

Research Article

Physical Health Care of Schizophrenic Patients in Germany: Who Cares?

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ABSTRACT

Purpose: The aim of this study was to investigate whether patients with schizophrenia in Germany differ in the number and frequency of medical screenings in primary care compared to healthy controls and whether such screenings are provided to schizophrenic patients by general practitioners (GPs) or psychiatrists.

Methods: In a self-report and questionnaire-based cohort study we quantified the screenings for cardiovascular risks and somatic comorbidity. We examined 81 patients with an ICD-10 F2 diagnosis (n=56 inpatients and n=25 outpatients) and 67 controls.

Results: GPs were the initiators of significantly more screening assessments in the control group compared to the

patients' cohort. Controls were more often asked about their smoking habits and they significantly more often consulted medical specialists other than a GP or a psychiatrist. On the other hand, schizophrenic patients had undergone EEG or brain imaging procedures significantly more often than controls. Vaccination against tetanus appeared to be neglected in patients with schizophrenia.

Conclusion: Adjustments in the German health care system are necessary to address the issues of medical screening in patients with schizophrenia and related disorders, thus bridging the gap between mental and physical health.

Keywords: Schizophrenia; Screening; Physical health; Cardiovascular risk; Comorbidity; Primary care; Diversity

Introduction

Patients with schizophrenia and related disorders experience a markedly shorter life expectancy than the general population. Although this difference has often been attributed to suicide, cardiovascular disease is in fact the leading cause of death (up to 75%) for patients with these disorders [1]. Risk factors for cardiovascular disease include obesity, dyslipidaemia, hypertension, diabetes mellitus and cigarette smoking. All of these risk factors are highly prevalent in patients with schizophrenia and related disorders [2-4]. With the widespread use of second generation antipsychotic agents known to produce adverse metabolic effects [5], concern about medical morbidity has intensified, particularly with respect to cardiovascular sequelae [4,6].

Such concerns prompted the European Psychiatric Association (EPA), supported by the European Association for the Study of Diabetes (EASD) and the European Society of Cardiology (ESC), to develop and publish a consensus paper in order to ensure that patients with schizophrenia and related disorders are screened for risk factors of cardiovascular disease [7]. However, apparently these and other guidelines are not routinely implemented in the clinical care of patients [8-10]. This suggests that screening for cardiovascular morbidity in these patients needs to be optimised. The identification of cardiovascular risks is often hindered by barriers related to patients' neglectful health care utilisation behaviours (due to symptoms like anxiety, social withdrawal or cognitive

impairment). On the other hand, the responsibility of specific substructures of the health care system (general practitioners and psychiatrists) to address somatic comorbidity is much debated at present. Although thorough primary screening efforts are crucial in patients with schizophrenia and related disorders, in some countries there is a paucity of funding for general somatic care for patients with severe mental disorders, especially those in long-term psychiatric treatment [11].

Several studies have confirmed a higher prevalence for cardiovascular morbidities in patients with schizophrenia and related disorders compared to control populations, but, up to now, epidemiologic studies in Germany dealing with deficiencies in patient's screenings (before the actual manifestation of clinically relevant conditions) are missing [12]. Such data are needed, in order to propose system changes that will improve the general medical care for patients with schizophrenia and related disorders in Germany. In the present cross-sectional cohort study we quantified medical health care utilisation behaviour, screenings for cardiovascular risks and other commonly enquired parameters in primary care, as well as a series of other mental health associated aspects in self-report questionnaires. This was done in patients suffering from schizophrenia (in- and out-patients), as well as a cohort of healthy controls without history of a psychiatric disorder. The aim of the study was to investigate in a retrospective self-report and questionnaire-based manner, whether patients with schizophrenia and related disorders in Germany differ in the number and frequency of screenings for cardiovascular

risk factors in primary care compared to a control group and whether such screenings are provided to schizophrenic patients by general practitioners (GPs) or psychiatrists. In addition, the participation in other primary care procedures, such as cancer prevention programs (bowel cancer, breast cancer) and vaccination programs (tetanus) was part of our study protocol.

Methods

Patients and controls

Inclusion criteria for schizophrenic patients were: an F2 diagnosis according to ICD-10, a minimum of one visit to an outpatient psychiatrist within the past six months and an age between 18 and 80 years. Exclusion criteria were: presence of a legal guardian, language barriers and inability to participate or fill in questionnaires. Inpatients were recruited during their hospital stay in the psychiatric university clinic (Central Institute of Mental Health, Mannheim, Germany) due to an acute exacerbation of schizophrenia. Outpatients were stable patients with schizophrenia recruited during routine visits in the ambulatory "Zentrum für Nervenheilkunde", Mannheim, Germany, an outpatient medical center employing solely psychiatrists and neurologists. Control subjects were aged between 18 und 80 years; any past or current psychiatric disorder led to their exclusion from the study. All study participants signed an informed consent. The study was approved by the ethics committee of the Faculty of Medicine Mannheim, University of Heidelberg, Germany.

General medical history (self-reports)

All study participants were asked in a short interview to provide information about their general medical history by answering questions in a questionnaire that we had specifically constructed for this purpose. Questions asked regarded the medical health care utilization behavior (frequency and intervals of visiting a GP, a psychiatrist and other specialists), eating patterns and physical activities, medication regimens, adherence to medication, as well as the use of nicotine or other psychotropic substances.

Patients with schizophrenia were additionally asked about their psychiatric history, prior suicide attempts, last time and total number of hospital stays due to schizophrenia; patients also had to declare whether a GP or a psychiatrist had made the diagnosis of schizophrenia first.

In order to evaluate somatic comorbidity, all participants were interviewed according to the "Cumulative Illness Rating Scale" (=CIRS) [13].

Subjective well-being/mental health status (questionnaires)

In addition, study participants had to fill in questionnaires for the assessment of various outcome parameters mostly associated with mental health. The applied questionnaires included the "Short Form Health Survey" (SF-12), consisting of physical and mental component summary scales for the assessment of health associated quality of life [14], the "Patient Health Questionnaire-

Depression" (PHQ-D), an instrument to assess depressive symptoms [15], the "Mannheim Polytox-Evaluation" (MAPE) for the assessment of substance use (alcohol, illegal drugs or medication) [16], the "Pearlin sense of mastery scale" for self-efficacy and the German short questionnaire of burden (KFB) as the short form of the "Daily Hassles Scale" for the identification of stress factors [17,18].

All participants of the study were also asked to fill in the "Medical Interview Satisfaction Scale" (MISS) as a measure of satisfaction with their GP and psychiatrist [19].

Quality of provided medical care (sum score)

In order to estimate the adequacy of medical care provided by GPs or psychiatrists, we asked all study participants to answer whether they had received one or more of the following: 1. ECG during the last 12 weeks, 2. Physical examination during the last 12 weeks, 3. Monitoring of blood pressure during the last 12 weeks, 4. Blood sampling, 5. Assessment of smoking habits, 6. Assessment of family history with regard to physical or psychiatric conditions, 7. Assessment of weight and height (BMI), 8. Cancer screening procedures within the last year, and 9. Vaccination against tetanus within the past 10 years.

Each of these items counted equally to sum a maximum of nine points. At the same time we assessed whether it had been the GP or the psychiatrist that had prompted the assessment. In the case that both the GP and the psychiatrist had initiated an assessment, a point was assigned to both. Items marked as "never received" or "I do not know" were not counted.

The items mentioned above were selected according to the recommendations of international associations with regard to necessary medical care screenings and according to the recommendations of the German health insurance with regard to the performance of preventive check-up examinations [6,20].

Statistics

Normal distribution of data was analysed with the Kolmogorov-Smirnov test. The statistical analysis plan included descriptive analyses followed by comparisons of schizophrenic patients and controls, as well as inpatients vs. outpatients by means of student's t-test or Mann-Whitney U-test, as appropriate. All statistics were carried out using PASW 18.

Results

Cohort description and socio demographic data

81 schizophrenic patients were included (25 outpatients and 56 inpatients). The control group consisted of 67 participants. Of the controls, n=35 (52.2%) were male and n=32 (47.8%) were female. Of the schizophrenic patients, n=57 (70.4%) were males and n=24 (29.6%) females (p=0.02). The control group was significantly younger than the patient's group (n=67, 35.3 ± 13.2 yrs. vs. n=81, 41.4 ± 12.3 years, respectively; p=0.01). Since the power was not sufficient to perform an analysis of variance, we ruled out a systematic error caused by the above mentioned age difference by performing a second analysis of

the investigated parameters with the core age group from 21-50 years, where 80% of the controls and 74% of the schizophrenic patients belonged to. The results were comparable and did not differ significantly from the results presented below. Thus, we confer comparability of study and control group.

Controls and patients differed significantly in certain socio-demographic aspects: 21% of patients were living in a patients' facility (vs. 0% of the controls, $p<0.01$), 24.7% of patients were unemployed or received pension (vs. 10.3% of the controls, $p=0.02$), while 21% of patients had no professional training (vs. 7.7% of the controls, $p=0.04$). With regard to marital status, 70.4% of the patients were single (vs. 53.7% of controls, $p<0.01$).

Outpatients with schizophrenia did not significantly differ from inpatients with regard to age ($n=25$, 45.0 ± 13.5 vs. $n=56$, 39.8 ± 11.5 years; $p=0.1$) or gender distribution ($p=0.17$).

Satisfaction with treatment (self-reports)

There were no significant differences between patients and controls with regard to the presence of a GP or the reasons for their lacking, the total years of consultation, the time of last consultation or the frequency of consultations. According to the MISS, patients and controls were similarly satisfied with

their GP ($p=0.40$) (Table 1). When comparing inpatients and outpatients, outpatients seemed to be significantly more content with their GP than inpatients ($n=24$, 70.2 ± 8.9 vs. $n=50$, 61.6 ± 10.7 ; $p<0.01$).

Psychiatric history

Almost half of all patients (48.1%) were diagnosed with schizophrenia by a hospital psychiatrist. Almost a third of diagnoses (29.6%) were made in a psychiatric outpatient setting. A GP was responsible for diagnosis in 12.3% of these cases. The time of first diagnosis had been 13.5 (± 10.2) years ago. At the time of our investigation, patients had had an average of 5.6 hospital admissions; with the last admission 4.2 years ago (the ongoing admission of schizophrenic inpatients was not considered). The outpatients had been diagnosed with schizophrenia long before the inpatients ($p=0.02$) and their last hospital stay due to schizophrenia dated back longer ($p=0.04$). The total number of hospital admissions did not differ between in- and outpatients (n.s.). A total of 37.5% patients reported having attempted suicide at some point of their lives.

Interestingly, outpatients were significantly more content with their psychiatrists than inpatients according to the MISS ($p<0.01$).

Table 1: Health care use of participants.

Variable	n	Controls	n	Patients	T	df	p-value
Last consultation (weeks)	64	30.1 \pm 54.7	73	39.8 \pm 85.7	0.8	124.0	0.43
Frequency of GP consultations (per year)	63	3.7 \pm 6.1	74	5.1 \pm 7.7	1.3	134.3	0.21
MISS – Satisfaction with GP	64	65.8 \pm 9.7	74	64.4 \pm 10.9	-0.8	135.9	0.40
Last physical examination (weeks)	63	70.2 \pm 111.7	53	59.1 \pm 103.4	-0.6	112.9	0.58
Last ECG (weeks)	45	145.7 \pm 163.7	37	84.7 \pm 127.6	-1.9	79.8	0.06
Last blood pressure assessment (weeks)	63	47.4 \pm 96.3	43	42.8 \pm 83.1	-0.3	98.3	0.78
Last blood drawn (weeks)	62	87.4 \pm 131.0	49	42.1 \pm 131.7	-1.8	102.9	0.07
Last cancer prevention (years)	28	6.2 \pm 19.4	23	2.0 \pm 3.3	-1.1	28.9	0.28
Last assessment of height and weight (weeks)	50	106.9 \pm 151.6	37	76.0 \pm 225.8	-0.7	59.2	0.47
Vaccination against tetanus during the past 10 years?	52	78.8%	43	53.1%	10.5	1	<0.01
History of smoking ever assessed?	60	89.6%	60	74.1%	5.7	1	0.02
Family history ever assessed?	35	52.2%	63	77.8%	12.1	1	<0.01
GP score (median)	67	3.2 \pm 1.9	81	2.0 \pm 1.6	3.8	129.1	<0.01
Ever carried out?							
EEG	11	16.4%	72	88.9%	78.2	1	<0.01
CCT	9	13.4%	36	44.4%	16.7	1	<0.01
Cerebral MRI	15	22.4%	41	50.6%	12.4	1	<0.01
Number of specialists consulted during the last 2 years (GP and psychiatrist excluded)	67	2.8 \pm 1.5	80	1.8 \pm 1.6	-3.7	144.2	<0.01

History of medical care

We found significant differences between patients and controls regarding EEG, cerebral CT or MRI procedures, with schizophrenic patients having undergone each of these procedures significantly more often than controls ($p < 0.01$, respectively) (Table 1). On the other hand, controls reported to have consulted a specialist (other than the GP or a psychiatrist) significantly more often during the past two years than schizophrenic patients did ($p < 0.01$) (Table 1). Patients' intake of medicine on a daily basis was significantly higher compared to control subjects ($p < 0.01$).

Nicotine consumption in pack years was approx. 3 times higher in the schizophrenic group ($p < 0.01$), that also reported to have less control over eating behaviors ($p = 0.03$), while being significantly less active ($p = 0.02$) (Table 2). In addition, patients with schizophrenia had a significantly higher BMI compared to controls ($n = 81$, 27.8 ± 5.0 vs. $n = 65$, 25.3 ± 4.1 kg/m²; $p < 0.01$) (Table 2).

Similar results were observed when we compared the group of controls separately against the group of inpatients and outpatients (data not shown).

When comparing inpatients against outpatients we found that inpatients underwent a cerebral MR examination significantly more often than outpatients ($p < 0.01$), while all other results did not differ between the groups (data not shown).

Subjective well-being/mental health status questionnaires

We found significant differences between patients and controls in all investigated domains of mental health and well-being:

In the SF-12, schizophrenic patients have systematically scored lower than controls ($p < 0.01$) in all domains, (Table 2), indicating that patients with schizophrenia considered their quality of life - in association with their physical and mental health status- to be lower than that of control subjects.

In the PHQ-D, schizophrenic patients obtained more than the threefold scores compared to the group of controls ($p < 0.01$), indicating a significantly higher presence of depressive symptoms (Table 2).

In the MAPE, we found that controls reported a significantly higher alcohol consumption than patients ($p < 0.01$), while patients stated to have a higher intake of prescribed drugs than controls ($p < 0.01$) (Table 2).

Moreover, according to the Pearlin scale, schizophrenic patients estimated their self-efficacy significantly lower than controls ($p < 0.01$) and evaluated their daily life stress situations (KFB) significantly higher than did the group of controls ($p < 0.01$) (Table 2).

In the CIRS, schizophrenic patients exhibited a higher multimorbidity and severity of physical illness than controls ($p < 0.01$) (Table 2).

The general adherence to medication regimes was similar in both groups ($p = 0.13$).

When comparing the group of inpatients against the group of outpatients, we found that inpatients scored significantly lower in the mental domain of the SF-12 ($n = 56$, 15.9 ± 4.4 vs. $n = 25$, 19.0 ± 4.2 ; $p < 0.01$) and in the total score ($n = 56$, 29.8 ± 6.8 vs. $n = 25$, 34.4 ± 6.7 ; $p = 0.01$). Inpatients also reached higher scores in the KFB (identification of stress factors) ($n = 56$, 52.9 ± 12.5 vs. $n = 25$, 45.3 ± 13.1 ; $p = 0.02$). The groups did not differ in all other applied questionnaires (data not shown).

Quality of provided medical care (sum score)

We found that the GP performed significantly more assessments in the group of controls than in the group of patients (3.2 ± 1.9 vs. 2.0 ± 1.6 points; $p < 0.01$).

When taking a closer look at each of the items separately, we observed that schizophrenic patients were more often asked about their family history than controls ($p < 0.01$) (Table 1). However, controls were apparently more often asked about their smoking habits ($p = 0.02$) (Table 1). Controls had also received

Table 2: Health status of participants.

Variable	n	Controls	n	Patients	T	df	p-value
Hours of physical activity per week	66	8.3 ± 8.4	81	4.7 ± 10.3	-2.3	145.0	0.02
Smoker	27	40.9%	48	59.3%	4.9	1	0.02
Pack years	66	5.0 ± 8.3	81	14.5 ± 17.6	4.3	118.9	<0.01
Actual weight change (kg)	67	+0.5 ± 3.5	81	+1.3 ± 7.8	0.7	115.8	0.46
BMI (kg/m ²)	65	25.3 ± 4.1	81	27.8 ± 5.0	3.4	144.0	<0.01
SF-12 total	67	40.3 ± 5.0	81	31.3 ± 7.1	-9.1	142.8	<0.01
SF-12 physical	67	17.6 ± 2.3	81	14.4 ± 3.3	-6.9	143.0	<0.01
SF-12 mental	67	22.7 ± 3.3	81	16.8 ± 4.5	-9.1	144.2	<0.01
PHQ-D	67	3.0 ± 3.1	81	9.6 ± 5.7	9.0	127.9	<0.01
MAPE alcohol	67	7.2 ± 3.4	81	5.1 ± 3.0	-4.1	133.7	<0.01
MAPE prescribed drugs	67	2.2 ± 2.6	81	5.1 ± 4.6	4.8	130.1	<0.01
MAPE illegal drugs	67	0.8 ± 2.9	80	1.3 ± 2.7	1.2	136.4	0.23
Pearlin – self-efficacy	67	17.6 ± 2.3	81	12.9 ± 3.5	-9.7	140.4	<0.01
KFB – stress factors	67	36.4 ± 10.7	81	50.6 ± 13.1	7.2	146.0	<0.01
CIRS	67	2.0 ± 2.8	81	4.7 ± 2.2	6.2	124.3	<0.01

Table 3: Differences in health care depending on severity of psychiatric disease.

VARIABLE	N	Out-patients	n	In-patients	T	df	p-value
GP score (median)	25	2.6 ± 2.0	56	1.8 ± 1.4	-1.9	34.6	0.07
Psychiatrist score (median)	25	1.4 ± 1.6	56	2.3 ± 2.0	2.1	58.2	0.04

vaccination against tetanus significantly more often than the group of schizophrenic patients ($p < 0.01$) (Table 1).

There were no significant differences when comparing the group of inpatients against the outpatients, with the exception of inpatients having been asked about their smoking habits significantly more often than outpatients ($p = 0.01$) (data not shown).

As far as the health status assessments were concerned, we found that psychiatrists initiated such significantly more often in the case of inpatients compared to outpatients ($p = 0.04$) (Table 3).

Discussion

Cardiovascular disease is the leading cause of morbidity and mortality in patients with schizophrenia and related disorders. This is due to the fact that risk factors for cardiovascular disease, including obesity, dyslipidaemia, hypertension, diabetes mellitus and cigarette smoking- are all highly prevalent in this group of patients. With the widespread use of second generation antipsychotic agents, the concern about cardiovascular sequelae has intensified [21]. However, several investigations suggest that cardiovascular morbidity in patients with schizophrenia and related disorders is screened for less efficiently than in individuals from the general population [22-25].

We hypothesised that patients with schizophrenia in Germany receive less screenings for physical health conditions, especially cardiovascular-related parameters, than controls. In the present retrospective, self-report- and questionnaire-based study we assessed aspects of general and cardiovascular medical history, mental health status and subjective well-being in a cohort of schizophrenic patients and randomly selected controls. In addition, based on published recommendations, we assessed a self-constructed sum score consisting of 9 items with regard to routine screening procedures (e.g. blood sampling, measures of BMI, etc.), cancer prevention examinations and status of vaccination against tetanus, in order to evaluate the quality of the provided medical care.

In summary, we found that compared to controls, patients suffering from schizophrenia showed adverse outcomes in a number of parameters (e.g. higher nicotine consumption, higher depression scores, somatic multimorbidity, less subjective self-efficacy, less health related quality of life, etc.). In some of these parameters inpatients had worse outcomes than outpatients. These results are not surprising and have been repeatedly confirmed in studies [7,26-29]. Being older and at higher medical risk, one would expect medical care and examinations to be more frequent and extensive in the schizophrenic study group, compared to the younger control group.

Interestingly, vaccination against tetanus seems to be a

neglected issue in patients with schizophrenia. GPs were the initiators of more screening assessments in the case of the control group over the patient's cohort. Controls were more often asked about their smoking habits than patients and smoking habits were significantly more often assessed in inpatients than outpatients. Controls reported significantly more often than schizophrenic patients to have consulted medical specialists other than a GP or a psychiatrist. On the other hand, schizophrenic patients have reported to have undergone EEG or brain imaging procedures significantly more often than controls. By comparing the sum score, the number of screenings initiated by psychiatrists differed significantly between inpatients and outpatients with schizophrenia. The monitoring in the outpatient group is mostly done by the GP (GP sum score), the inpatient group gets more service from the psychiatrist (psychiatrist score). The outpatient group is more content with their doctors. Thus, severity of illness seems to be a factor determining medical service and its quality.

Patients with schizophrenia and related disorders have a relative risk for cardiovascular disease between 1.5 to 2.0 compared to the general population [30]. Roberts et al. reviewed case notes of 195 schizophrenia patients and 390 matched controls and found that patients with schizophrenia were significantly less likely to have had their blood pressure or cholesterol levels recorded [31]. Oud et al. conducted a search of the MEDLINE, EMBASE and PsycINFO data-bases and the Cochrane Library and demonstrated that the incidence in the primary care setting of a wide range of diseases, such as diabetes mellitus, the metabolic syndrome, coronary heart diseases and chronic obstructive pulmonary disease (COPD) is significantly higher in schizophrenia patients than in the general population [32]. The UNITE global survey; a 3 month internet-based initiative that recruited schizophrenic patients and caregivers from 11 countries (incl. Germany) clearly demonstrated that patients received guideline-discordant care [33]. Cardiovascular factors were found to be underdiagnosed in schizophrenic patients also in Spain and to lead to frequent hospitalisations associated with a substantial in-hospital mortality [34,35]. Other studies could demonstrate that patients are less likely than non-schizophrenic individuals to receive cancer screening [36].

Overall, our results presented here indicate that, although there are possibilities for optimisation, the physical medical care of patients with schizophrenia is not as detrimental as hypothesised in the first place. However, this might be the case in an urban environment (Mannheim, Germany), but may be substantially different in rural areas; this remains to be investigated. Further research is needed to verify our results about the possible association of severity of mental illness and medical examinations.

Our study was conducted retrospectively with all

disadvantages and weaknesses that such a type of study may have. In addition, data might be biased as not all schizophrenic patients were cooperative or able to fill in the questionnaires due to their psychiatric condition. Another bias may be that general medical history and mental health status domains were assessed based on self-reports and questionnaires. A possible way to increase validity of the gathered data would have been to -at least for a certain number of patients- confirm patients' statements by comparing them to patient's files. After all, we have not gathered laboratory/metabolic parameters (e.g. blood lipids, blood pressure, etc.), in order to be able to make statements regarding the patients' actual physical medical condition compared to controls.

Published guidelines aim at increasing the awareness of the general medical needs of patients with schizophrenia. However, none of the current guidelines gives a clear suggestion whether psychiatrists or GPs should provide the necessary medical care for patients with schizophrenia [37-42]. The current debate on duties within the German health care system also tackles the question of who might be responsible and able to provide screening for cardiovascular risks to patients with schizophrenia and related disorders. The key points seem to be who is compiling the monitoring plan, who is undertaking the monitoring or who is controlling that the monitoring is done (GP or psychiatrist). In Germany, the GP is mainly responsible for preventive examinations and the coordination of health care (referral to other medical specialists). On the other hand, psychiatrists are the experts in antipsychotic drugs, their side effects and obligatory monitoring; however, psychiatrists cannot bill certain physical screenings with the health insurances [43]. We suggest that the communication between GPs and psychiatrists be optimized. Monitoring plan and control should be in the responsibility of the psychiatrist, while implementation of monitoring should be done by the GP.

Conclusion

Our results may help to operate the necessary adjustments in the health care system to address the issues of screening for cardiovascular risk factors and somatic comorbidity in patients with schizophrenia and related disorders, thus bridging the gap between mental and physical health [44]. The reintegration of psychiatry and classical somatic medicine, enhanced models of shared care with an ultimate goal of providing high quality multidisciplinary services to a vulnerable patient population, represents the most important challenge for psychiatry and general health care today, requiring urgent and comprehensive action towards achieving an optimal solution.

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