inconsistent findings in terms of insight into illness.

### Treatment compliance

McEvoy et al. [28] (QR: 4.0 pts.), Rain et al. [43] (QR: 3.0 pts.), and Pieters [39] (QR: 3.5 pts.) studied treatment compliance in terms of outpatient appointments of involuntary and voluntary patients with schizophrenic, schizoaffective and affective dis-

**Table 3** Studies on psychopathology, and social functioning

Ref- No.	Pub- Year	Country of origin	Study population	Setting	Design <sup>a</sup> N	Attrition rate	Inclusion/ exclusion criteria	Time point(s)	Instrument	Quality rating	Findings
<i>Studies that found significant differences between voluntary and involuntary patients</i>											
52	1981	UK	250 unselected patients, most with schizophrenia, depression or "undiagnosed major mental disorders"	3 hospitals serving the Borough of Camden/ London	Ap N <sub>vol</sub> = 100 N <sub>inv</sub> = 150	No data reported	NA	1 year after admission	1-item expert-rating	3.5	Voluntarily admitted patients showed less symptoms and a better level of social functioning respectively ( $C = .50$ , $p < .001$ ).
28	1989	USA	52 patients suffering from schizophrenia or schizoaffective disorder	Inpatient Schizophrenia Unit	Ap T1, T2: N <sub>vol</sub> = 28 N <sub>inv</sub> = 24	T1: 27% T2: 27%	Study included patients who met criteria for schizophrenia or schizoaffective disorder and had a LOS of >14 days	T1 = time of initial consent (mean 6 ± 5); T2 = at discharge	BPRS <sup>b</sup> , CGI <sup>c</sup> , 1-item self-rating; ITAQ <sup>d</sup>	4.0	At T1, groups differed on CGI ( $d = .67$ , $p < .05$ ) and self-assessment ( $d = .84$ , $p > .05$ ), but not on ITAQ ( $d = .55$ , $p > .053$ ) and BPRS ( $d = .21$ , ns). At T2, groups differed on CGI ( $d = .71$ , $p < .05$ ) and ITAQ ( $d = 1.03$ , $p < .01$ ), but not on BPRS ( $d = .39$ , ns) and self-assessment ( $d = .19$ , ns). Voluntary patients improved on all assessments, involuntary patients on CGI and BPRS. Groups differed at T1 ( $C = .26$ , $p < .01^*$ ) and at T2 ( $C = .20$ , $p < .05^*$ ) in that voluntary patients showed less impairment; groups did not differ at T3 ( $C = .10$ , ns <sup>e</sup> ).
23	1993	Sweden	199 patients suffering from different mental disorders	2 general psychiatric hospitals	Ap T1, T2: N <sub>vol</sub> = 99 N <sub>inv</sub> = 100 T3: N <sub>vol</sub> = 89 N <sub>inv</sub> = 90	T1: 14% T2: 14% T3: 23%	Study excluded e.g. patients aged <17 or >70, alcohol abusers, drug addicts, and sentenced patients.	T1: at admission T2: at discharge or 3 weeks after admission T3: 4–8 months after T2	GAS <sup>e</sup>	6.0	Groups differed in insight at T1 ( $d = NA$ ; $p < .05$ ), but not at T2 ( $d = NA$ , $p = ns$ ). Involuntary but not voluntary patients improved from T1 to T2.
54	1995	Germany	59 patients suffering from schizophrenia	Mental State Hospital Wiesloch	Ap T1: N <sub>vol</sub> = 31 N <sub>inv</sub> = 28 T2: N <sub>vol</sub> = 23 N <sub>inv</sub> = 23	T1: 25% T2: 41%	Study included patients who met criteria for schizophrenia and had a LOS of > 14 days	T1 = briefly after admission T2 = briefly ahead of discharge	1-item self-rating	4.0	Groups differed in insight at T1 ( $d = NA$ ; $p < .05$ ), but not at T2 ( $d = NA$ , $p = ns$ ). Involuntary but not voluntary patients improved from T1 to T2.
19	1997	Finland	87 patients aged 15–64 and suffering from functional psychoses	Psychiatric Clinic	Ap T1: N <sub>vol</sub> = 42 N <sub>inv</sub> = 45 T2: N <sub>vol</sub> = 28 N <sub>inv</sub> = 28 T1, T2: N <sub>vol</sub> = 221 N <sub>inv</sub> = 832	T1: 13% T2: 44%	Study included patients with psychotic disorders	T1 = 2 weeks after admission T2 = 6 months after discharge	BPRS, GAS	4.5	Groups did not differ, neither at T1 (BPRS: $d = .23$ ; ns; GAS: $d = .16$ , ns) nor at T2 (BPRS: $d = .14$ , ns; GAS: $d = .14$ , ns). However, involuntary patients improved both on BPRS and GAS; voluntary did not.
47	1997	USA	1,053 unselected, severely ill, and indigent inpatients	Both locked and voluntary inpatient units at a public hospital	Br T1, T2: N <sub>vol</sub> = 221 N <sub>inv</sub> = 832	No data reported	NA	T1 = at admission T2 = at discharge	PSAS <sup>f</sup> , 1-item expert-rating on insight	3.5	Legal status was significantly correlated with "Percentage change in PSAS score" ( $r = .08$ , $p < .01$ ) and with "Insight into illness at discharge" ( $r = .20$ , $p < .01$ ).
29	1999	Finland	46 patients suffering from psychotic disorders	Turku City Hospital	Bp T1, T2: N <sub>vol</sub> = 20 N <sub>inv</sub> = 26	40%	Study included patients aged 18–64 and suffering from any psychotic disorder	T1 = 1 week after admission T2 = 8 weeks after admission	IES-R <sup>g</sup> , CAPS <sup>h</sup>	3.0	At T2, involuntary patients had more treatment-related traumatic symptoms, as assessed by IES-R ( $d = NA$ , $p < .01$ ) and CAPS ( $d = NA$ , $p < .01$ ).



Table 3 Continued

Ref- No.	Pub.- Year	Country of origin	Study population	Setting	Design <sup>a</sup>	N	Attrition rate	Inclusion/ exclusion criteria	Time point(s)	Instrument	Quality rating	Findings
<i>Studies that found no significant differences between voluntary and involuntary patients</i>												
24	1997	Sweden	165 patients with different mental disorders	1 university hospital, 1 central hospital	Ap	T1: N <sub>vol</sub> = 83 N <sub>inv</sub> = 82 T2: N <sub>vol</sub> = 66 N <sub>inv</sub> = 71	T1: 2% T2: 18%	Study excluded e.g. patients aged <18 or >69, alcohol and drug use disorders	T1: at admission T2: at discharge or 3 weeks after admission	GAF <sup>i</sup> ; 1-item self-rating	6.0	Groups did not differ: neither in terms of self-rated improvement nor in terms of GAF improvement; (d = not computed due to lack of information, ns).
34	1996	USA	211 unselected patients, most with substance-related disorders, schizophrenic and schizoaffective disorders and mood disorders	Hospital housing general psychiatric inpatient services plus a long-term treatment program for dually diagnosed patients.	Bp	T1, T2: N <sub>vol</sub> = <55 N <sub>inv</sub> = <165	4%	NA	T1: At admission T2: At discharge	GAS	4.5	If controlled for GAS at admission, GAS at discharge was not significantly correlated with legal status (r = .10).
51	2004	Germany	88 adult patients with schizophrenia and delusional disorders	320-bed psychiatric hospital	Ap	T1, T2: N <sub>vol</sub> = 75 N <sub>inv</sub> = 13	0%	Study included patients aged 18–65 with schizophrenia or delusional disorder	T1: at admission T2: at discharge	PANSS <sup>j</sup> , GAF	5.5	At T1, groups did not significantly differ in PANSS (d = .52, p = ns) or in GAF (d = .21, p = ns). In addition, groups neither differed in terms of reduction in the PANSS total score nor in increase of the GAF score.

Note. An asterisk \* indicates that the statistical test was computed *ex-post facto* by the authors of this review. The effect size index *d*, the *Phi*-coefficient  $\phi$ , and the *C*-coefficient were without exception calculated by the authors of this review, too

<sup>a</sup> Ap = prospective study with the main intention to assess the association between legal status at admission and outcome; Ar = retrospective study with the main intention to assess the association between legal status at admission and outcome; Bp = prospective study that did not focus on the association between legal status at admission and outcome, but provided data; Br = retrospective study that did not focus on the association between legal status at admission and outcome, but provided data; <sup>b</sup> BPRS = Brief Psychiatric Rating Scale; <sup>c</sup> CGI = Clinical Global Impressions (Global Severity Item); <sup>d</sup> ITAQ = Insight and Treatment Attitudes Questionnaire; <sup>e</sup> GAS = Global Assessment Scale; <sup>f</sup> PSAS = Psychiatric Symptom Assessment Scale; <sup>g</sup> IES-R = Impact of Event Scale-Revised; <sup>h</sup> CAPS = Clinician-Administered PTSD Scale; <sup>i</sup> GAF = Global Assessment of Functioning; <sup>j</sup> PANSS = Positive and Negative Syndrome Scale

**Table 4** Studies on patients' satisfaction with treatment

Ref- No.	Pub.- Year	Country of origin	Study population	Setting	Design <sup>a</sup>	N	Attrition rate	Inclusion/ exclusion crite- ria	Time point(s)	Instrument	Quality rating	Findings
<i>Studies that found significant differences between voluntary and involuntary patients</i>												
12	1989	Sweden	173 unselected patients, most suffering from psychotic disorders (60.1%)	Department of Psychiatry that has been reorganized into a community-oriented care delivery organization	Br	$N_{vol} = 142$ $N_{inv} = 31$	56%	LOS $\geq 5$	3–15 months after discharge	Self-developed instrument measuring six areas of satisfaction	1.5	Involuntary patients showed a significantly lower level of satisfaction in 5 out of the 6 areas. Effect size was highest for "Staff–patient relationship" ( $d = .61, p < .01$ ) and lowest for "Treatment Design" ( $d = .35, ns$ ).
31	2003	Switzerland	107–272 unselected patients with unknown diagnoses	5 psychiatric hospitals	Bp	T1: $N_{vol} = 210$ $N_{inv} = 62$ T2: $N_{vol} = 84$ $N_{inv} = 23$ $N_{vol} = 118$ $N_{inv} = 117$	T1: 70% T2: 89%	NA	T1: at discharge T2: 10 days after discharge	"Zürcher Fragebogen zur Patienten-zufriedenheit"	3.5	Involuntary patients showed a significantly lower level of satisfaction at T1 ( $d = .38, p < .01$ ), but not at T2 ( $d = .03, ns$ ).
25	2004	Sweden	235 patients	4 psychiatric care settings in different parts of Sweden	Bp	$N_{vol} = 118$ $N_{inv} = 117$	55%	Study excluded e.g. patients aged $< 18$ or $> 69$ , main diagnosis of substance abuse	at discharge or 3 weeks after admission	Open questions with answers classified according to fixed categories	4.0	73% of the involuntary and 75% of the voluntary patients reported having been treated well ( $\phi = .02, ns$ ). 32% of the involuntary patients, but 53% of the voluntary patients reported that they would when necessary like to have the same treatment ( $\phi = .22, p < .01^*$ ).
<i>Studies that found no significant differences between voluntary and involuntary patients</i>												
24	1997	Sweden	165 patients with different mental disorders	1 university hospital, 1 central hospital	Ap	$N_{vol} = 83$ $N_{inv} = 82$	2%	Study excluded e.g. patients aged $< 18$ or $> 69$ , alcohol and drug use disorders	At discharge or 3 weeks after admission	1-item rating with answers categorized into "satisfied" or "not satisfied"	5.0	46% of the involuntary patients and 54% of the voluntary patients reported to be satisfied with treatment ( $\phi = .08, ns$ ).
39	2003	Germany	83 patients, all with schizophrenia or schizoaffective disorder	General psychiatric hospital	Ap	T1: $N_{vol} = 33$ $N_{inv} = 46$ T2: $N_{vol} = 15$ $N_{inv} = 24$	T1: 28% T2: 65%	Study limited to patients with schizophrenia at admission	T1: 3–4 weeks after admission T2: 6 months after discharge	KLIBB <sup>b</sup> (with modified rating scale)	4.5	At T1, involuntary patients showed a lower level of satisfaction with groups differing significantly on 3 out of 7 questions (e.g. 54% of involuntary patients but 76% of voluntary patients felt respected and well-regarded [ $\phi = .22, p < .05$ ]). At T2, a lower number of involuntary patients (58%) was satisfied with the therapist compared to voluntary patients (100%, $\phi = .46, p < .01$ ). No other question revealed significant differences between the groups.

Note. An asterisk \* indicates that the statistical test was computed *ex-post facto* by the authors of this review. The effect size index  $d$ , the  $\Phi$ -coefficient  $\phi$ , and the  $C$ -coefficient were without exception calculated by the authors of this review, too

<sup>a</sup> Ap = prospective study with the main intention to assess the association between legal status at admission and outcome; Br = retrospective study with the main intention to assess the association between legal status at admission and outcome; Bp = prospective study that did not focus on the association between legal status at admission and outcome, but provided data

<sup>b</sup> KLIBB = Klientenbogen zur Behandlungsbewertung (i.e. Client Assessment of Treatment)

orders. The three studies used self-developed items [39, 43] or reviewed outpatient charts [28]. The period assessed varied from one month after discharge [39] to 3½ years after discharge [28]. No study found significant differences between involuntary and voluntary patients at either follow-up assessment, however. Effect size indices either could not be calculated ([28, 43] for initial or final assessment) or were small ( $C = .04$ ; ns [39], and  $\Phi = .21$ ; ns [28] for assessment one month after discharge).

### Medication compliance

Information on medication compliance in involuntary and voluntary patients was provided by five studies assessing different follow-up-periods [28, 39, 43, 52, 55]. Four of these found no group differences in medication compliance scores, neither with respect to the duration of the index-hospitalization [28] (QR: 3.0 pts.) nor with respect to any other follow-up period such as ten weeks [43] (QR: 3.0 pts.), six months [39] ( $C = .01$ , ns; QR: 3.5 pts.), or two years after discharge [55] (QR: 2.5 pts.). Solely within an older study were involuntary patients statistically significantly less likely to take their psychotropic medication at the one-year follow-up [52] (QR: 3.5 pts.).

### ■ Subjective outcome domains

#### Treatment satisfaction

In the five studies that assessed treatment satisfaction (Table 4), both standardized [31, 39] and non-standardized instruments [12, 24, 25] have been used; individual item formulation differs a lot and does not always address comparable areas of treatment satisfaction. In addition, a broad range of follow-up periods has been covered.

Nonetheless, three out of four studies [24, 25, 31, 39] assessing satisfaction 3–4 weeks after admission or at discharge showed a statistically significantly lower level of satisfaction in involuntary groups; only one study using a dichotomized 1-item rating [24] did not report group differences. One study demonstrated equal levels of satisfaction shortly after discharge [24]. Within longer follow-up periods, two studies showed significantly lower levels of satisfaction in involuntary groups [12, 39], specifically focusing on the aspect of staff- or therapist-patient relationship.

Thus, we might conclude that involuntarily-admitted patients are significantly less satisfied with (important aspects of) their treatment than voluntarily-admitted patients.

#### Perceived need/justification for admission

All four studies on this topic [3, 9, 39, 57] found statistically-significant differences, i.e. a greater

number of voluntary patients than involuntary patients felt that they needed hospital treatment. This finding applies either to an undefined time-point during index-hospitalization [3] (QR: 3.5), to discharge [9] (QR: 2.5 pts.), to assessments both about 3 weeks after admission and 6 months after discharge [39] (QR: 3.5 pts.), or to an unspecified time point [57] (QR: 2.0 pts.). Effect size indices for the four studies ranged from  $\Phi = .24$  ( $p < .01$ ) [39] to  $\Phi = .45$  ( $p < .001$ ) [3].

### Perceived coercion

According to our search results, only one study compared perceived coercion in involuntary and voluntary patients. Surprisingly, this study [50] (QR: 4.5) found that legal status of admission was not correlated with the level of perceived coercion assessed briefly before discharge.

## Discussion

### ■ Methodological limitations of this review

The criteria defined for excluding papers from this review significantly restricted the spectrum of mental disorders potentially subjected to involuntary admission in acute units for general psychiatric patients. Recent structural developments within psychiatric facilities showed, however, that services for addictive disorders, children/youths and geriatric patients are not only frequently separated from the wards for other disorders but function more and more as organizationally-independent units [2]. Further, in many countries the legal basis for involuntarily admitting these three patient groups is different from that for other general psychiatric patients groups [18], and thus does not allow for a direct comparison. To mix our results with those from patient groups treated in units which might conceptually include the use of coercive measures accepted by other patients, for example those with eating disorders, would have disregarded the main inclusion criterion of legally involuntary admission.

To restrict the literature search to English and German papers resulted in biasing our results to services mostly established in English- or German-speaking countries. In detail, results qualify for generalizability only in the context of service provision and legal tradition of the U.S, Canada, Australia, Israel, and a selection of Western and Northern European countries.

To compare populations by defining the legal status at the admission time-point rather than by identifying the legal status relevant for a longer period of involuntary hospitalization seemed justified in order not to exclude subpopulations admitted for short

periods. Although short-term admissions are legitimized by emergency legal procedures [18], they do not always appear as involuntary admissions in official statistics when the confirmation by a court's decision is not required. In general, using the legal definition of involuntary admission to select relevant papers could be criticized because the level of coercion perceived by the patients might be as or even more important for the clinical reality of inpatient service provision, and for predicting its outcome. However, to our knowledge studies subdividing populations admitted to acute units with regard to their level of perceived coercion do not exist.

Finally, the chosen methodology could be criticized because of the criteria for the quality rating of the papers included. Obviously, they do not address important research methodology issues such as a hierarchy of the general research design (e.g. randomized trial, matched-pair design, etc.), sample size calculation, performance of missing data analysis or if researchers were independent from the professionals responsible for the clinical treatment. From previous review activities in the field of coercive treatment [21, 49], we assumed that the overall methodological quality of the included studies would be rather low. This resulted in defining criteria that could be realistically assessed, and that are particularly important for the external validity of the reported findings.

### ■ Methodological quality of the included studies

A rich variety of performance aspects and a lack of standardization of major design elements appeared as main characteristics. Most important in this respect are the vastly different sizes of the samples assessed, follow-up periods and attrition rates that varied significantly, and the limited use of comparable standardized instruments for assessing observer-based clinical, and, in particular, subjective outcome domains. Further, most outcome results have been established in middle-aged samples of general psychiatric patients with a diagnostic focus on psychotic or, even more specifically, on schizophrenic disorders.

Confirming the results demonstrated in a recent review on outcomes of involuntary hospital admission [21], our results show that the overall methodological quality of the studies reviewed was rather low. Only results on service-related outcomes have been established with sufficient methodological quality.

Finally, almost without exception and independent of the outcome domains assessed, effect sizes ranged from small to medium.

### ■ Outcome results

With regard to service-related outcome indicators, a homogeneous pattern of results appeared across the

studies reviewed. For involuntarily-admitted patients, LOS was at least as long as or longer than for voluntarily-admitted patients. The likelihood of involuntarily-admitted patients being readmitted was at least as high as or higher than for voluntarily-admitted patients. In addition, there was a higher risk of involuntary readmission among patients for whom index admission was involuntary. We want to emphasize, however, that important clinical questions and significant research deficits remain despite these clear-cut statements. Firstly, the studies do not provide any evidence if and to what extent legal or clinical variables, such as periods of stay set by a court's decision or the severity of the disorder, could have predictive power and might thus influence LOS. Secondly, no study reported cost data or discussed health economic consequences of the longer hospitalization periods of patients admitted involuntarily. Thirdly, the factors which might contribute to increasing the risk for involuntarily-admitted patients of further—and in particular of further involuntary—hospitalizations are unclear. Explanations could be that involuntary admission influences the threshold for the use of further legal instruments or that the course of the disorders includes a specific risk for violent behavior legitimizing such procedures.

The review demonstrated that mortality and suicidality of involuntarily-admitted patients as compared to voluntarily-admitted has, so far, been of limited scientific interest. These issues seem to be of special importance, however, because of the well-known typical social disintegration of involuntary patients [e.g. 1, 4, 27, 41, 45, 48, 52], and the well-established findings of higher mortality rates [42] and shortened life expectancy [11] of hospitalized mentally ill patients. Because only one study was available, the assumption of a greater risk for mortality of involuntary compared to voluntary patients should not be definitely rejected at this stage. Because concrete and immediate suicidal risk is one of the common legal pre-conditions for involuntary admission cross-nationally, the result that involuntary patients were more frequent in assessed suicide groups is congruent with the expectations, but could also challenge the effectiveness of involuntary admissions.

Results on clinical and observer-based outcome domains have been established in studies with a broader range of methodological quality that is generally lower than for service-related outcomes. Nonetheless, we might conclude that the review's results do not provide evidence for the assumption that involuntary patients showed a homogeneous pattern of worse outcome in these domains as compared to voluntary patients [21]. As could be expected in clientele at high-risk for social disintegration, involuntarily-admitted patients had either a comparable or lower level of social functioning both at admission and at discharge, but did improve in the same range as voluntarily-admitted patients. In terms of general



psychopathology, no differences between the two groups appeared. In the specific area of insight into illness, inconsistent findings emerged. Only in terms of traumatic stress related to treatment experiences, one study of lower quality found more severe stress symptoms of involuntary patients.

Further, involuntary admission does not seem to disadvantage treatment compliance. The few studies of medium or lower quality that have assessed this subject did not demonstrate a significant correlation between legal status at index admission and treatment compliance. Concerning psychopharmacological treatment, they did not show group differences in medication compliance scores nor significant correlations between legal status at index admission and medication compliance. These findings were not established, however, by the use of standardized assessment instruments.

Because of the cross-nationally replicated findings that patients are more dissatisfied with and critical of restrictive measures in different mental health care settings [e.g. 10], a consistent pattern of negative results of involuntarily-admitted patients on the subjective outcome domains assessed could be expected. Because the majority of studies on this subject, mostly of lower methodological quality, did show that involuntarily-admitted patients were significantly less satisfied with their treatment than voluntarily-admitted patients, this review's results met this expectation for treatment satisfaction. Particularly within longer follow-up periods, levels of satisfaction in involuntary groups tended to be lower, specifically focusing on the important aspect of staff- or therapist-patient relationship. Further, the review's findings showed the expected consistent pattern in the perceived need for hospitalization, in that all studies on this subject provided evidence that more voluntary than involuntary patients felt they needed hospital treatment [21].

Because we could only find one study indicating that the legal status of admission was not correlated with the level of perceived coercion assessed briefly before discharge, we would consider the association of the legal and subjective definition of coercion in this specific clinical situation to be still an open research question.

## Conclusions

Because of the generally low methodological level of research demonstrated in this important and sensitive field of mental health service provision, and because of the huge variety of methodological aspects appearing in the studies assessed, a significant need to perform future methodologically-sound studies in routine care settings remains. The most urgent methodological improvement would be the use of standardized instruments for any of the relevant outcome domains. Further, samples of sufficient size adequate for the

precise research question must be assessed and study groups increased following respective power calculations. This should be complemented by clear definitions of follow-up periods and tracking strategies.

Cross-national replications in countries not included in this review are needed. Because epidemiological data indicate rates of involuntary hospitalizations of patients with dementia and substance abuse disorders, and of mentally ill children/youths are increasing, systematic reviews on the involuntary hospital treatment of patient groups excluded here (and future studies on these groups using the required advanced methodological level) should be carried out as well [e.g. 19, 41, 48].

With regard to outcome domains, it is important to clarify whether the legal status of admission is of importance for the level of coercion perceived by the patients. New concepts of coercion [35] in which the patient's subjective perspective plays a more dominant role than the formal legal status, and empirical results showing that the level of perceived coercion has significant predictive power for the longer-term treatment outcome [20] are strong arguments for stimulating research in this area.

In general, the adequacy of a dichotomized criterion of legally voluntary and involuntary admission is questionable for differentiating the outcome of acute hospitalization. The number of days spent on acute (or closed) wards independent of the legal basis or the level of perceived coercion associated with hospitalization could be alternatives for differentially assessing the impact of coercion on different outcome domains.

Should the differentiated picture of results on a range of outcome domains appearing in this review be confirmed in more methodologically robust trials, this would be highly significant for the acute hospital treatment of general psychiatric patients. That such treatment, if performed on a legally involuntary basis, is not automatically associated with a higher risk for overall negative outcome, but bears specific risks on selected outcome domains such as treatment satisfaction that might be therapeutically influenced, could be an important message for patients, therapists, and the public helping to de-stigmatize this still frequently-used treatment approach.

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