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ORIGINAL PAPER

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Mental hospital admission rates of immigrants in Switzerland

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Abstract *Purpose* This epidemiological study aims to assess the utilisation of inpatient psychiatric services by immigrants. Specifically, we address the question of gender-specific differences in immigrants and compare the population-based rates of males and females from different countries of origin. *Methods* We analysed inpatient admission rates from a defined catchment area over a 6-year period by means of psychiatric register data. Poisson regression analysis was used to model effects of gender, age and country group (immigrants grouped into six categories according to their country of origin). *Results* Of the total of 28,511 subjects consecutively referred to psychiatric inpatient treatment, 4,814 were foreign nationals (16.9%). Among immigrants the proportion of female inpatients (38.7%) was far lower than in the general population (45.6%; equal proportion of female-to-total among Swiss inpatients). Immigrants were 37.4 years old on average at index admission (Swiss people: 46.3 years), but there were considerable differences across country groups. We found three groups with particularly high admission rates: male immigrants originating from Turkey, Eastern European and 'Other' countries (rates >6 per 1,000 population/year). These were admitted as inpatients at far higher rates than females from the same countries. In women, there was no immigrant group utilising inpatient treatment at a higher level than Swiss females. The rates of inpatient admission in males and females was almost equal among the Swiss (4.3 per 1,000), as was the case for immigrants from Southern, Western/Northern Europe and former Yugoslavia, although on a lower level (2.26–3.15 per 1,000). Regression analysis further suggests that country effects and age effects are different for males and females, and age effects are specific to the country of origin. *Discussion* These gender- and interaction effects point to inequalities in psychiatric service use in people with different migration background. Further research is needed, particularly to understand the reasons for the markedly different gender-specific utilisation of psychiatric services by some immigrant groups.

Key words migration – psychiatric hospitalisation – gender – epidemiology

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Introduction

Several European countries have experienced large-scale immigration for decades. Switzerland has one of the highest immigration numbers in Western Europe with 20.6% [44]. Traditionally, people seeking employment, particularly from Italy, Portugal and Spain, constitute a substantial group of foreign nationals. In the last 20 years the number of political refugees from former Yugoslavia increased considerably forming now the second largest group of immigrants in Switzerland [43]. Immigrants are most heterogeneous concerning their cultural and social background, the reasons to leave their home countries and the degree of assimilation in the host country. Unlike the UK, where the major ethnic majorities are Asian and Black people [32], or France, where people from Maghrebian countries are the predominant ethnic minority [33], the majority of non-Swiss citizens living in Switzerland are Caucasian [44].

For a long time, migration has been recognised as a risk factor for mental disorders [31]. There is a growing body of research showing increased incidence of schizophrenia and other psychotic disorders among immigrants in European countries [5, 12, 29,

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38, 46]. The impact of migration on other common mental disorders is not as clear, but there is some evidence suggesting a high prevalence of anxiety and depression among at least some migrant groups [4]. Significant psychiatric and social dysfunction, resulting from trauma or torture, has been described worldwide among refugees (e.g., [6, 21, 42]).

It poses some challenges to the mental health system to make appropriate and acceptable treatments available to immigrants, considering their migration history and linguistic diversity. According to some evidence, immigrant access to the mental health care system is limited by a variety of barriers, including: language, poor understanding of the health system, cultural mistrust and ethnocentrism of service providers [2]. In their early hospital admission study, Cochrane & Bal [12] demonstrated low overall rates of admission to psychiatric hospitals in the UK for Indian-, Pakistani-, German- and Italian-born immigrants compared with the native-born. In a representative survey covering outpatient medical services in Germany, psychotherapeutic and psychosomatic treatment was found to be under-represented among migrants whereas prescription of psychopharmaca was greatly increased [13]. Furthermore, among foreign patients, in particular among those with a low income level, lower continuity of care has been shown [18]; discontinuity of contact with services, however, also has been called into question and attributed to differential access to psychiatric services [25].

Epidemiological findings from national surveys point out the need to take gender into account as a fundamental dimension for mental health [23, 24, 36], suggesting that the female gender is a correlate of increased rates of mental disorders (except for substance disorders) and co-morbidity. It therefore has been criticised that gender often is treated more as a confounder to be controlled for, rather than a determinant on its own [1]. Gender differences among ethnic minorities have received little attention in the research literature. If anything, data suggest an increase in psychological distress, symptom rates and common mental health disorders in females (e.g., [14, 34, 35]). According to findings from a cross-sectional community survey of Russian-born immigrants to Israel, such gender differences stem from women's greater exposure to specific psychosocial stressors, whereas among men stress-protective factors were more prevalent [35]. Nevertheless, there is some indication from a previous study that female immigrants in Switzerland from Turkey and geographically more distant countries are less likely to be re-admitted to psychiatric hospitals, even less likely than males from the same regions [27].

To structure psychiatric services optimally so as to meet the needs of immigrants, data on the prevalence of mental disorders and the utilisation of psychiatric care are crucial. Besides studies on the incidence of psychosis, data covering the entire spectrum of mental disorders among immigrants are still sparse. A further limitation is that for ethnic minorities findings are often limited in that they only reflect the sample from which the data has been collected [4]: Usually, observational studies are conducted in health service settings using regional hospital admission data which clearly limits epidemiological conclusions. Moreover, the composition of any one ethnic group varies across studies, so it is difficult to generalise findings originating from other—even within-European—countries. In the UK, e.g., most studies compared Black and White patients [8], while in Germany the focus was mainly on Turkish patients [11], and in the Netherlands on Surinamese and Antillean-born persons [39, 40]. Findings most consistently suggest that there is variation between ethnic groups in pathways to specialist mental health services and in the use of inpatient services, and there is strong evidence regarding differences in compulsory admissions [8].

In order to assess the utilisation of mental health services of immigrants to Switzerland, we analysed inpatient admission rates in a defined catchment area using psychiatric register data. With this study we aimed

- to investigate the treated prevalence of mental disorder among immigrants and to compare the rates to those of natives (Swiss people).
- Specifically, we address the question of gender-specific differences in immigrants and compare the prevalence in males and females from different countries of origin.

Subjects and methods

Sample

We included all patients aged 16 and older who were treated in one of the psychiatric hospitals in the Canton of Zurich between January 1, 1995 and December 31, 2001. This age-range was used because country-specific population data of the period studied are available only for immigrants of two age groups: older and younger than age 16. The basic sample comprised a total of 28,511 inpatients.

Patients were traced using the central psychiatric register, which covers all mental health services in the Canton of Zurich/Switzerland, a catchment area of about 1.2 million people. All psychiatric hospitals are legally mandated to report admissions and discharges to the register; so all inpatient episodes within this catchment area are recorded. Individuals were identified by means of computerised record linkage on the basis of 18 defined match criteria. The method of this record linkage is detailed in [10, 28]. The records were analysed with respect to standard demographic characteristics (gender, age, country of origin).

Country of origin

In the present study the term 'immigrant' is defined as any foreign person according to the Swiss law on citizenship. It includes asylum seekers, short-term and settled residents. Patients not naturalised

in Switzerland are classified in the psychiatric register according to their country of origin. In 93 foreign nationals (1.9%) the country of origin was unknown; these patients were excluded from further analyses.

As most countries are represented only by few patients, we grouped all immigrants into six categories which were considered to reflect a rough geographical breakdown: Foreign nationals coming from Southern Europe (including Spain, Greece, Italy, Portugal), Western and Northern Europe (Austria, Belgium, Germany, Denmark, France, Great Britain, Ireland, Liechtenstein, Luxemburg, the Netherlands, Finland, Greenland, Iceland, Norway, Sweden), former Yugoslavia (Bosnia-Herzegovina, Croatia, Macedonia, Slovenia, Yugoslavia and Albania), Turkey, Eastern Europe (Bulgaria, Czech Republic, Hungary, Poland, Romania, Slovakia, Estonia, Latvia, Lithuania, Moldavia, Russia, Belarus, Ukraine), and 'Other countries' which comprises all countries not represented by the five prior groups, mainly people originating from Africa (Algeria, Tunisia), the Middle East (Iran, Iraq) and the Far East (Sri Lanka). Clinical and social characteristics (including psychiatric diagnoses) of these immigrant groups have been described in a previous paper [27]. Based on a case-control study (immigrants and natives matched for psychiatric diagnosis), service utilisation patterns analysed over a 7-year period have been reported in [26].

Population data

Demographic data concerning the general population of the Canton of Zurich were supplied on request by the Swiss Federal Office for Migration FOM [15] and the Statistical Office of the Canton of Zurich [41]. The FOM provides current figures on foreign nationals living in Switzerland, broken down by gender, age group and citizenship. For the period under study, such figures classed according to age-, gender- and nationality, however, were no longer available, only age-aggregated data. Therefore, we recalculated the age distributions for this period, based on the current population strata for each gender and country category. We used census data of Swiss nationals from the Statistical Office of the Canton of Zurich and aggregated these accordingly by gender and age. The same 10-year age groups applied for both population and inpatients. Figure 1 gives the age distributions of the population data over the study period, by gender and country group.

Statistical analysis

Data were grouped by three factors: gender, age group (with 7 levels) and country of origin group (with 7 levels). Within each factor level, crude rates were calculated by dividing the number of inpatients (numerator) by the number of the population at risk over the 7-year period (person-years; denominator).

The SAS V8 procedure PROC GENMOD was used to perform a Poisson regression analysis of these data. A model including gender, age group, country of origin and all 2-way-interaction terms fitted the data. (The 3-way interaction term was statistically not significant and therefore no longer considered in the model). Statistical significance was accepted at $p < 0.05$, two-tailed.

Results

Of the total of 28,511 subjects consecutively referred to psychiatric inpatient treatment between 1995 and 2001, 4814 were foreign nationals (Table 1). Immigrants made up 16.9% of all inpatients, ranging from 14.5% to 19.4% per year. Most patients had been admitted as inpatients only once during the study period (71.5%). Regarding the number of hospitalisations, there were no significant differences between the immigrant groups (mean 1.54–1.72) and Swiss patients (mean 1.60).

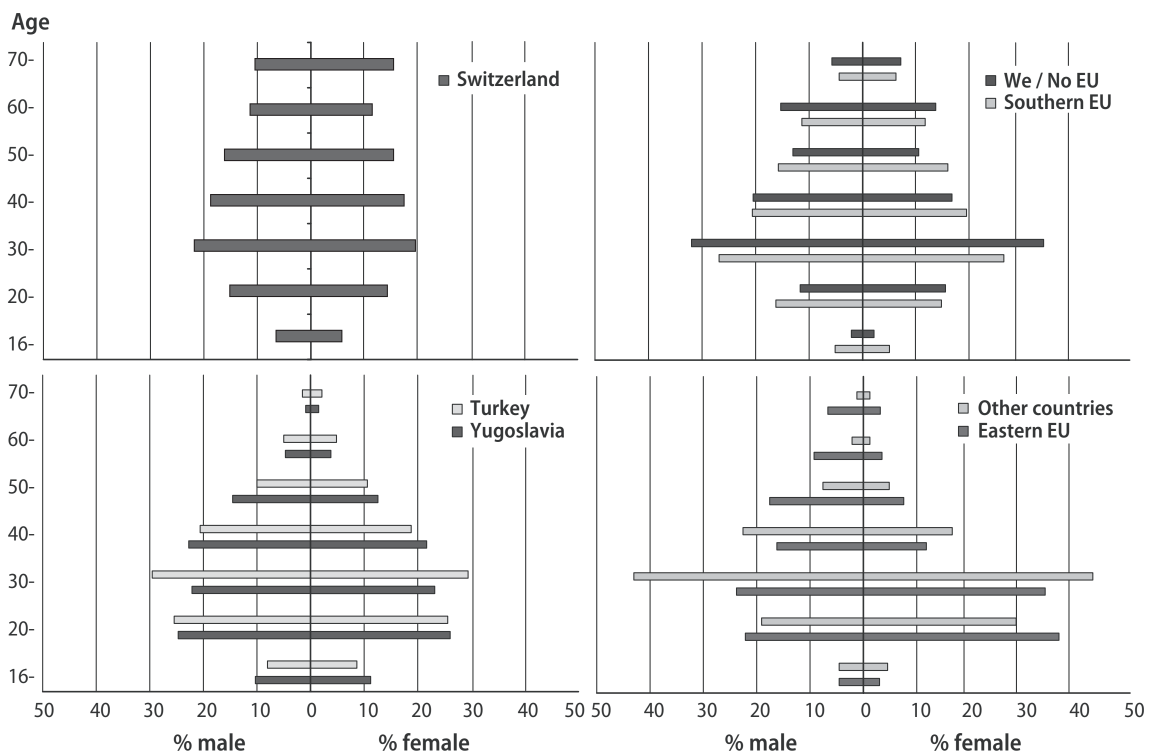

Fig. 1 Age distribution of the study populations (proportion of person-years within country group)

Table 1 Population and sample (psychiatric inpatients) characteristics for immigrants to Switzerland and Swiss people

		Population Canton Zurich (year 2000)			Total psychiatric inpatients (≥1 admission in 1995–2001)		
Country of origin	Gender	*N*	%	Age Mean (SD)	*n*	%	Age Mean (SD)
Southern EU	M	41,559	57.66	42.95 (15.25)	852	63.87	35.90 (13.40)
	F	30,512	42.34	44.06 (15.94)	482	36.13	41.21 (16.29)
Western/Northern EU	M	26,602	55.23	45.16 (15.15)	443	56.01	44.26 (15.60)
	F	21,564	44.77	44.09 (15.99)	348	43.99	46.94 (16.94)
F. Yugoslavia	M	25,628	52.63	37.73 (13.67)	565	54.33	34.64 (11.83)
	F	23,068	47.37	36.95 (13.71)	475	45.67	36.09 (12.49)
Turkey	M	6,504	55.40	37.30 (13.28)	296	63.38	32.09 (10.00)
	F	5,237	44.60	37.30 (13.70)	171	36.62	33.50 (11.08)
Eastern EU	M	1,936	39.10	42.77 (16.34)	117	60.00	44.44 (17.26)
	F	3,015	60.90	35.94 (13.31)	78	40.00	41.56 (14.75)
Other	M	11,840	49.09	37.23 (11.03)	685	69.40	33.21 (9.30)
	F	12,279	50.91	34.88 (10.49)	302	30.60	33.01 (9.19)
Switzerland	M	384,985	47.15	45.34 (17.43)	11,090	46.80	43.35 (18.25)
	F	431,547	52.85	47.59 (18.54)	12,607	53.20	48.86 (20.50)
Total		1,026,276		45.36 (17.59)	28,511		44.76 (19.12)

M—male; F—female

Of the total patient sample, 50.7% were female. Among Swiss people, the proportion of *female inpatients* was almost equal to that in the general Swiss *population*. In immigrants, however, the proportion of female inpatients was far lower (38.7%) than the female proportion in the general population (45.6%). Among immigrants from Eastern Europe and 'Other' countries these discrepancies were particularly large.

With a mean age of 46.3 (±19.7) years, Swiss patients were 9 years older at index admission on average, compared to immigrants (37.4 ± 14.1 years), but there were considerable differences regarding the age distribution and variance across country groups.

Males were admitted as inpatient at a younger age than females. The male-female difference in age at admission, however, was more pronounced in Swiss people (Δ 5.5 years) than in immigrants (M: 36.3 years; F: 39.1 years; Δ 2.8 years).

Figure 2 gives the crude rates of psychiatric inpatients per year for immigrant groups and natives. There were three groups with particularly high admission rates: In males originating from Turkey, Eastern European and 'Other' countries rates of >6 per 1,000 population were found. Males originating from these countries were admitted as inpatients at far higher rates than females, for Eastern Europe and 'Other' countries, rates of males were more than double those of females. In Swiss people, the rate of inpatient admissions in males and females was almost equal (4.3 per 1,000). This was more or less the case also in immigrants from Southern, Western/Northern Europe and former Yugoslavia, but in these country groups rates were on a lower level (2.26–3.15 per 1,000).

The results from Poisson regression analysis (Table 2) indicate that the admission rates did not only depend on the country of origin and gender, but also on age. Country effects and age effects, however, were different for males and females, and age effects were specific to the country of origin.

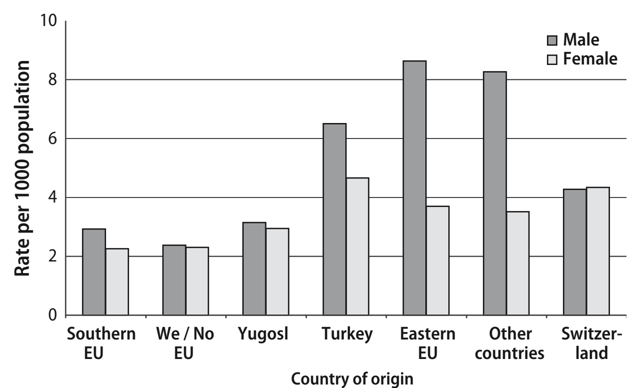

Fig. 2 Crude rates of inpatient admission by country of origin and gender

Table 2 Model statistics (likelihood ratio for type 3 analysis)

Parameter	df	χ^2	*p*-Value
Age (*Ref* 30-)	6	194.88	<0.0001
Gender (*Ref* male)	1	44.36	<0.0001
Country (*Ref Swiss p.*)	6	314.93	<0.0001
Gender * Country	6	161.25	<0.0001
Gender * Age	6	259.80	<0.0001
Age * Country	36	313.40	<0.0001
Goodness of Fit	df	Value	Value/df
Deviance	36	52.81	1.47

In order to get an idea of the gender-by-country interaction effect, we built a model in which age-by-country interactions were tentatively disregarded. The Relative Risks of inpatient admission for each immigrant group by gender resulting from this model are presented in Table 3. In all immigrant groups, except those from Turkey and Eastern Europe, females were

Table 3 Age-adjusted relative risks of psychiatric inpatient admission for male and female immigrants to Switzerland (Ref.: Swiss people)

	Gender	
	Male	Female
Country of origin	Relative risk (95% CI)	Relative risk (95% CI)
Switzerland	1.00	1.00
Southern EU	0.68 (0.63–0.73)	0.54 (0.49–0.59)
Western/Northern EU	0.56 (0.51–0.61)	0.54 (0.49–0.60)
F. Yugoslavia	0.70 (0.64–0.76)	0.70 (0.63–0.76)
Turkey	1.40 (1.25–1.57)	1.10 (0.94–1.28)
Eastern EU	1.93 (1.61–2.32)	0.84 (0.67–1.05)
Other	1.75 (1.62–1.89)	0.81 (0.72–0.91)

significantly less likely to be inpatient admitted. In particular for females from Southern, Western and Northern European countries, the risks were only half those of Swiss females. For males, significantly lower risks were found for Western, Northern, Southern Europeans and immigrants from former Yugoslavia. Male immigrants from Turkey, 'Other' countries and particularly from Eastern Europe, however, were significantly more likely to be admitted than Swiss people of the same gender.

To examine further age-by-country interaction effects, we estimated effects of age considering age as a linear function. Results suggest the following specific age effects within country groups: In immigrants from Southern Europe, Turkey and 'Other' countries, the risk of inpatient admission decreased significantly with a higher age in comparison to the Swiss population. The Relative Risks in these groups range between 0.81 and 0.85 indicating a decrease of 15–19% per age decade. In contrast, immigrants from Western, Northern and Eastern Europe were significantly more likely to be admitted, the higher their age was (RR 1.12–1.24; compared to the Swiss population). We have no indication that these age-by-country interaction effects are gender-specific (3-way interaction not statistically significant).

Discussion

The present study estimates the population-based rates of psychiatric inpatient admission in immigrants to Switzerland and compares the rates of immigrants from different countries of origin. Findings suggest that the treated prevalence of mental disorder is strongly associated with the country of origin, but associations are specific to gender as well as to age. Depending on the country of origin, age-specific rates of male immigrants range between half and double of those of Swiss people of the same gender. Among females, rates for immigrants of most countries of origin were significantly lower than those for Swiss females.

Limitations and strength

Before discussing the relevance of these findings, some methodological issues should be addressed. Firstly, there is no information available about the *need* for psychiatric treatment for immigrants in Switzerland. We therefore cannot determine whether over-representation is due to higher rates of mental disorders or increased utilisation of inpatient services. And, similarly, whether under-representation is due to lower rates of mental disorders or, conversely, barriers to access psychiatric services. Moreover, help-seeking behaviour varies between Swiss and foreign patients and across immigrants of different countries of origin, as for instance immigrants are more often referred to psychiatry from general hospitals and less likely to be admitted as self-referrals [26].

A further limitation is that, using register data, we have no information about a patient's length of stay in the host country and thus are not able to distinguish between first and second generations of immigrants. Our definition of 'immigrant' refers to the 'nominal' citizenship of a person, not to ethnic origins. In contrast to many other studies that are confined to only one ethnic minority (e.g., [14, 16, 20, 35]), we assessed all foreign nationals hospitalised in the catchment area and addressed differences between immigrants grouped by country of origin.

Data are population-based, hence findings on service use are not merely a pattern characteristic of a particular hospital setting or a single service. Switzerland has a well-equipped mental health care system, without official barriers to mental health service use for immigrants, and access to psychiatric treatment does not depend on civil status (permanent or short-term residency, asylum seeker) or whether residency already has been determined. In the Canton of Zurich, 10 psychiatric institutions providing community mental health services [9] and a total of 439 psychiatrists in office practice [45] are serving a population of circa 1.2 million people. Lower hospital admission rates of some immigrant groups therefore cannot be attributed to insufficient health resources or selective effects due to social system factors. Nevertheless, access to the healthcare system can be complicated by many other factors like cultural mistrust, ethnic matching, medication, religion, age, personality, language [2] and—according to the present findings—gender that influence use of psychiatric services.

Inpatient admission rates, by country of origin

Findings suggest significant lower admission rates among immigrants from Southern, Western, Northern European countries and former Yugoslavia—with relative risks ranging from 0.70 to 0.54 compared to Swiss people of the same gender.

Regarding people from Southern, Western and Northern Europe, it is unlikely that low treated prevalence rates can be attributed to barriers making it difficult to access mental health services, such as low language proficiency, social class affiliation or rejection by the locals. Most people from these countries who immigrated to Switzerland were attracted by better employment possibilities and many of them have been living in the country as guest workers for a long time. It is assumed that these immigrants are those with the lowest culture (and language) distance to the host country and with the highest level of acculturation of all immigrant groups. A possible interpretation could be that selective migration could have contributed to a 'healthy worker effect' with lower prevalence of mental disorder in these groups. Another point of consideration, however, is cultural affinity. According to a recent study, cultural integration is a resilience factor for mental health problems during adolescence [7]. Similarly, several studies reviewed by Bhugra stress the importance of cultural identity and the degree of comfort in the recipient culture as a patho-protective factor [4].

Conceivably, immigrants returning to their home country for treatment could explain lower admission rates, especially because these countries are geographically proximate to Switzerland. Considering, however, that the majority of these immigrant groups (84% and 75%, respectively) are settled residents who have been living in the country for a long time (administrative minimum: 5 years) weakens this argument.

The situation for people from former Yugoslavia, the third low admission group, of which 20% are asylum seekers (52% settled residents) is quite different. Most are refugees from the civil war or migrated due to political repression during the last 20 years. It is unlikely that such people spend much time in their former homeland or, in the case of asylum seekers, even have the chance of returning. Though it has been put forward that there is no evidence of a significant impact on referral rates to mental health services by war refugees [42], their low admission rates in the present analysis are puzzling. They might point to more difficulties assessing health care due to language or cultural factors or prejudicial beliefs (and mistrust) about the role of psychiatric institutions in society. On the other hand, evidence suggests that inpatients from former Yugoslavia are married and living with others at relatively higher rates compared to other immigrant groups and Swiss patients [27]. This might point to higher social support from the family that can be regarded as an important resource in preventing and dealing with mental health problems.

Gender-specific differences

When comparing males and females, our findings do not suggest significant gender differences regarding the aforementioned country groups, i.e. under-representation of immigrants holds true for both gender. For immigrants from Turkey, Eastern European and 'Other' (geographically more distant) countries, however, there were remarkable gender differences with lower treated prevalence rates in women than in men. The gender difference was most pronounced for immigrants from 'Other' countries, with age-specific Relative Risks of 75% above (men) and 19% below (women) those of Swiss people of the same gender.

Considering the prevalence of common mental disorders [17, 23, 24, 36], such gender specific differences are unexpected. One of the rare epidemiological studies assessing the prevalence of depressive and anxiety disorders across cultures, the WHO Collaborative Study on psychological problems in general health care, indicates higher rates in women, but similar effects across various countries [17].

It is noteworthy that gender differences were most salient for those country groups that are geographically and culturally more distant to a Western society. Ethnocultural factors therefore might have contributed to under-recognition of mental disorders in women, since these people often tend to a more somatic symptom presentation [3, 30], and general practitioners thus might be less likely to detect mental health problems and admit to specialist treatment. Findings of the mentioned WHO study [17], however, challenge this view: There was no indication that patient's gender affects the likelihood of these mental disorders being detected by primary care physicians. Moreover, culture related symptom presentation might explain lower admission rates in females, but conflict with the increased rates found in males of same country groups. Our hypothesis is that with greater cultural distance to our society, gender-specific social differences (regarding e.g. the exposure to role-related stress, social vulnerability, help seeking and social support) may play a more important role in the utilisation of services.

It is not likely that high admission rates in the three male immigrant groups are due to compulsory admission. Risk of compulsory admission was markedly increased in immigrants from former Yugoslavia, Eastern Europe and Other countries, but the increase was at a comparable or even a higher rate in females of these country groups [27].

Regarding immigrants from Turkey to European countries, there is some research, for the most part focusing on psychotic illness: Among Turkish migrants to Germany increased *administrative* prevalence rates of psychotic disorders have been reported [19, 22], while incidence for psychosis was *not* found to be raised in many European countries [22]. A study from The Netherlands suggests similar treated prevalence rates in (male and female) Turkish immigrants and natives [37]. In a recent review of the literature, underutilisation of inpatient psychiatric services by Turkish immigrants in Germany has been reported

[11] which has been attributed to cultural barriers [19]. Since these analyses are based on samples of particular in- or outpatient services mainly from urban areas, generalisation of findings may be limited, and with one exception, gender differences are not addressed in these papers.

Conclusion

The present findings point to inequalities in psychiatric service use in people with different migration background. As to male immigrants, they suggest higher treatment prevalence in some, but lower in other immigrant groups. Regarding women, however, we found no immigrant group utilising inpatient treatment at a higher level than Swiss females, but most to be underrepresented in inpatient care. Moreover, females originating from Turkey, Eastern European and 'Other' more distant countries used inpatient facilities at far lower rates than their male counterparts did. Considering that the psychological symptom load in female immigrants is higher according to community surveys [35], these figures point to an underutilisation of psychiatric services. Further research is necessary, particularly to understand the reasons for the markedly different gender-specific utilisation of psychiatric services of these immigrants. The present findings raise the issue as to whether our psychiatric services are optimally structured to facilitate access and to meet the treatment needs of women originating from more remote countries. Medical and health care should place special emphasis on the recognition of their treatment needs and efforts should be made to attract women with mental health problems from these immigrant populations to specialist psychiatric treatment.

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