

# Charakteristika der allgemeinen Internetnutzung psychiatrischer Patienten

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### **Charakteristika der allgemeinen Internetnutzung psychiatrischer Patienten**

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47 Seiten, 41 Literaturstellen in der Einführung, 2 Anlagen;  
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Die Arbeit befasst sich mit der Internetnutzung von psychiatrischen Patienten. Das Angebot an Therapien für Patienten mit psychiatrischen Erkrankungen steigt seit Jahren. Auch die Menge an Informationen, welche vor allem online zu bekommen sind, wird immer größer. Allerdings gibt es nur wenige Informationen zur Internetnutzung von psychiatrischen Patienten im Vergleich zur Gesamtbevölkerung. Sind psychiatrische Patienten bezüglich Zugang zum Internet und Nutzung von Internetinformationen und -therapien benachteiligt?

An der Klinik und Poliklinik für Psychiatrie und Psychotherapie der Universität Leipzig wurde eine Patientenbefragung durchgeführt mit dem Ziel, den Wissensstand über die Internetnutzung und -gewohnheiten der psychiatrischen Patienten zu vertiefen. Die Ergebnisse wurden mit den Resultaten einer jährlich von den öffentlich-rechtlichen Medienanstalten durchgeführten Studie zur Internetnutzung der deutschen Bevölkerung verglichen.

Die Arbeit kommt zu dem Schluss, dass die Patienten mit psychiatrischen Erkrankungen das Internet genauso häufig nutzen wie der Durchschnitt der Bevölkerung. Vor allem junge Patienten und Patientinnen mit höheren Bildungsabschlüssen nutzen die Informationen und auch interaktive (Therapie-) Angebote.

#### **Die Entwicklung des Internet im Allgemeinen**

Das Internet hat sich als Informations- und Kommunikationsmedium in den vergangenen 20 Jahren immer weiter verbreitet. In den 1990er Jahren begann die Nutzung innerhalb der Bevölkerung und inzwischen ist es aus dem Alltag nicht mehr wegzudenken. Es dient zum Beispiel als Informationsquelle, Einkaufsmöglichkeit, Austauschplattform und Vernetzungsmöglichkeit. Weltweit wird von einer Internetnutzung von circa 40 % ausgegangen (Internet World Stats, 2014), während der Anteil in Europa mit 75 % noch deutlich höher liegt (Digital Agenda for Europe, Scoreboard 2012). In Deutschland wird zur Ermittlung der Internetnutzung seit 1997 jährlich eine ARD/ZDF-Onlinestudie veröffentlicht, welche das Ziel verfolgt, die Internetnutzung und Internetgewohnheiten der Bevölkerung in Deutschland genauer zu ermitteln. So wurde ein rasanter Anstieg der Internetnutzung beobachtet: Laut dieser Studie haben 1997 nur 6,5 % der deutschen Bevölkerung das Internet genutzt, während es 2013 schon 77,2 % der Bevölkerung waren (van Eimeren und Frees, 2013). Noch deutlicher wird die Entwicklung bei der jüngeren Bevölkerung, vor allem der Jugendlichen zwischen 14 und 19 Jahren, welche schon seit 2010 zu 100 % das Internet nutzen. Bezüglich der Zeit, die im Internet verbracht wird, zeigen sich ebenfalls erhebliche Steigerungen. So verweilten die Deutschen 1997 durchschnittlich 76 Minuten pro Tag im Internet, während es 2012 schon 133 Minuten am Tag waren. Inzwischen steigen die Wachstumsraten der Internetnutzung nicht mehr so stark wie zu Beginn des 21. Jahrhunderts, aber es zeigt sich weiterhin eine Ausweitung der Internetnutzung zum Beispiel durch eine Zunahme der Nutzungsdauer. Von 133 Minuten durchschnittliche tägliche Nutzungsdauer im Jahr 2012 stieg die Zahl 2013 schon auf 169 Minuten pro Tag an (van Eimeren und Frees, 2013). Die Entwicklung von sozialen Medien und Netzwerken wie Facebook verstärken

weiterhin die Nutzung und Vernetzung im Internet. Mittlerweile ermöglichen zahlreiche mobile Endgeräte wie Smartphones und Tablet-PCs einen immer flexibleren und schnelleren Zugang zu Online-Informationen (van Eimeren und Frees, 2013).

### **Das Internet im Gesundheitswesen**

Auch im medizinischen Bereich ist das Internet nicht mehr wegzudenken und zu einem essentiellen Medium geworden. Es ermöglicht beispielsweise medizinischem Personal den Zugang zu aktuellen Forschungsergebnissen und neuesten Behandlungsrichtlinien. Das Internet wird auch als Kommunikationsmedium sowohl zwischen Medizinern als auch zwischen Arzt und Patient eingesetzt (Murray et al., 2003). Online-Angebote und Informationen im Internet haben sich immer weiter ausgeweitet und ein häufiger Grund für Internetrecherchen von Patienten ist die Suche nach medizinischen Inhalten (Powell und Clarke, 2002). In älteren Studien wurde berichtet, dass 50 – 75 % der Internetnutzer das Internet für medizinische Inhalte verwenden (Murero et al., 2001; Tatsumi et al., 2001, McDaid und Park, 2011). In Deutschland nutzten 2007 schon 71 % der Internetnutzer dieses Medium um sich über Gesundheitsthemen zu informieren (Andreassen et al., 2007). Eine Studie von 2013 belegt einen Anstieg der Suche nach medizinischen Inhalten unter den Internetnutzern. So haben 2013 über 80 % der Patienten das Internet für medizinische Belange bezüglich ihrer eigenen Krankheit oder Krankheiten ihrer Familienangehörigen genutzt (Bianco et al., 2013). Bezogen auf die Gesamtbevölkerung wiederum, haben in den USA 2012 schon 59 % online nach medizinischen Themen gesucht (Fox und Duggan, 2013).

Der hohe Stellenwert medizinischer Inhalte wird außerdem durch eine Studie von Grandinetti (2000) betont, die zeigt, dass 70.000 Internetseiten medizinische Themen beinhalten. Nach

einer Veröffentlichung von Powell und Clarke (2002) beinhalten mindestens 2 % aller Internetseiten medizinische Aussagen.

Bei der Suche nach gesundheitsbezogenen Themen werden vor allem Informationen über Medikamente und spezifische Krankheitsbilder gesucht. Dies wird zum Beispiel dazu genutzt, selbst eine Diagnose zu finden. Weitere Gründe für die Internetnutzung bezüglich gesundheitsbezogener Themen sind der Erfahrungsaustausch mit anderen Betroffenen, sowie die Suche nach einer Klinik oder Ärzten beziehungsweise der direkte Austausch mit medizinischem Fachpersonal (McDaid und Park, 2011; Fox und Duggan, 2013.).

### **Psychiatrische Patienten und das Internet**

Auch Patienten mit psychischen Erkrankungen nutzen das Internet. Powell und Clarke berichteten 2006, dass 18 % der Nutzer das Internet als Informationsquelle für psychische Themen nutzen. Nach einer Studie von 2008 suchten 68,5 % der psychiatrischen Patienten nach medizinischen Inhalten im Netz (Khazaal et al., 2008).

Abgesehen vom Internet als Informationsquelle, gibt es auch weitere Chancen, die sich durch die Nutzung des World Wide Web für Patienten mit psychischen Erkrankungen ergeben. Ein Beispiel ist vor allem der unbegrenzte und schnelle Zugang zu Online-Therapien, nicht zuletzt durch die weit verbreitete Verfügbarkeit des Internets. Ambulante Therapien sind in Deutschland oft mit langen Wartezeiten verbunden, was zur Folge hat, dass die Anzahl an Patienten, die sich in stationäre Behandlungen begeben, ansteigt (Bundespsychotherapeutenkammer, 2011). Dies stellt wiederum einen hohen Kostenfaktor im Gesundheitssystem dar. Menschen, die wegen psychischer Beschwerden einen ambulanten psychotherapeutischen Behandlungsplatz suchen, warten durchschnittlich drei Monate (12,5 Wochen) auf ein Erstgespräch. In ländlichen Regionen kann die Wartezeit zum Teil bis zu

vier Monate dauern (Bundespsychotherapeutenkammer, 2011). Diese Tatsache ist von großer Bedeutung, da sich gezeigt hat, dass sich mit steigender Wartezeit auf einen Therapieplatz die Belastung für psychiatrische Patienten erhöht (McGarry et al., 2008). Lange Wartezeiten führen auch dazu, dass sich psychische Erkrankungen verschlimmern und dadurch verlängern, komplikationsbehafteter oder chronisch werden (Bundespsychotherapeutenkammer, 2011). Es konnte auch gezeigt werden, dass Patienten, die lange auf eine Therapie warten müssen dazu neigen, diese ab einem gewissen Punkt nicht mehr anzufangen (Issakidis und Andrews, 2004).

Durch die Nutzung von Online-Angeboten besteht die Möglichkeit, dass der Zugang zu Therapien für Patienten vereinfacht werden könnte und somit auch Menschen in ländlichen oder unterversorgten Gebieten an einer herkömmlichen Therapie zeitnah teilnehmen könnten (Handley et al., 2014).

Ein weiteres Potential von Online-Therapien betrifft den ökonomischen Aspekt. Weil Therapeuten für die Betreuung Internet-basierter Therapien weniger Zeit benötigen, sind diese Formen der Therapie höchst kosteneffizient und bei richtiger Indikationsstellung trotzdem effektiv (Hedman et al., 2012).

Auch die Mischung von Online-Modulen und persönlichem Kontakt zum Therapeuten stellt sich als weiterer potentieller Vorteil heraus. Es verstärkt den Willen zum „Selbst-Management“ der Erkrankung (Van der Vaart et al., 2014).

### **Gesellschaftliche Benachteiligung von Menschen mit psychischen Erkrankungen**

Patienten mit psychiatrischen Erkrankungen leiden unter vielen sozioökonomischen Benachteiligungen. Beispiele hierfür sind ein geringeres Einkommen und ein geringerer Lebensstandard (Fryers et al., 2003). Des Weiteren gehen psychische Erkrankungen oft mit

Arbeitslosigkeit und Wohnungslosigkeit einher (Tripathi et al., 2013). In Deutschland zum Beispiel leiden mehr als zwei Drittel der Wohnungslosen unter psychischen Erkrankungen. Kellinghaus et al. zeigte 1999, dass Wohnungslosigkeit wiederum mit sozialer Isolation und Armut assoziiert ist.

Bezüglich Arbeitslosigkeit haben Studien gezeigt, dass unbehandelte psychiatrische Erkrankungen eine deutliche Barriere darstellen bei Bestrebungen Patienten in die Erwerbstätigkeit zu führen (Bühler et al., 2013).

Menschen, die an psychischen Erkrankungen leiden, haben auch eine erhöhte Wahrscheinlichkeit von Komorbiditäten. Das bedeutet, dass ein erhöhtes Risiko für zusätzliche andere psychische Erkrankungen besteht. (Tripathi et al., 2013). Ein Beispiel für eine Komorbidität ist die Substanz-Abhängigkeit (Evren et al., 2014; Rücker et al., 2015).

### **Gefahren der Internetnutzung für Patienten**

Obwohl das Internet viele positive Effekte für Patienten zeigt, birgt es aber gerade für psychisch erkrankte Menschen auch viele Gefahren. Die rasante Entwicklung und Popularität des Internets führt zu negativen Aspekten wie beispielsweise einer exzessiven Nutzung, die in einer Internet-Abhängigkeit resultieren kann (Kuss et al., 2014). Des Weiteren besteht die Gefahr, dass Patienten an falsche und/ oder nicht-wissenschaftliche Informationen im Internet gelangen. Diese Informationen können auch schädlich sein und aktuelle Behandlungen gefährden (Ernst und Schmidt, 2004). Betroffen ist hiervon auch das Thema Suizid, für das das Internet gleichfalls eine Plattform für Austausch bietet. Die sich aus dem Austausch ergebenden Möglichkeiten für psychiatrisch erkrankte Menschen sind ambivalent: Einerseits bietet der Austausch positive Möglichkeiten, andererseits sind durch die Erreichbarkeit von



Informationen zum Thema Suizid Auswirkungen auf die Inzidenz suizidaler Ereignisse beschrieben (Robert et al., 2015).

### **Chancen der Internetnutzung für Psychiatrische Patienten**

Es ist hervorzuheben, dass das Internet aber vor allem viele Chancen für Patienten mit psychischen Erkrankungen bietet. Ein positives Beispiel von Austausch über Plattformen im Internet ist die Möglichkeit, Personen miteinander zu verbinden und das Gefühl des Alleinseins zu verringern (Robert et al., 2015).

Als weiteres Beispiel wird von positiven Effekten bezüglich sozialer Interaktionen bei schizophrenen Patienten berichtet, wobei das Internet hilft, gewisse soziale Schwierigkeiten zu überbrücken (Spinzy et al., 2012). Internetnutzer haben angegeben, dass ihnen die neuen Möglichkeiten durch die Sozialen Medien helfen stärker zu interagieren und sie äußern sich positiv über Nachrichten und Austausch mit den jeweiligen Ärzten (Miller et al., 2015). Ein weiterer großer Vorteil des Internets ist die ständige Verfügbarkeit von Online-Therapien und Informationen. Dies ermöglicht einen schnellen Therapiebeginn und verringert lange Wartezeiten, die - wie oben erwähnt - eine erhebliche Belastung für Patienten darstellen (McGarry et al., 2008).

Das Internet als Mittel zur Bewältigung psychiatrischer Erkrankungen wird derzeit von weniger als der Hälfte der befragten Patienten mit Internetnutzung als Hilfe angesehen (Kalckreuth et al., 2014). Das Potential muss aber als höher eingeschätzt werden.

## **Therapieangebote im Internet**

Derzeit gibt es immer mehr Therapieangebote für Patienten mit psychiatrischen Erkrankungen im Internet. Zielgruppe sind hierfür meist Patienten mit Depressionen oder Angststörungen. Auch diagnoseübergreifende Angebote bestehen bereits. Diese versuchen eine Therapie von Depression und Angststörung innerhalb eines für beide Indikationen gestalteten Programms zu ermöglichen (Newby et al., 2014).

Zielstellung der meisten Angebote ist die Durchführung von kognitiver Verhaltenstherapie über das Internet (iCBT: Internet cognitive behavioural therapy) als therapeutische Unterstützung.

Kessler et al. zeigten 2009, dass in Echtzeit durchgeführte kognitive Verhaltenstherapie für depressiv Erkrankte auch dann effektiv ist, wenn sie über das Internet durchgeführt wird. Andere Studien berichten über positive Effekte Internet-basierter Therapie vor allem in der Kombination mit Diskussionsgruppen im Internet (Andersson et al., 2005).

Es hat sich also in mehreren Studien gezeigt, dass solche Therapien effektiv sind und eine Möglichkeit der adäquaten Behandlung darstellen (Andersson, 2002, Carlbring et al., 2007, Kersting et al., 2009, Andersson und Cuijpers, 2009, Newby et al., 2014).

## **Fragestellung der vorliegenden Arbeit**

Seit mehreren Jahren wird ein enormer Forschungsaufwand betrieben um Internet-basierte Therapieprogramme zu beurteilen. Allerdings gibt es bisher wenige Studien, die sich damit beschäftigen, inwieweit das Internet überhaupt von psychiatrischen Patienten genutzt wird und ob Unterschiede zur Allgemeinbevölkerung bestehen. Die wenigen Studien liegen einige Jahre zurück (Wöller, 2005, Powell und Clarke, 2006, Khazaal et al., 2008) und angesichts

der schnellen Entwicklung des Internets bleibt es weiterhin sinnvoll einen aktuellen Stand zu erheben um weitere Forschung anknüpfen zu können. Hierbei ist zunächst die Frage zu stellen, ob und inwieweit psychiatrische Patienten das Internet überhaupt nutzen. Besitzt der Hauptteil der Patienten einen Internetzugang beziehungsweise die Möglichkeit an Online-Information zu kommen? Denn nur wer über einen Internetzugang verfügt und das Internet nutzt, wird in der Lage sein von Online-Angeboten zu profitieren. In Anbetracht der Tatsache, dass in Europa eine hohe Prävalenz für psychische Erkrankungen besteht (Alonso et al., 2004), ist es besonders interessant ein aktuelles Bild der Internetnutzung dieser Patientenkohorte zu bekommen.

Es wurde bereits ausführlich erläutert, dass Patienten mit psychischen Erkrankungen häufig sozioökonomischen Benachteiligungen unterworfen sind (Fryers et al., 2003). Das wirft die Frage auf, ob dies auch auf die Möglichkeit zur Internetnutzung zutrifft. Die entscheidende Grundvoraussetzung für die Nutzung aller Onlineangebote zu psychischen Erkrankungen wäre in diesem Fall nicht erfüllt.

Das Ziel dieser Arbeit ist es, zu erforschen inwieweit Patienten mit psychiatrischen Erkrankungen die Möglichkeit des Internetzugangs haben und inwiefern sie das Internet nutzen. Folgende Fragestellungen werden bearbeitet:

- (1) Seit wann und wie oft nutzen die Patienten das Internet?
- (2) Welche Internetdienste werden hauptsächlich genutzt?
- (3) Nutzen die Patienten das Internet für medizinische (und vor allem psychiatrische) Inhalte?
- (4) Warum nutzen Patienten das Internet für medizinische Inhalte, und welche Informationen werden hauptsächlich gesucht?

Somit sollen wichtige Informationen bezüglich der Internetgewohnheiten von Patienten mit psychischen Erkrankungen erhoben werden. Ein wichtiger Aspekt dieser Untersuchung war die Gegenüberstellung der Daten mit denen der deutschen Bevölkerung, um Unterschiede im Nutzungsverhalten zwischen der deutschen Allgemeinbevölkerung und psychiatrisch erkrankten Menschen zu erforschen. Des Weiteren wurden die verschiedenen Altersgruppen der Patienten, ihr Bildungsstand und die Form der Behandlung (stationär, ambulant, Tagesklinik) detaillierter betrachtet, um das Nutzungsverhalten genauer zu beschreiben.



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## Psychiatric patients' internet use corresponds to the internet use of the general public

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### ABSTRACT

The use of Internet has grown in the past number of years, including the increased application of various therapy programs for psychiatric patients which can be accessed online. Few studies investigating psychiatric patients' Internet use exist. Therefore, the aim of this study was to examine the number of psychiatric patients that use the Internet in comparison to the general population. Since patients with mental health disorders frequently suffer from a variety of disadvantages in society, it was evaluated whether psychiatric patients were disadvantaged particularly concerning the use and access of the Internet. Three hundred and thirty-seven patients participated in the study and completed a 29-item questionnaire. A response rate of 66% was achieved. Descriptive statistics, analysis of variance and binary logistic regression analysis were used. Out of the participants, 79.5% were Internet users. This number corresponds to the Internet use of the general population. Young patients in particular were found to use online information, using mostly search engines to seek medical information. The results show that psychiatric patients do not rank below the general population concerning the frequency of Internet use, which is especially important for accessing health related information online or participating in online programs.

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### 1. Introduction

During the 1990s, the general public started to use the Internet. Since then, Internet use has been increasing every year. In 1997, 6.5% of the German population used the Internet at least occasionally. This percentage increased to 77.2% in 2013 (van Eimeren and Frees, 2013). There are investigations about the characteristics of medical information seeking using the Internet among the public as well as among patients in general (Diaz et al., 2002; Baker et al., 2003; Andreassen et al., 2007). As cited in Powell and Clarke (2002), "at least two percent of websites are health-related" and Cline and Haynes (2001) stated that, "more than 70 000 websites provide health information". Studies have illustrated that the Internet is widely used in order to search for health information. For example, in the US, 59% of the population had searched online for health related information in 2012 (Fox and Duggan, 2013).

Despite these numbers, there is a lack of data concerning the use of the Internet in patients with mental health problems. Only a few surveys are readily available (Wöller, 2005; Khazaal et al.,

2008; Carras et al., 2014). This study involves a larger sample size and addresses patients with a variety of different diagnoses and treatment settings. Due to the enormous impact that the Internet has on users from the health community as a decision making tool, we consider it necessary to gain current and up-to-date knowledge about the Internet use of patients with a psychiatric disorder (Mathieu, 2010; Lagan et al., 2011; Bert et al., 2013).

It is well documented that psychiatric patients are facing a variety of disadvantages. Tripathi et al. (2013) and Kellinghaus et al. (1999) refer to unemployment and homelessness, in addition to social isolation. Moreover, studies have reported that untreated psychiatric disorders prolong periods of unemployment and act as a significant barrier for patients wishing to gain employment (Bühler et al., 2013).

Patients with mental health problems have many therapeutic options available through the Internet. Studies exist, investigating the effectiveness on Internet-based therapies (Andersson, 2002, 2005; Carlbring et al., 2007; Kersting et al., 2009; Andersson and Cuijpers, 2009; Kessler et al., 2009). To our knowledge, no studies exist examining the specific use of Internet for mental health patients. Therefore, it is unclear whether online therapies or programs could be of use for the majority of psychiatric patients. A clearer profile of psychiatric patients' use of the Internet will help determine the usefulness of online options in settings such as

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rural areas where access to local psychiatric hospitals or out-patient physicians may be challenging. Further insight to patients' Internet access and use is needed to help determine whether this medium can be used to overcome illness related difficulties, such as social isolation (Spinzy et al., 2012).

The goals of this study, were to (1) determine the proportion of all patients in the psychiatric department who use the Internet, (2) compare their behavior of Internet use with the data from the general population, and (3) describe the patients' use of Internet for medical information and their motivation to use this source of information.

## 2. Methods

### 2.1. Questionnaire

The questionnaire used in this study was adapted from a study that was commissioned by the German public broadcasting corporations (ARD/ZDF) (van Eimeren and Frees, 2013). It has been used to investigate the annual Internet behavior of the general population in Germany since 1997.

The questionnaire consisted of three different sections. The sections were divided into: (1) demographic characteristics, (2) questions about the general Internet use and (3) questions about "mental health related Internet use".

In the first section, socio-demographic indicators were collected using multiple-choice questions for gender, marital status, education and occupation and open-ended questions in order to evaluate the patients' age and diagnosis. General Internet use was assessed by open-ended questions to determine the amount of time, which patients' are spending online and for how many years patients have been using the Internet. Also, multiple-choice questions were used in this section to identify the online services as well as the topics for the health-related Internet use. The section "mental health-related Internet use" included multiple-choice questions to explore the most common topics concerning psychiatric issues, to investigate the reasons for an online search on medication, to ask whether patients found the web understandable and could take advantage of the information they had found. Other areas of interest were explored, including the following question: "Has the Internet been helpful for coping with your psychiatric disorder?" In an open-ended question, patients were asked to provide the name of particular web pages they had used. The total number of items in the questionnaire was 29.

The study was approved by the local ethical review committee and respected the Declaration of Helsinki (<http://www.uni-leipzig.de/~ethik/>, 2014).

### 2.2. Participants

All inpatients and outpatients of the Psychiatric Department of the University of Leipzig, Germany (Klinik und Poliklinik für Psychiatrie und Psychotherapie, 2014), were asked to complete the questionnaire.

The inclusion criteria were (1) to be an adult patient ( $\geq 18$  years old) treated in the Department of Psychiatry, University of Leipzig and (2) a signed informed consent. The exclusion criteria were illiteracy, insufficient knowledge of the German language and a cognitive impairment making completion of the questionnaire impossible such as patients with the diagnosis dementia (ICD-10 F00-F03) or Alzheimer's disease (ICD-10 G30-32).

### 2.3. Procedure

Data was collected between February and July of 2013. All eligible patients, including patients who were new inpatients at the time of the study, as well as all outpatients coming to their appointments at the clinic were asked to participate. In the case of the inpatients, the study was conducted three times with a time span of at least 8 weeks, in order to recruit a greater number of new participants. In order to make sure that patients did not fill in the questionnaire more than once, the list of informed consent was checked. The group of patients who did not fill in the questionnaire consisted of patients who were not willing to participate as well as patients who were not able to participate due to an acute exacerbation of disease. The correct understanding of the questionnaire was ensured by including explanatory phrases and examples in the questionnaire. As all questionnaires were completed in the presence of the study staff, further support and explanations could be provided during the data acquisition. Participation in the study was completely voluntary and all patients who had signed an informed consent were included. Patients were informed that their data would be pooled, analyzed and published in scientific articles. The patients completed the questionnaire on their own and the data obtained was treated anonymously.

### 2.4. Analyses

For the statistical analyses PASW Statistics (SPSS Inc. Released 2009, PASW Statistics for Windows, Version 18.0, Chicago: SPSS Inc.) was used. We used descriptive statistics in order to determine the percentage of patients who use the Internet and the characteristics of their Internet use. Evaluations involved the calculation of means and group variability was reported as the standard deviation (S.D.). For the comparison of groups the Chi square test and the Fisher's exact test were used. The strength of association was assessed by using the Phi coefficient. In addition, *t*-tests were utilized to compare age and Internet use. Indicated *M*-values refer to the arithmetic mean. Differences of groups concerning the patients' type of treatment and Internet use were examined via analysis of variance (ANOVA) with the Scheffé post-hoc analysis for further results. The effect of age and the type of treatment was central to the analyses; binary logistic regression was used to examine their effects on the study results. The dependent variable was Internet use (1=yes; 0=no). The independent variables in the model were age group (age 18–29, age 30–39, age 40–49, age 50–59, age 60+; reference category age 18–29) and type of patients' treatment (inpatients, outpatients, day clinic patients; reference category: inpatients). Educational level was used as covariate in the regression model (without degree, mandatory school, high school, university degree; reference category: without degree). For all analyses a significance level of  $p \leq 0.05$  was applied.

## 3. Results

### 3.1. Response rate

A total of 525 patients were asked to participate, 346 patients agreed and filled in the questionnaire and informed consent form (overall response rate: 66%). The response rate categorized by patients' type of treatment (inpatients, day hospital patients, outpatients) is shown in Table 1.

Out of the 346 questionnaires, nine (2.6%) were excluded from the analyses for not meeting the inclusion criteria (being under age ( $n=1$ ), not listed as a patient of the Psychiatric Department of the University Hospital of Leipzig ( $n=3$ ) and not being able to fill in the questionnaire on their own, because of dementia ( $n=5$ )). The final number of participants' questionnaires analyzed was therefore 337. Of these participants, 108 (32.1%) were in-patients, 57 (16.9%) patients of the day hospital and 172 (51%) out-patients.

### 3.2. General characteristics of the sample

Table 2 shows the socio-demographic characteristics of the study population. Referring to the micro census of 2011 by the Federal Office for Statistics, at this time, the German general population consisted of 48.9% males and 51.1% females (<https://www.destatis.de/DE/Startseite.html>, 2013b). The general population consists of 28.5% single, 54.4% married or co-habiting, 8.7% widowed and 8.4% divorced (<https://www.destatis.de/DE/Startseite.html>, 2014a, 2014b). Concerning education and occupation, 64.8% of the general German public achieved obligatory

**Table 1**  
Number of patients approached and response rate categorized by their type of treatment.

	In-patients	Day hospital patients	Out-patients
Number of patients approached	191	76	258
( $n=525$ )	(36%)	(15%)	(49%)
Patients willing to participate	108	57	181
( $n=346^a$ )	(31%)	(17%)	(52%)
Response rate	56.5%	75%	70.2%
Overall response rate: 66% (346/525)			

<sup>a</sup> Nine patients were excluded from the analysis for not meeting the inclusion criteria.

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**Table 2**  
Socio-demographic characteristics of the study population.

	Total sample (n=337) (100%)	Internet Users (n=268) (79.5%)	Non-Internet users (n=69) (20.5%)
Age (mean ± S.D.)	45.99 (± 16.33)	41.55 (± 14.1)	63.46 (± 12.5)
Gender			
Male	144/337 (43%)	117/268 (44%)	27/69 (39%)
Female	193/337 (57%)	151/268 (56%)	42/69 (61%)
Marital status			
Single	145/337 (43%)	129/268 (48%)	16/69 (23%)
Married/co-habiting	109/337 (32%)	80/268 (30%)	29/69 (42%)
Divorced/separated	69/337 (21%)	54/268 (20%)	15/69 (22%)
Widowed	14/337 (4%)	5/268 (2%)	9/69 (13%)
Educational status			
No School Degree	4/332 (1%)	2/264 (1%)	2/68 (3%)
Mandatory School	184/332 (55%)	138/264 (52%)	46/68 (68%)
High School	59/332 (18%)	55/264 (21%)	4/68 (6%)
University Degree	85/332 (26%)	69/264 (26.1%)	16/68 (23%)
Occupation			
Unemployed	56/325 (17%)	54/258 (21%)	2/67 (3%)
Apprentice/ Trainee	9/325 (3%)	9/258 (4%)	–
University Student	20/325 (6%)	20/258 (8%)	–
Employee	74/325 (23%)	72/258 (28%)	2/67 (3%)
Self-Employed	15/325 (5%)	14/258 (5%)	1/67 (2%)
Housewife/-husband	7/325 (2%)	6/258 (2%)	1/67 (2%)
Retiree	121/325 (37%)	60/258 (23%)	61/67 (91%)
Other	23/325 (7%)	23/258 (9%)	–

school degrees (<https://www.destatis.de/DE/Startseite.html>, 2013a) and in 2013, 6.9% of the general population were unemployed (<http://de.statista.com/>, 2014).

The key differences between the study population and the general population were marital status, education and occupation. The study population consisted of 43% single, 32.3% married or co-habiting, 4.2% widowed and 20.5% divorced. 98.8% of the study population achieved obligatory school degrees and a large part of the study population was unemployed (17.2%) or retired (37.2%).

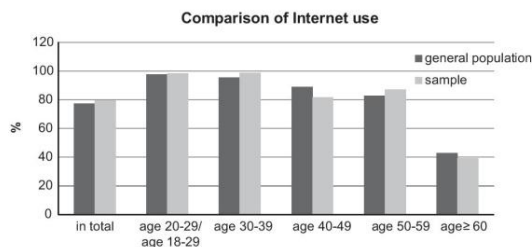
Within the sample, 79.5% were Internet users and 20.5% did not use the Internet.

In the sample, 44.2% of the patients were treated for mood disorders, 17.8% for schizophrenia, 17.8% for neurotic, stress and somatoform disorders, 8% for organic disorders, including symptomatic mental disorders, 7.4% for personality and behavioral disorders in adulthood and youth, 3% for substance abuse or dependence and for 1.8% of the participants, the diagnosis was not yet determined at the time of research.

### 3.3. Internet use of psychiatric patients and the general public

In 2013, 77.2% of the German population used the Internet, with the highest rate of Internet use being registered in the younger generations. The rate of the general population using the Internet in comparison to the psychiatric patients is illustrated in Fig. 1.

The average amount of minutes spent surfing the Internet was 169 min per day (study sample: approximately 112 min per day). Internet services that were mostly used in the general public include the use of search engines (83%), e-mail services (79%), the direct search for information (72%) and the use of online communities (39%). In the general population, 46% of the Internet users privately used social communities and networks, and 74% at least occasionally used the encyclopedia Wikipedia (<http://www.ard-zdf-onlinestudie.de>, 2013). All of these services were more frequently used by the 14–29-year-olds and the 30–49-year-olds.



**Fig. 1.** Comparison of Internet use between sample of psychiatric patients and general population (van Eimeren and Frees, 2013).

In our study, 268 patients (79.5%) had already used the Internet for personal reasons and the mean amount of use was 13.5 h (S.D. ± 17.2) per week. Reasons for not using the Internet were the lack of a computer or of Internet access (61.9%), no interest or insufficient computer skills (28.6%), skepticism or fear (4.8%) and the preference of using other media (4.8%).

In terms of the patients' duration of Internet use, we analyzed for how many years they had used the Internet. This was 10.6 years (S.D. ± 5.1) in average and in proportion to the patients' life years; 78.4% of all Internet users surfed the Internet for 10–50% of their lives. Internet use varied and t-tests showed significant age differences between Internet users ( $M=41.55$ , S.D.=14.07) and non-users ( $M=63$ , S.D.=12.5) ( $t=11.72$ ; d.f.=333;  $p<0.001$ ). Internet was found to be mostly used by younger patients aged 18–29 years (98.4%) and aged 30–39-years (98.6%). Regarding gender, Chi square analysis revealed no significant differences in use between males and females ( $\chi^2=0.46$ , d.f.=1,  $p=0.498$ ;  $\phi=-0.4$ ,  $p=0.498$ ); 78.2% of the female patients and 81.3% of the male patients had already used the Internet. Concerning education, Fisher's exact test showed significant differences in Internet use ( $p=0.005$ ): Patients who achieved mandatory school degrees consisted of 75% Internet users and 25% non-Internet users and 87.2% of the patients with higher education (high school degrees and university degrees) used the Internet (12.8% non-Internet users). Phi coefficient for cross tables between educational level and Internet use showed significant but low association ( $\phi=0.19$ ,  $p=0.01$ ). Further Chi square analysis showed that there was a significant association between patients' amount of Internet use and their type of treatment ( $\chi^2=8.03$ , d.f.=2,  $p=0.018$ ;  $\phi=0.15$ ,  $p=0.018$ ): 93% of the day-clinic patients, 78.7% of the in-patients and 75.6% of the out-patients used the Internet. The following analyses have been made for Internet users of the sample. Using Fisher's exact test, a significant association between education and the patients' type of treatment was found ( $\chi^2=18.17$ , d.f.=6,  $p=0.003$ ;  $\phi=0.23$ ,  $p=0.007$ ). The ANOVA revealed that the different groups of patients concerning their type of treatment also show significant differences in age ( $F=8.22$ , d.f.=2,  $p<0.001$ ). The mean age of inpatients was 44.62 years (S.D.: ± 16.8 years), the mean age of the outpatients was 49 years (S.D.: ± 16 years) whereas the day-clinic patients showed a mean age of 39.5 years (S.D.: ± 14.3 years). The Scheffé post-hoc analysis demonstrated a significant difference between outpatients and day clinic patients for age ( $p=0.001$ ). The other Scheffé tests failed to be significant. In order to examine if the differences in Internet use are due to the type of patients' treatment or can be seen as an effect of age, binary logistic regression analysis was employed with educational level as covariate. The full regression model was significantly superior to an intercept-only model (Omnibus-test:  $\chi^2=125.0$ , d.f.=9,  $p<0.001$ ) and explained 50% of the total variance (Nagelkerke's  $R^2=0.5$ ). Overall, 284 of 330 cases (86.1%) could be correctly identified by the model. This percentage was higher than could be expected by chance (binomial test:

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**Table 3**  
Predictors of Internet use according to a binary logistic regression analysis.

Variables	Odds Ratio (95% Confidence interval)	P-value
<b>Variables</b>		
<b>Age group<sup>a</sup></b>		
– 30–39	1.46 (0.06–34.3)	< 0.001
– 40–49	0.05 (0.004–0.58)	0.12
– 50–59	0.07 (0.005–0.78)	0.03
– 60+	0.005 (0.000–0.06)	< 0.001
<b>Treatment<sup>b</sup></b>		
– Outpatients	1.39 (0.65–2.98)	0.15
– Day clinic patients	4.14 (0.99–17.32)	0.052
<b>Educational level<sup>c</sup></b>		
– Mandatory school	39.43 (1.76–885.59)	0.02
– High school	80.44 (3.1–2090.81)	0.01
– University degree	119.03 (4.95–2863.47)	0.003

<sup>a</sup> Reference category: age 18–29.

<sup>b</sup> Reference category: inpatients.

<sup>c</sup> Reference category: without school degree.

$p < 0.000001$ ). An even higher percentage of correctly classified cases (94.7%; 249 of 263 cases) was found for the group of persons who had used the Internet (binomial test:  $p < 0.000001$ ) whereas the correspondent percentage for the group without experiences regarding the use of the Internet (52.2%; 35 of 67 cases) was markedly lower and was not significantly different from the reference value which could be expected by chance (50%) (binomial test:  $p = 0.09$ ). Age and educational level were found to be significant predictors of Internet use in the regression model, with higher age going along with a lower probability to use the Internet ( $p < 0.001$ ). Higher educational level was associated with a higher likelihood to use the Internet ( $p = 0.004$ ). The Predictors of Internet use according to the binary logistic regression analysis are shown in Table 3. Type of treatment had no significant effect on Internet use ( $p = 0.15$ ).

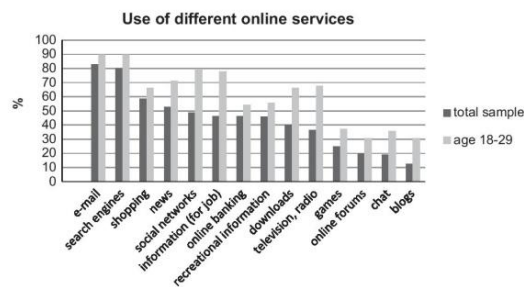
#### 3.4. Services used online

Internet e-mail services (82.8%) and the use of search engines (80.1%) were the most common online services utilized by all age groups. Other services found to be used were news (52.9%), social media (49.0%), search for job-related information (46.4%), recreational information (46.0%) and other services, such as Internet forums (19.9%). Information seeking, social media use and online forums were found to be more common among the younger generations of patients. As 79.7% of the patients aged 18–29 were using social media, they showed a significant difference in comparison to the total study sample (patients aged 30–39:  $p = 0.012$ , patients aged 40–49:  $p = 0.000$ , patients aged 50–59:  $p = 0.000$  and patients aged  $\geq 60$  years:  $p = 0.000$ ). The same effect could be seen for the search for job-related information (78% of the 18–29-year-olds) and online forums (30.5% of the 18–29-year-olds). These important differences of Internet use regarding the total sample and the patients aged 18–29 are shown in Fig. 2.

#### 3.5. Medical information seeking

Most of the patients in the study sample used the Internet to get information, and 80% of them used search engines for this purpose. Within the study sample, 83.7% of all Internet users had already used online services to gather information on medical subjects and 73.1% specifically used it for information on psychiatric topics.

More than half of the patients in our sample (57.1%) had already made use of online information on medication concerning mental



**Fig. 2.** Different use of online services on the Internet respecting the total sample and patients aged 18–29.

health. Also, 17.8% of the patients who used the Internet for more than 20 h/week, which applied to 8.5% of the participating patients, decided on at least one occasion not to take their prescribed medication because of the information they had found on the Internet.

Reasons given for online search about medication were the need for information (93.3%), insufficient information by professionals (42.0%), the need for information before a consultation (24.0%), the difficulties of patients to understand medical health professionals (8.0%) and the lack of trust in medical health care providers (6.7%). These searches about medication were mainly carried out using search engines (56.2%) or using the Internet site 'Wikipedia' (18.9%).

## 4. Discussion

### 4.1. Internet use in general

The results of this study show that most of the patients treated in the psychiatric department of the University of Leipzig use the Internet (79.5%). In the mean, 13 h a week are spent online. The patients do not show any major differences to the general population, where 77.2% use the Internet with an average amount of 19.7 h a week (van Eimeren and Frees, 2013). The Internet use of psychiatric patients seems to vary widely, and is 15% higher in this study than in a study that was carried out six years ago in Switzerland (Khazaal et al., 2008). This may be explained by the expansion of Internet use across Europe. In 2011, it was reported that 76% of the population had been online at least once (<http://ec.europa.eu/digital-agenda/en/scoreboard>, 2014). In addition, an American study from 2009 reported that 36% of their study population has ever used Internet (Borzekowski et al., 2009). We can therefore assume that Internet use among psychiatric patients has increased enormously within the past years; and that patients with mental disorders do not rank below the general population concerning Internet use.

### 4.2. Young patients and Internet use

Our study shows that young patients in particular utilize the Internet in order to get information about medical issues. This confirms findings from an Australian study, where 33.9% of the 18–25-year-olds had searched the Internet for information on mental health, alcohol and other substance use problems (Burns et al., 2010). The Australian survey also showed that most of the young people use Internet search engines such as Yahoo and Google (93.3%) in order to find information on mental health. In our study, most of the patients also report the use of e-mail services and search engines as the most accepted Internet services, although it



is only 60.9% of the 18–29-year-olds. In order to get medical information, they specifically use search engines such as Google or directly use the online encyclopedia 'Wikipedia'. This result is not an active choice as Google is the dominating search engine globally. A particular difference to the Australian survey is the explicit use of "Wikipedia". Of those who look up information concerning health on the Internet, the majority (98.5%) are interested in information about their diagnosis, their treatment and medication.

Taking demographic effects into account, it can be seen that younger patients (patients aged up to 39 years old) show a higher likelihood for Internet use. Also, patients aged up to 39 years old are more likely to use social networks and online forums. We can presume that age seems to be the most important effect accounting for Internet use. This is compatible with the study of Couper et al. (2010), who found significant variation in Internet use by age.

#### 4.3. No differences in Internet use for psychiatric patients

The results of our study are in accordance with the results from the study of the general population concerning the percentage of Internet users, the common online services used and the fact that young people use the Internet more than older people (van Eimeren and Frees, 2013). It can be concluded that patients treated in the Psychiatric Department of the University Hospital, Leipzig, are not disadvantaged to use the Internet. There are high numbers of patients who are using the online services in the same way the general German population does, many patients use the Internet especially to seek information. The patients aged 18–29 also take advantage of communities and social networks. In addition, as written in Spinzy et al. (2012), the Internet is a useful platform for social connections. It also has to be emphasized that this refers to both genders. Female and male patients do not show significant differences in their use of the Internet. This can be seen as an important fact for practitioners in order to provide more options for reliable online information, programs and therapies, particularly for young patients.

#### 4.4. Limitations

This is a single-center survey with a limited sample size. Some patients were excluded from the study because of severe illness, such as dementia or acute psychosis. However, with an overall response rate of 66%, this study shows a rather high rate of response. As the Internet underlies rapid changes, and at the time of writing, there were no recent or up-to-date studies on the Internet use of psychiatric patients with a large sample size, it was important to gain more knowledge in this growing field of interest. Future studies will be helpful for the evaluation of changes concerning patients' Internet use over time.

#### 4.5. Future directions

The Internet has become an important source for health care information and patients put a high level of trust in the Internet (Borzekowski et al., 2009; Wynn et al., 2014). In our study, patients state that insufficient information by health professionals, the lack of trust in medical health care providers and the need for mental health information in general or before a consultation are important reasons for their online search about medication. It even reaches to a point, where 11% of people who use the Internet for medical information seeking, use the Internet as opposed to seeing a doctor (Diaz et al., 2002).

Referring to Diaz et al. (2002), there is a high percentage of patients (59%) who do not discuss the information acquired online with their doctor. This shows that online information cannot

replace the contact to physicians as online information is not always reliable and some websites even are deemed to be harmful if patients follow their instructions (Ernst and Schmidt, 2004). This has to be considered as particularly important when it comes to patients who decide to take or not to take their prescribed medicine because of prior online search. The more we know about patients' Internet use, the better practitioners can use this information to provide more trustworthy information on mental health and suggest Internet-based health programs.

In our study, we found that psychiatric patients use the Internet as much as the general population. This shows that online therapy or self-management programs can be useful for many patients, showing the potential capacity of online programs for psychiatric patients. Nevertheless, physicians are needed in order to evaluate and improve online information and services, as well as to support patients in assessing evidence-based information that is provided on the Internet.

It is necessary that more research is conducted about the quality of information provided on the Internet. As most patients use search engines for information, it is important to find out more about the way in which users are selecting their articles. Some significant strides have been made in developing the Health on the Net Foundation (HON) (<http://www.hon.ch/>, 2013), which addresses the need for reliable medical information online.

## Appendix A

Do you use the Internet?

Yes  No

If "No", why? \_\_\_\_\_

For how many years do you use the Internet? \_\_\_\_\_

For how many hours per week do you privately use the Internet? \_\_\_\_\_ hrs/week

Which online services do you use? (It is possible to tick more than one)

- |  |   |
|--|---|
| <input type="checkbox"/> E-mail          | <input type="checkbox"/> Search engines           |
| <input type="checkbox"/> Shopping        | <input type="checkbox"/> News                     |
| <input type="checkbox"/> Social networks | <input type="checkbox"/> Information (for job)    |
| <input type="checkbox"/> Online banking  | <input type="checkbox"/> Recreational information |
| <input type="checkbox"/> Downloads       | <input type="checkbox"/> Television, radio        |
| <input type="checkbox"/> Games           | <input type="checkbox"/> Online forums            |
| <input type="checkbox"/> Chat            | <input type="checkbox"/> Blogs                    |

## Appendix B. Supporting information

Supplementary data associated with this article can be found in the online version at <http://dx.doi.org/10.1016/j.psychres.2014.12.037>.

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Dissertation zur Erlangung des akademischen Grades

Dr. med.

*Charakteristika der allgemeinen Internetnutzung psychiatrischer Patienten*

eingereicht von Friederike Trefflich

angefertigt an der Medizinischen Fakultät der Universität Leipzig,  
Klinik und Poliklinik für Psychiatrie und Psychotherapie

betreut von Frau PD Dr. C. Rummel-Kluge

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In dieser Arbeit wurde die Internetnutzung von Patienten mit psychiatrischen Erkrankungen untersucht. Es wurde hierzu eine Patientenbefragung in der Klinik und Poliklinik für Psychiatrie und Psychotherapie der Universität Leipzig von Februar bis Juli 2013 durchgeführt. Die Befragung basierte auf einem Fragebogen, welcher in Anlehnung an eine ARD/ZDF-Internetstudie entwickelt wurde. Diese ARD/ZDF-Studie erfasst jährlich repräsentativ das Internetverhalten der Bevölkerung in Deutschland. In dem Fragebogen der Patientenbefragung dieser Arbeit wurden die folgenden Daten erhoben:

- (1) Beginn und Häufigkeit der Internetnutzung durch die Patienten
- (2) Internetdienste, die hauptsächlich genutzt werden
- (3) Nutzung des Internets für medizinischen (und vor allem psychiatrischen) Informationsbedarf
- (4) Art der gesuchten medizinischen Inhalte und Gründe der Internetnutzung



Die Daten dieser Erhebung wurden statistisch ausgewertet. Hierzu wurden sowohl deskriptive Statistik als auch Varianzanalysen und ein binäres logistisches Regressionsmodell verwendet.

Das Ziel dieser Arbeit war herauszuarbeiten, ob Patienten mit psychiatrischen Erkrankungen die gleichen Möglichkeiten haben das Internet zu nutzen wie die restliche Bevölkerung oder ob Unterschiede in der Internetnutzung vorliegen.

525 Patienten wurden zur Teilnahme an der Studie gebeten. Von diesen haben 346 Patienten teilgenommen und den 29-teiligen Fragebogen sowie die Einverständniserklärung vervollständigt. Insgesamt wurde eine Rücklaufquote von 66 % erreicht. Von den teilnehmenden Patienten mussten neun von den Analysen ausgeschlossen werden, da sie aufgrund akuter Symptomatik nicht in der Lage waren, den Fragebogen auszufüllen.

Im Ergebnis der Studie stellte sich heraus, dass Patienten als Internetnutzer (79.5 %) kein von der Allgemeinbevölkerung (77,2 % Internetnutzer) abweichendes Verhalten aufweisen. Zwischen Männern und Frauen gab es keine signifikanten Unterschiede. Signifikante Unterschiede in der Häufigkeit der Internetnutzung konnten bezüglich unterschiedlicher Bildungsstände, für die verschiedenen Behandlungstypen (stationär, ambulant, Tagesklinik) und bezüglich verschiedener Altersgruppen herausgestellt werden. Vor allem in jüngeren Altersgruppen (18-29 Jahre und 30-39 Jahre) zeigte sich eine höhere Internetnutzung. Die am häufigsten genutzten Internetdienste waren E-Mail und die Recherche mittels Suchmaschinen.

Ein Regressionsmodell wurde entwickelt um herauszuarbeiten, ob die Unterschiede in der Internetnutzung auf den Behandlungstyp oder das Alter zurückzuführen sind. Hierzu wurde der Bildungsstand als Kovariable benutzt. Im Regressionsmodell konnten sowohl das Alter der Patienten als auch der Bildungsstand als wichtige Prädiktoren bezüglich der Internetnutzung gefunden werden. Der Behandlungstyp hatte hierbei keinen Einfluss. Die

Wahrscheinlichkeit der Internetnutzung steigt mit einem höheren Bildungsstand und sinkt mit einem höheren Alter der Patienten.

Die Ergebnisse dieser Studie zeigen, dass Patienten mit psychiatrischen Erkrankungen das Internet genauso häufig und in der gleichen Weise wie die Allgemeinbevölkerung nutzen. Psychiatrische Patienten sind, wenn es um Internetzugang und -nutzung geht, gegenüber der übrigen Bevölkerung nicht benachteiligt. Vor allem junge Patienten nutzen verschiedenste Internetdienste, darunter auch Foren und Soziale Netzwerke. Dies zeigt, dass Online-Therapien und –informationen sowie Self-Management Programme von psychiatrischen Patienten genutzt werden können. Ärzte und Ärztinnen sind angehalten Online-Informationen zu verbessern und Patienten in der Wahl von Online Therapien und –Informationen zu unterstützen.

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PATIENTENNUMMER:

DATUM:

**Sehr geehrte Patientin, sehr geehrter Patient,**

**Bitte füllen Sie den Fragebogen vollständig aus. Die von Ihnen gemachten Angaben werden anonymisiert ausgewertet.**

**Herzlichen Dank für Ihre Mitarbeit!**

**1. Angaben zur Person (Bitte ankreuzen)**

**Geschlecht:**  weiblich  männlich

**Alter:** \_\_\_\_\_ Jahre

**Behandlung:**  stationär  ambulant  Tagesklinik

**Diagnose:** \_\_\_\_\_

**Familienstand:**  ledig  
 verheiratet oder mit Partner/In zusammenlebend  
 geschieden / getrennt  
 verwitwet

**Höchster Schulabschluss:**

- noch in der Schule
- kein Schulabschluss
- Sonderschulabschluss
- Hauptschule
- Realschule / mittlere Reife
- Abitur / Fachabitur
- Abgeschlossenes Hochschulstudium

**Aktuelle berufliche Situation:**

- Auszubildende(r)
- Student/in
- Arbeitslose(r)

Angestellte(r) oder Beamte(r)

- Selbständige(r)
- Hausfrau/-mann
- Rentner/in
- andere

## 2. Fragen zum Internetgebrauch

### 2.1 Haben Sie das Internet schon einmal genutzt?

- Ja       Nein

### 2.2 Falls nein, warum nicht?

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**! Für Patienten, die das Internet noch nicht benutzt haben, endet hier der Fragebogen. !**

### 2.3 Seit wie vielen Jahren nutzen Sie bereits das Internet?

seit \_\_\_\_\_ Jahren

### 2.4 Wie viele Stunden pro Woche haben Sie in den letzten zwölf Monaten durchschnittlich privat das Internet genutzt?

\_\_\_\_\_ Stunden pro Woche

### 2.5 Welche Internetdienste nutzen Sie? (Bitte ankreuzen, mehrere Kreuze möglich)

- Chat
- soziale Netzwerke, und zwar:
  - Facebook
  - sonstige Communities (z.B. VZ-Netzwerke, google+ etc.)
- Blogs
- Diskussionsforen
- E-Mail
- Downloads von Dateien (Musik, Filme etc.)
- Suchmaschinen
- Spiele
- Einkaufen (z.B. Bücher, Kleidung)
- Nachrichten

- berufliche/schulische Informationen
  - Freizeitinformationen (z.B. über Reisen)
  - Online-Banking
  - Fernsehen, Radio hören
  - Partner-, Kontaktbörsen
  - Sonstiges:
- 

**2.6 Haben Sie schon einmal Internetseiten mit medizinischen Inhalten besucht?**

- Nein       Ja, und zwar zu folgenden Themen:
- 
- 

**2.7 Haben Sie sich schon einmal im Internet über psychische Erkrankungen informiert?**

- Nein       Ja, und zwar zu folgenden Themen:
- 
- 

**2.8 Haben Sie sich schon einmal im Internet über Medikamente für psychische Erkrankungen informiert?**

- Nein       Ja

**2.9 Wenn ja, warum? (Mehrfachnennung möglich)**

- um mich vor dem Arztbesuch zu informieren
  - um mich über Medikamente (z.B. Nebenwirkungen) zu informieren
  - weil ich dem Arzt nicht vertraue
  - weil ich den Arzt nicht verstanden habe
  - weil mir die Informationen, die mir der Arzt gegeben hat, nicht ausreichen
  - um meine Erfahrungen mit anderen Betroffenen auszutauschen (E-Mail, Chat)
  - um einen Arzt zu finden
  - um mit einem Arzt zu kommunizieren
  - aus anderen Gründen, und zwar:
-

**2.10 Fanden Sie die Internetseiten zu psychischen Erkrankungen verständlich?**

- Nein       Ja

**2.11 Fanden Sie die Internetseiten zu psychischen Erkrankungen hilfreich?**

- Nein       Ja

**2.12 Hat Ihnen das Internet bei der Bewältigung Ihrer psychischen Erkrankung geholfen?**

- Ja, weil

---

- Nein, weil

---

- Vielleicht, weil

---

**2.13 Haben Sie schon einmal psychiatrische Medikamente nicht genommen aufgrund einer voran gegangenen Internetrecherche?**

- Nein       Ja

**2.14 Haben Sie schon einmal psychiatrische Medikamente genommen aufgrund einer voran gegangenen Internetrecherche?**

- Nein       Ja

**2.15 Für welche psychiatrischen Themen und Inhalte interessieren Sie sich im Internet besonders? (Mehrfachnennung möglich)**

- Informationen zu bestimmten psychiatrischen Krankheitsbildern
- Informationen über Medikamente (z.B. Antidepressiva, Antipsychotika)
- Suche nach Psychiatern bzw. Psychiatrischen Kliniken (z.B. zur Kontaktaufnahme oder Terminvereinbarung)

- Erfahrungsaustausch mit anderen Betroffenen
- Foren, in denen Psychiater/Psychotherapeuten Fragen von Betroffenen beantworten, o.ä.
- sonstiges, und zwar:  
\_\_\_\_\_

**2.16 Welche Internetseiten besuchen Sie zum Thema psychische Erkrankungen? (Auch die Angabe von Stichwörtern für Suchmaschinen ist möglich.)**

- 1. www. \_\_\_\_\_
  - 2. www. \_\_\_\_\_
  - 3. www. \_\_\_\_\_
- 

**2.17 Sind Sie der Meinung, dass es mehr Internetseiten geben sollte, die sich mit psychischen Erkrankungen beschäftigen?**

- Nein       Ja

**2.18 Haben Sie schon einmal über das Internet mit einem Psychiater/Psychotherapeuten Kontakt aufgenommen?**

- Nein       Ja

**2.19 Wenn nein, glauben Sie, dass das Internet Ihnen diese Kontaktaufnahme erleichtern würde?**

- Ja       Nein       Weiß nicht

**2.20 Wünschen Sie sich Internetangebote zur Unterstützung im Umgang mit Ihrer psychiatrischen Erkrankung (sog. Selbstmanagement)?**

- Nein       Ja, weil:
- 
- 
-

## Einschätzung der Erkrankungsschwere

(vom Arzt auszufüllen)

### CGI (Clinical Global Impressions) - Gesamt-Schweregrad der Erkrankung

**Unter Berücksichtigung Ihrer gesamten klinischen Erfahrung, wie krank war der Patient während der letzten Woche? (Bitte eine Ziffer ankreuzen)**

Normal nicht krank	Minimal krank	Leicht krank	Mäßig krank	Deutlich krank	Schwer krank	Extrem schwer krank
1	2	3	4	5	6	7

**GAF (Global Assessment of Functioning Scale): \_\_\_\_\_ (Score eintragen)**

**Beurteilen Sie hier die psychische, soziale und berufliche Leistungsfähigkeit des Patienten auf einem hypothetischem Kontinuum zwischen seelischer Gesundheit und Krankheit zum jetzigen Zeitpunkt. Beeinträchtigungen der Leistungsfähigkeit aufgrund körperlicher (oder durch Umweltbedingungen bedingter) Einschränkungen sind nicht mit einzubeziehen.**

**Benutzen Sie, wenn angemessen, auch Zwischenwerte, z. B. 45 oder 68.**

- 100 – 81: Keine oder nur minimale Symptome (z. B. eine leichte Angst vor Prüfungen), gute Leistungsfähigkeit in allen Gebieten, interessiert und eingebunden in ein breites Spektrum von Aktivitäten, sozial effektiv im Verhalten, im allgemeinen zufrieden mit dem Leben, übliche Alltagsprobleme oder –sorgen (z.B. nur gelegentlicher Streit mit einem Familienmitglied)
- 80 – 71: Wenn Symptome vorliegen, sind diese vorübergehende oder normale Reaktionen auf psychosoziale Stressoren (z.B. Konzentrationsschwierigkeiten nach einem Familienstreit); höchstens leichte Beeinträchtigungen der sozialen, beruflichen und schulischen Leistungsfähigkeit.
- 70 – 61: Einige leichte Symptome (z.B. depressive Stimmung oder leicht ausgeprägte Schlaflosigkeit) ODER einige leichte Beeinträchtigungen hinsichtlich sozialer, beruflicher und schulischer Leistungsfähigkeit (z.B. gelegentliches Schule schwänzen oder Diebstahl im Haushalt), aber im Allgemeinen relativ gute Leistungsfähigkeit, hat einige wichtige zwischenmenschliche Beziehungen
- 60 – 51: Mäßig ausgeprägte Symptome (z.B. Affektverflachung, weitschweifige Sprache, gelegentlich Panikattacken) ODER mäßig ausgeprägte Schwierigkeiten bezüglich der sozialen, beruflichen oder schulischen Leistungsfähigkeit (z.B. wenig Freunde, Konflikte mit Arbeitskollegen)
- 50 – 41: Ernsthafte Symptome (z.B. Suizidgedanken, schwere Zwangsrituale, häufige Ladendiebstähle) ODER jedwede ernste Beeinträchtigung der sozialen, beruflichen und schulischen Leistungsfähigkeit (z.B. keine Freunde, unfähig, eine Arbeitsstelle zu behalten)
- 40 – 31: Einige Beeinträchtigungen in der Realitätswahrnehmung oder der Kommunikation (z.B. Sprache zeitweise unlogisch, unverständlich oder belanglos) ODER starke Beeinträchtigungen in mehreren Bereichen, z.B. der Arbeit, Schule, familiären Beziehungen, Urteilsvermögen, Denken oder der Stimmung (z.B. ein Mann mit einer Depression vermeidet Freunde, vernachlässigt seine Familie und ist unfähig zu arbeiten; ein Kind schlägt häufig jüngere Kinder, ist zu Hause trotz und versagt in der Schule).
- 30 – 21: Das Verhalten ist ernsthaft durch Wahngedanken oder Halluzinationen beeinflusst ODER ernsthafte Beeinträchtigung der Kommunikation und des Urteilsvermögens (z.B. bleibt den ganzen Tag im Bett, kein Zuhause und keine Freunde).
- 20 – 11: Selbst- und Fremdgefährlichkeit (z.B. Selbstmordversuche oder eindeutige Todesabsicht, häufig gewalttätig, manische Erregung) ODER ist manchmal nicht in der Lage, minimale persönliche Hygiene aufrechtzuerhalten (z.B. schmiert mit Kot) ODER weitgehende Beeinträchtigung in der Kommunikation (größtenteils inkohärent oder stumm).
- 10 – 0: Ständige Gefahr, sich oder andere schwer zu schädigen (z.B. wiederholte Gewaltausübung) ODER anhaltende Unfähigkeit, die minimale persönliche Hygiene aufrechtzuerhalten ODER ernsthafte Selbstmordversuch mit eindeutiger Todesabsicht.

## RESEARCH ARTICLE

## Open Access

# Mental health related Internet use among psychiatric patients: a cross-sectional analysis

Sophie Kalkreuth<sup>1</sup>, Friederike Trefflich<sup>1</sup> and Christine Rummel-Kluge<sup>1,2\*</sup>

## Abstract

**Background:** The Internet is of great importance in today's health sector, as most Internet users utilize online functions for health related purposes. Concerning the mental health care sector, little data exist about the Internet use of psychiatric patients. It is the scope of this current study to analyze the quantity and pattern of Internet usage among mental health patients.

**Methods:** Patients from all services of the Department of Psychiatry at a university hospital were surveyed by completing a 29-item questionnaire. The data analysis included evaluation of frequencies, as well as group comparisons.

**Results:** 337 patients participated in the survey, of whom 79.5% were Internet users. Social media was utilized by less than half of the users: social networks (47.8%), forums (19.4%), chats (18.7%), blogs (12.3%). 70.9% used the Internet for mental health related reasons. The contents accessed by the patients included: information on mental disorders (57.8%), information on medication (43.7%), search for mental health services (38.8%), platforms with other patients (19.8%) and platforms with mental health professionals (17.2%).

Differences in the pattern of use between users with low, medium and high frequency of Internet use were statistically significant for all entities of social media ( $p < 0.01$ ), search for mental health services ( $p = 0.017$ ) and usage of platforms with mental health professionals ( $p = 0.048$ ).

The analysis of differences in Internet use depending on the participants' type of mental disorder revealed no statistically significant differences, with one exception. Regarding the Internet's role in mental health care, the participants showed differing opinions: 36.2% believe that the Internet has or may have helped them in coping with their mental disorder, while 38.4% stated the contrary.

**Conclusions:** Most psychiatric patients are Internet users. Mental health related Internet use is common among patients, mainly for information seeking. The use of social media is generally less frequent. It varies significantly between different user types and was shown to be associated with high frequency of Internet use. The results illustrate the importance of the Internet in mental health related contexts and may contribute to the further development of mental health related online offers.

**Keywords:** Internet, Psychiatry, Availability, Information seeking, Social media, Internet-based interventions

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## Background

The Internet is of great importance in today's health care sector. The majority of Internet users utilize online functions for health related purposes such as to search for information on medical conditions or medication [1-3]. The mental health (MH) care sector is part of this development [4], as the Internet offers a wide range of options for patients suffering from psychiatric disorders, as well as for mental health professionals [5,6]. In the current mental health related research, several Internet-based therapy programs are being examined in randomized controlled trials, including the German language sphere [7-9]. So far, promising results have been shown for the effective web-based treatment of many common psychiatric disorders [10,11] particularly for depression [12-21] and anxiety disorders [22-24]. The successful usage of these programs requires (1) access to the Internet and (2) the capability and willingness to employ social media and eLearning methods, i.e. the application of digital media for teaching and learning [25]. To date, there has been little research about the specific characteristics of Internet use of psychiatric patients, even though mental disorders are frequent in industrialized countries [26] and therefore are of great relevance for health and health related research. Since psychiatric disorders can be cause and effect of social inequalities [27], a disadvantage of this patient population regarding Internet use can be suspected.

To our knowledge, only few surveys investigating the Internet use of mental health patients exist [28,29]. However, these studies are restricted to certain patient populations (mainly inpatients [28], outpatients only [29]), and the data used date back to 2001 [28] and 2007 [29]. Particularly little data exist about social media, such as social networks, blogs and forums. As the Internet is a dynamic medium, which is rapidly changing, we consider it necessary to evaluate the Internet use of psychiatric patients today in order to gain knowledge about the preconditions for mental health related online options. Therefore, we aim to ascertain the following:

1. Internet usage of mental health patients, particularly in terms of social media
2. Mental health patients' view on the Internet's therapeutic options
3. Possible differences in (1) and (2), depending on the frequency of Internet use
4. Possible differences in (1) and (2), depending on a patient's psychiatric diagnosis

Results may contribute to the further development of web-based mental health treatment options, as they will deliver insight into patients' interests and needs in this context. This could avoid the unfocused creation of

online offers without consideration of the target group's demand.

## Methods

### Study population

This research was conducted at the Department of Psychiatry and Psychotherapy of the University Hospital Leipzig, Germany. All patients who were currently treated in any of the department's services (inpatient care, outpatient care, day hospital) were invited to take part in the study. Inclusion criteria were: age  $\geq 18$  years and submission of an informed consent. The exclusion criteria included insufficient knowledge of German, illiteracy and a cognitive impairment making the completion of the questionnaire impossible.

The study was approved by the Ethical committee of the Medical Faculty of Leipzig University.

### Material

The questionnaire used for this study consists of three sections: Socio-demographic data, general Internet use and mental health related Internet use.

In the first section, nine socio-demographic indicators were surveyed using six multiple-choice questions, one time specification and two open-ended questions. General Internet use was assessed by six questions: two multiple-choice questions, one multiple-choice question with room for adding explanations, two time specifications and one open-ended question. The section "mental health related Internet use" included 14 questions: ten multiple-choice questions, three multiple-choice questions with room for adding explanations and one open-ended question.

The total number of items is thus 29. Sample questions are enclosed as Additional file 1. The full questionnaire is available upon request from the corresponding author.

Questions about general Internet use were adapted from the German ARD/ZDF Online study [30], a representative survey on media use in the German public. Based on this general assessment, mental health related topics and questions were added to the questionnaire. For the patients receiving inpatient care, their data were completed with information obtained by clinicians regarding exact medication, current diagnosis and the severity of a patient's illness. The quantitative rating of the disease severity was obtained using the Global Assessment of Functioning Scale (GAF) [31] and the Clinical Global Impressions Scale (CGI) [32].

### Procedure

Inpatients and patients in the day hospital were addressed in their respective wards. The invitation to take part in the study was distributed orally in a patient group meeting or through a written notice displayed in

the common areas. Outpatients were approached in the waiting area of the outpatient service. The correct understanding of the questionnaire was ensured in two ways: Explanatory phrases and examples were included in the questionnaire in order to clarify specific Internet-related terms. As all questionnaires were completed in the presence of the study staff, further support and explanations could be provided during the data acquisition.

The data were collected from February to July 2013.

#### Data analysis

The data were treated confidentially and anonymized before evaluation. For all statistical analysis the statistical software package PASW Statistics 18™ for Windows (IBM, New York, USA) was used.

Frequency of reported weekly Internet use was categorized by thirds as high, medium or low; these three groups were then compared. For the analysis of differences depending on the patients' diagnosis, groups were defined according to ICD-10 categories. Chi-square tests were performed for univariate significance testing, accepting a  $p$  value of  $\leq 0.05$  as statistically significant. Wherever expected frequencies were  $<5$ , the Fisher-Freeman-Halton test was used. The comparison of user type and the variables age, GAF and CGI allowed for the employment of the Kruskal-Wallis test, followed by post-hoc testing using the Mann-Whitney- $U$  test. Answers to open-ended questions were sorted and classified in correspondent categories by two independent coders.

In order to keep a straight focus on mental health related Internet use we refrained from a detailed comparison with the German public, which will be published elsewhere.

## Results

### Participation rate

346 patients agreed to participate in the study, signed the informed consent and completed the questionnaire. Nine patients had to be excluded from the analysis due to not meeting the inclusion criteria [age  $<18$  ( $n = 1$ ); not currently treated at the Department of Psychiatry ( $n = 3$ ); incapability of completing the questionnaire without help ( $n = 5$ )]. The final number of participants was therefore 337, consisting of 108 inpatients, 172 outpatients and 57 patients from the day hospital.

The participation rate was calculated counting the number of patients present at the outpatient clinic and the respective inpatient units at the time of assessment. Although it was not always possible to invite all eligible patients to the survey at all times (e.g. due to patients' absence from the ward at the time of recruitment visits), we encountered a participation rate of 56.5% at the inpatient clinic, 70.2% at the outpatient clinic and 75%

amongst day hospital patients. The overall participation rate was thus 66%.

### Sample characteristics

Sociodemographic characteristics of the sample are shown in Table 1. The three user groups showed statistically significant differences for age ( $\chi^2 = 43.2$ ;  $df = 2$ ;  $p < 0.001$ ), marital status ( $FI = 25.3$ ;  $df = 6$ ;  $p < 0.001$ ), educational level ( $FI = 11.4$ ;  $df = 6$ ;  $p = 0.048$ ) and occupation ( $FI = 27.1$ ;  $df = 14$ ;  $p = 0.012$ ). Differences in gender were not statistically significant ( $\chi^2 = 4.75$ ;  $df = 2$ ;  $p = 0.93$ ). Post-hoc testing revealed statistically significant differences in the comparison of low and medium Internet use for age ( $Z = -2.0$ ;  $p = 0.043$ ), gender ( $\chi^2 = 4.1$ ;  $p = 0.043$ ) and marital status ( $FI = 12.5$ ;  $p = 0.003$ ). In the comparison of medium and high Internet use this was the case for age ( $Z = -3.1$ ;  $p = 0.002$ ) and marital status ( $FI = 7.3$ ;  $P = 0.042$ ). The analysis of low versus high Internet use reported statistically significant results for age ( $Z = -6.4$ ;  $p > 0.001$ ), marital status ( $FI = 18.3$ ;  $p > 0.001$ ), educational level ( $FI = 9.7$ ;  $p = 0.012$ ) and occupation ( $FI = 22.4$ ;  $p = 0.001$ ).

The patients participating in this research were diagnosed with the following mental disorders: 44.2% (149/337) affective disorders [ICD-10 diagnoses F30-F39]; 17.8% (60/337) schizophrenia [ICD-10 diagnoses F20-F29]; 17.8% (60/337) neurotic, stress-related and somatoform disorders [ICD-10 diagnoses F40-F49]; 8.0% (27/337) organic mental disorders [ICD-10 diagnoses F00-F09]; 5.6% (19/337) disorders of adult personality and behavior [ICD-10 diagnoses F60-F69]; 3.0% (10/337) disorders due to psychoactive substance use [ICD-10 diagnoses F10-F19] and 3.6% (12/337) other disorders [ICD-10 diagnoses F50-F59, F70-F99].

51% of the participants were outpatients, 32% were inpatients and 17% were day hospital patients. The mean GAF score was 56 ( $SD \pm 16$ ), corresponding to the category: "Moderate symptoms and/or moderate difficulty in social, work or school functioning" [31]. For the CGI, a mean score of 4.1 ( $SD \pm 1.1$ ) was calculated, classifying patients as "moderately ill" [32].

### Internet use of mental health patients

#### General Internet use and user definition

79.5% of all participants (268/337) reported having used the Internet at least once, and therefore were classified as *Internet users*. All following analysis refers to the 268 Internet users. Patients were divided into one of three categories according to their reported weekly frequency of Internet use: 3.5 hours or less [*low Internet use* ( $n = 78$ )], more than 3.5 and less than 12.5 hours a week [*medium Internet use* ( $n = 88$ )], 12.5 hours and more [*high Internet use* ( $n = 85$ )]. 17 patients had not provided information on their weekly Internet use and therefore could not be classified.



**Table 1 Sociodemographic sample characteristics**

	Entire sample (n = 337)	Low internet use (n = 78)	Medium internet use (n = 88)	High internet use (n = 85)
<b>Age mean (±SD)</b>	46.0 (±16.3)	49.2 (±13.4)	40.9 (±13.7)	35.2 (±13.7)
<b>Gender %</b>				
<i>Female</i>	57.3	66.7	51.1	52.9
<i>Male</i>	42.7	33.3	48.9	47.1
<b>Marital Status %</b>				
<i>Unwed</i>	43.0	30.8	47.7	63.5
<i>Married/living with partner</i>	32.3	33.3	38.6	21.2
<i>Divorced/separated</i>	20.5	32.1	13.6	14.1
<i>Widowed</i>	4.2	3.8	0.0	1.2
<b>Educational level %</b>				
<i>No school degree</i>	1.2	0.0	1.2	1.2
<i>Mandatory school</i>	55.4	61.0	45.9	47.1
<i>High school</i>	17.8	11.7	23.5	30.6
<i>University degree</i>	25.6	27.3	29.4	21.2
<b>Occupation %</b>				
<i>Unemployed</i>	17.2	18.7	21.2	21
<i>Apprentice/trainee</i>	2.8	1.3	4.7	4.9
<i>University student</i>	6.2	0.0	5.9	17.3
<i>Employee</i>	22.8	32.0	25.9	27.2
<i>Self-employed</i>	4.6	4.0	9.4	3.7
<i>Housewife/househusband</i>	2.2	2.7	1.2	2.5
<i>Retiree</i>	37.2	32.0	24.7	14.8
<i>Other</i>	7.1	9.3	7.1	8.6

A negative correlation was found between age and reported frequency of Internet use with a Pearson's coefficient of  $r = -0.261$  ( $p < 0.01$ ), showing that older patients used the Internet less frequently than younger patients.

#### Usage of social media

Analysis of the responses revealed that 47.8% of the Internet users (128/268) utilized social networks. 19.4% (52/268) took part in online forums, 18.7% (50/268) used web-based chat functions and 12.3% (33/268) read or wrote blogs.

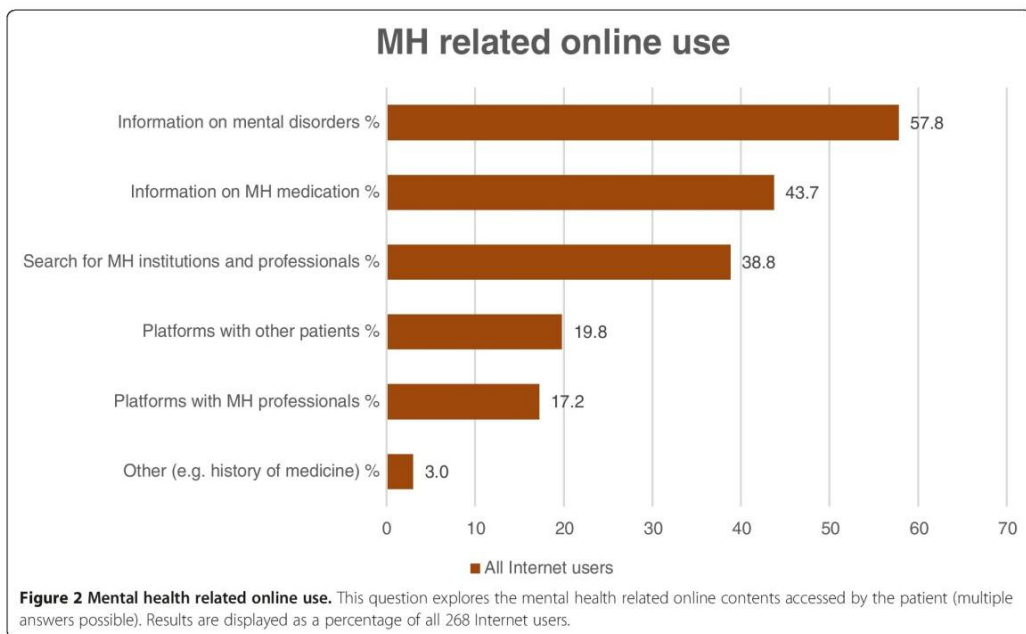
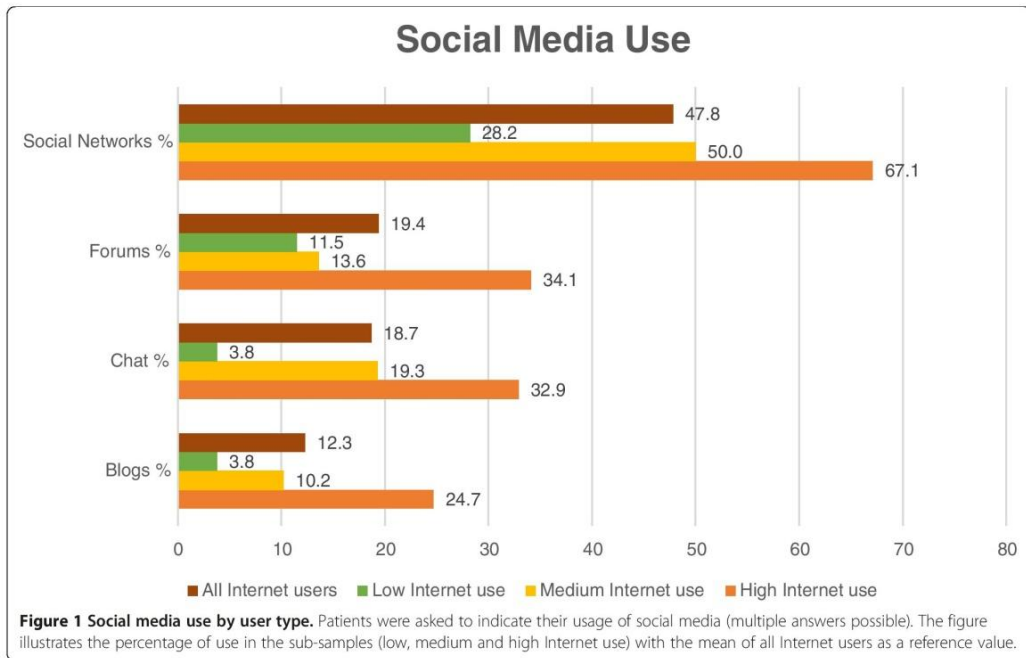
Figure 1 illustrates the differences between the three groups of Internet users, which were statistically significant for all entities of social media: social networks ( $\chi^2 = 24.6$ ;  $df = 2$ ;  $p < 0.01$ ), forums ( $\chi^2 = 16.4$ ;  $df = 2$ ;  $p < 0.01$ ), chat ( $\chi^2 = 22.3$ ;  $df = 2$ ;  $p < 0.01$ ), blogs ( $\chi^2 = 16.5$ ;  $df = 2$ ;  $p < 0.01$ ). Further analysis of the subgroups showed the following results: When comparing only low and medium Internet use these differences were statistically significant for the use of social networks ( $\chi^2 = 8.2$ ;  $df = 1$ ;  $p = 0.004$ ) and chat ( $\chi^2 = 9.3$ ;  $df = 1$ ;  $p = 0.002$ ). Between

medium and high Internet use statistically significant differences were shown for social networks ( $\chi^2 = 5.2$ ;  $df = 1$ ;  $p = 0.023$ ), forums ( $\chi^2 = 10.0$ ;  $df = 1$ ;  $p = 0.002$ ), chat ( $\chi^2 = 4.2$ ;  $df = 1$ ;  $p = 0.041$ ) and blogs ( $\chi^2 = 6.3$ ;  $df = 1$ ;  $p = 0.012$ ). In the comparison of low and high Internet use statistical significance was revealed for social networks ( $\chi^2 = 24.6$ ;  $df = 1$ ;  $p < 0.001$ ), forums ( $\chi^2 = 11.6$ ;  $df = 1$ ;  $p = 0.001$ ), chat ( $\chi^2 = 22.4$ ;  $df = 1$ ;  $p < 0.001$ ) and blogs ( $\chi^2 = 14.1$ ;  $df = 1$ ;  $p < 0.001$ ).

#### Mental health related Internet use

70.9% of the participating patients (190/268) had already used the Internet for mental health related reasons. Figure 2 illustrates the types of information and online contents accessed by the patients.

131 answers were given to an open-ended question about the websites used for mental health related information. 57.3% (75/131) indicated search engines, 19.8% (26/131) cited the online encyclopedia Wikipedia, while 11.5% (15/131) named diagnosis-specific websites. 5.3% (7/131) stated health portals, 3.8% (5/131) indicated forums and 2.3% (3/131) specified hospital websites.



**Online search for and communication with mental health professionals**

In our sample, 38.8% (104/268) used the Internet to search for mental health services and mental health professionals. 16.8% (45/268) had established contact with a mental health professional via Internet before, in contrast to 74.6% (200/268) who had never done so. Of those, 66.0% (132/200) believed that the Internet could facilitate the approaching of mental health professionals, whereas 32.0% (62/200) stated the contrary. Regular communication with mental health professionals via Internet was reported by 7.1% (19/268) of our sample.

Figure 3 shows the frequency of online search for and communication with mental health professionals for low, medium and high Internet use.

Regarding the search for mental health services or mental health professionals, a statistically significant difference between user groups was detected ( $\chi^2 = 8.2$ ;  $df = 2$ ;  $p = 0.017$ ). In the comparison of subgroups a statistically significant difference was shown between medium and high Internet use ( $\chi^2 = 4.1$ ;  $df = 1$ ;  $p = 0.043$ ), as well as between low and high Internet use ( $\chi^2 = 7.5$ ;  $df = 1$ ;  $p = 0.006$ ). For the establishment of contact with mental health professionals ( $\chi^2 = 2.1$ ;  $df = 2$ ;  $p = 0.358$ ) and online communication with mental health professionals ( $\chi^2 = 0.8$ ;  $df = 2$ ;

$p = 0.682$ ), differences in matters of user type were not statistically significant.

**Exchange of experience**

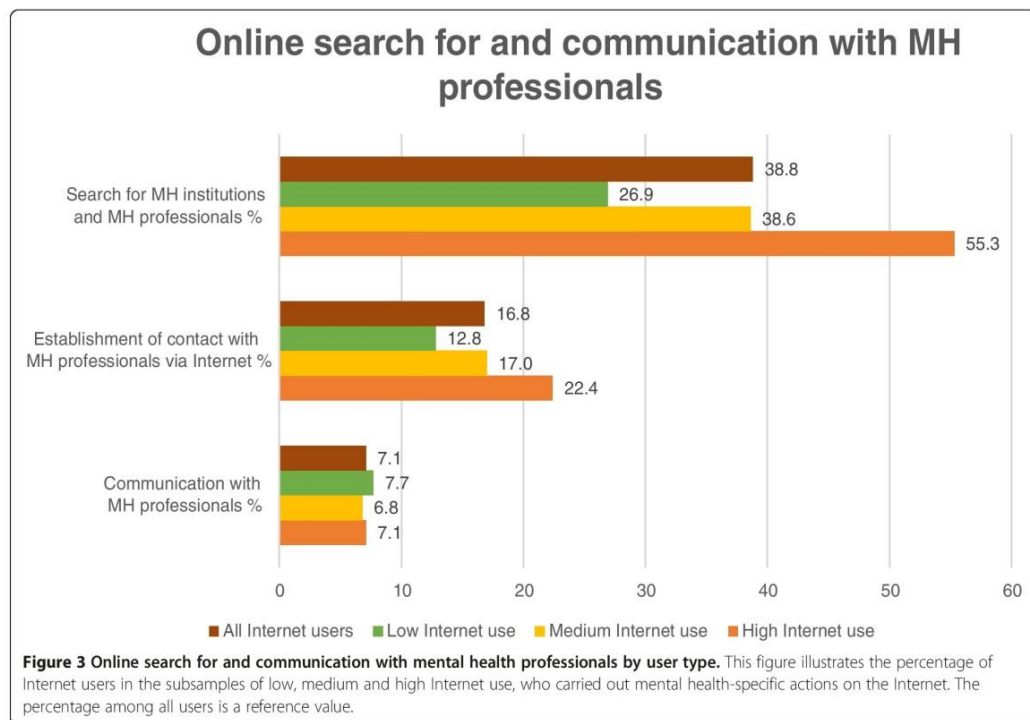
19.8% of the participants (53/268) used the Internet in order to exchange experiences with other patients (“peer-support”). 17.2% (46/268) used online platforms on which advice and information is supplied by mental health professionals (Figure 4).

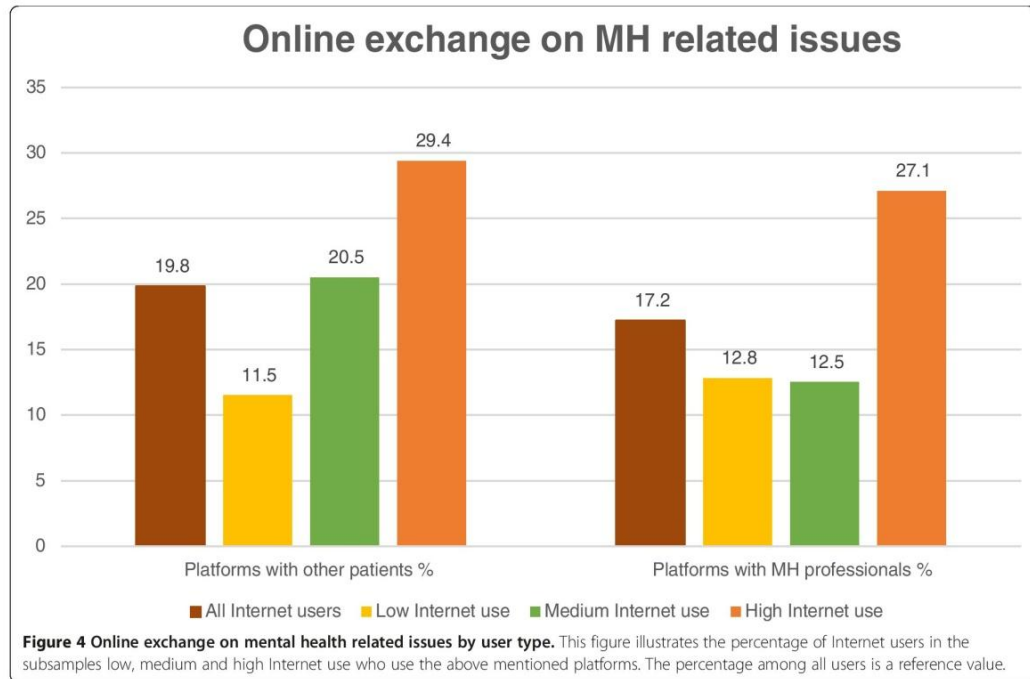
Regarding online exchange platforms with other patients, there was no statistically significant difference by user type ( $\chi^2 = 5.2$ ;  $df = 2$ ;  $p = 0.075$ ), whereas the difference between user groups was statistically significant for the use of interactive platforms with mental health professionals ( $\chi^2 = 6.1$ ;  $df = 2$ ;  $p = 0.048$ ). This is underlined by a significant difference between medium and high Internet use ( $\chi^2 = 5.4$ ;  $df = 1$ ;  $p = 0.020$ ).

**The patients’ view on the Internet’s therapeutic options**

**Coping online**

17.5% of the Internet users (47/268) believed that the Internet had helped them to cope with their mental illness, in contrast, 38.4% (103/268) were convinced that the Internet had not been helpful in contributing to their coping process. For 18.7% (50/268) the Internet may have

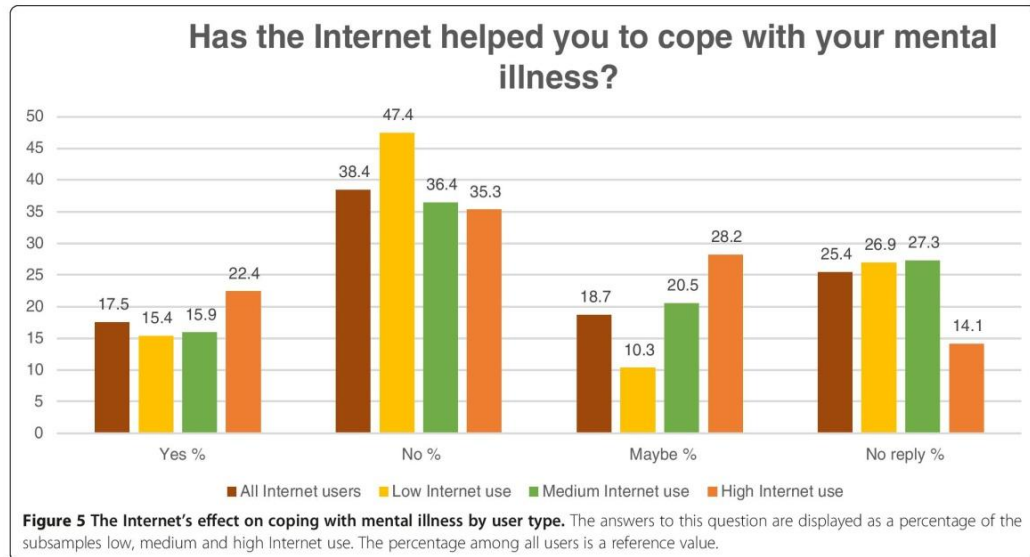




been supportive in helping them to cope (Figure 5). There were no statistically significant group differences ( $\chi^2 = 8.6$ ;  $df = 4$ ;  $p = 0.072$ ).

Arguments and counter-arguments concerning the Internet's role in coping with a mental illness were given

by 149 participants as open-ended answers and are displayed in Table 2. They illustrate the importance of psychoeducation by highlighting the "improved understanding of illness" as a major argument in favor of coping via Internet. However, this cannot replace personal





**Table 2 Answers to open-ended questions about mental health related internet use**

Arguments regarding the internet's role in coping	
	<b>Yes (n = 85)</b>
Improved understanding of illness	58
Exchange of experience and contact to others	19
Insight into illness	5
Availability of Internet services	3
	<b>No (n = 64)</b>
Lack of personal contact	38
Insufficiency and low quality of online information	16
Sufficient conventional therapy	10
Arguments in favour of internet-based self-management (n = 53)	
Psychoeducation	17
Proactivity and self-control	13
Availability and anonymity	9
Exchange with others	7
Ease of integration in daily routine	4
Information for family members	3

interaction, which was the most important reason for our participants to reject the Internet's possibilities for coping with a mental disorder.

**Internet-based self-management**

27.6% of the sample (74/268) liked to take part in web-based programs for the self-management of their mental disorder, while 60.1% (161/268) did not wish to do so. Differences between user groups were not statistically significant for this question ( $\chi^2 = 1.1$ ;  $df = 2$ ;  $p = 0.573$ ).

Reasons why patients would wish for Internet-based self-management were given as a free text entry by 53 participants (Table 2) and consisted of 32.1% psychoeducation (17/53), 24.5% proactivity and self-control (13/53), 17.0% availability and anonymity (9/53), 13.2% exchange with others (7/53), 7.5% ease of integration in daily routine (4/53) and 5.7% information for family members (3/53).

**Differences in Internet usage depending on diagnosis and illness severity**

In addition to the analysis mentioned above, Chi-square testing was carried out for the analysis of differences in reported Internet usage depending on a patient's diagnosis. As affective disorders, schizophrenia and neurotic, stress-related and somatoform disorders (ICD-10 diagnoses F20-F48) covered 79.8% of all participants, the analysis was limited to these disorders.

Differences were neither statistically significant for reported Internet usage in general ( $\chi^2 = 2.7$ ;  $df = 2$ ;  $p = 0.254$ ), nor for the usage of social media, such as social networks ( $\chi^2 = 1.0$ ;  $df = 2$ ;  $p = 0.614$ ), forums ( $\chi^2 = 0.3$ ;  $df = 2$ ;

$p = 0.843$ ), chat ( $\chi^2 = 0.8$ ;  $df = 2$ ;  $p = 0.687$ ) and blogs ( $\chi^2 = 1.3$ ;  $df = 2$ ;  $p = 0.521$ ).

Regarding the mental health related online contents used by patients, a statistically significant difference was found for "Online search for mental health professionals or services" ( $\chi^2 = 11.2$ ;  $df = 2$ ;  $p = 0.04$ ), which was utilized by 13.3% (6/45) of Internet users with schizophrenia, by 46.0% (58/126) of Internet users suffering from depression and by 40.0% (20/50) of Internet users diagnosed with neurotic, stress-related and somatoform disorders. In the further testing for group differences, statistical significance was found in the comparison of the sub-groups depression and schizophrenia ( $\chi^2 = 9.3$ ;  $df = 1$ ;  $p = 0.002$ ), as well as for schizophrenia and neurotic disorders ( $\chi^2 = 9.5$ ;  $df = 1$ ;  $p = 0.002$ ). As for the other mental health related online contents, "Information on mental disorders" ( $\chi^2 = 3.4$ ;  $df = 2$ ;  $p = 0.183$ ), "Information on medication" ( $\chi^2 = 4.6$ ;  $df = 2$ ;  $p = 0.100$ ), "Platforms with other patients" ( $\chi^2 = 0.8$ ;  $df = 2$ ;  $p = 0.670$ ) and "Platforms with mental health professionals" ( $\chi^2 = 2.2$ ;  $df = 2$ ;  $p = 0.336$ ), differences were not statistically significant. Similar results were shown for "Establishment of contact with mental health professionals via Internet" ( $\chi^2 = 1.8$ ;  $df = 2$ ;  $p = 0.406$ ) and "Communication with mental health professionals via Internet" ( $\chi^2 = 0.0$ ;  $df = 2$ ;  $p = 0.988$ ). In terms of "Coping" ( $\chi^2 = 3.3$ ;  $df = 4$ ;  $p = 0.506$ ) and the "Internet-based self-management" ( $\chi^2 = 1.1$ ;  $df = 2$ ;  $p = 0.575$ ), results were also shown to be not statistically significant.

In order to explore the relationship between illness severity (as assessed with GAF) and both general and mental health related Internet use, statistical testing was effectuated, but found no statistically significant cohesion (Table 3). This was also the case for an analysis

**Table 3 Analysis of relationship between illness severity (GAF) and internet use**

	$\chi^2$	df	p
Internet use	3.6	7	0.827
Social networks	9.9	7	0.193
Forums	5.9	7	0.550
Chat	8.4	7	0.300
Blogs	2.0	7	0.959
Search for MH professionals or services	5.9	7	0.547
Information on mental disorders	7.5	7	0.377
Information on medication	6.3	7	0.513
Platforms with other patients	11.3	7	0.127
Platforms with MH professionals	5.7	7	0.578
Contact with MH professionals via Internet	2.6	7	0.919
Communication with MH professionals via Internet	2.6	6	0.854
Coping online	3.5	7	0.836
Internet-based self-management	7.7	7	0.364

using the CGI scores, which is included as Additional file 2.

## Discussion

### Information seeking is the key activity performed in mental health related Internet use

More than half of the participants look for information on mental disorders online and more than a third search for mental health services and professionals, using mainly search engines and online encyclopedias. The importance of Internet-based information seeking raises questions about the objectivity and quality of online information sources, which have been addressed not only by several studies [33-37], but also by participants in this survey (Table 2) – addressing the low quality of online information as an obstacle for coping via Internet.

According to Eysenbach et al. [38] the encounter of false online information depends on the quantity of incorrect information and the evaluation skills of the user. The latter requires specific training and the knowledge and employment of quality criteria [39].

In addition to information seeking, social media including social networks, chats and forums play an important role in both general and mental health related internet use. More than one in six patients use the option of sharing experience on the Internet with other patients or mental health professionals.

### Patients with high Internet use have a much stronger use of social media

Looking at results from previous surveys [4,29], we notice growing proportions of mental health related Internet use in general. In 2006 Powell and Clarke found that 20.5% of people with psychiatric history use the Internet for mental health related issues, while in 2008 Khazaal et al. identified 68.5% of mental health patients who looked for general health information online, without determining the proportion of patients looking for mental health related topics in particular. Our results show that 70.9% of Internet users search specifically for mental health related contents on the Web. This suggests a growth of mental health related Internet use over time, as Internet use in general continues to grow throughout the world [40].

Different types of users show statistically significant differences not only in matters of sociodemographic variables such as age, marital status, educational level and occupation, but also regarding the employment of interactive elements on the Web. We therefore assume that as Internet use continues to grow, the proportion of high Internet use and therefore strong usage of social media will rise as well. Data from the German general public support this hypothesis by showing an increase of social media usage in the last years [30]. For example, social

networks were used by 15% of the German public in 2007, as opposed to 46% in 2013. In addition to this, the negative correlation between the reported frequency of Internet use and the users' age illustrates a trend, which has also been addressed in statistics published by the European Commission [41]: Younger patients use the Internet more frequently – leading us to the conclusion that for future mental health patients interactive functions will continue to gain importance.

### Coping and self-management via Internet are seen with ambivalence by patients

The interpretation of the Internet's role in the coping process is ambiguous. More than a third of the sample state that the Internet has not helped them with coping due to lack of personality and its questionable quality (Table 2). In contrast, almost the same number of patients believe that the Internet may have or has helped them to cope with their mental illness, because it offers options for mental health related communication and psychoeducation, a widely-used intervention [42]. Another advantage mentioned by patients is the high level of availability of online services.

In the current sample, more than half of the patients do not express a desire for online self-management tools. This opinion is shared by all users with no significant group difference and is illustrated as well by indicating conventional treatment options as sufficient for the coping process (Table 2). Somatic patients have been reported to show a similar attitude regarding the usage of online patient support groups [43]. It is thus important to devote attention to the persisting imbalance of supply and demand in Internet-based self-management, especially in the further development of online treatment options.

Reasons for the negative attitude towards online self-management programs were not specified in our survey. They have been explored in prior research, concluding that the negative perception of such programs mainly stems from the lack of immediate patient – therapist interaction [44,45]. In this context, patient education and counselling could be of great importance for the reduction of attitudinal barriers [46].

Nonetheless, more than a quarter of the patients declared interest in web-based self-help offers in the hope for psychoeducation, proactivity and self-control. Similar expectations have been found by Beattie et al. [44].

### Internet use does not vary between different types of psychiatric diagnoses

Neither the kind of a patient's mental disorder, nor her/his degree of illness severity seems to influence the mental health related Internet use. Differences in the quantity and quality of reported Internet use were found to be not statistically significant in our data, with the exception



of online search for mental health professionals. We therefore deduce that web-based therapy may be applicable for a wide variety of mental disorders. However, it is important to keep in mind that most programs are designed for patients with mild to moderate symptoms only and that online treatment is not yet accepted by all potential participants. Transdiagnostic approaches could be possible, particularly for disorders showing high proportions of comorbidity. Previous studies evaluating online therapy programs with transdiagnostic designs [47,48] have shown promising results, especially for the combined treatment of depression and anxiety disorders [10,49].

#### Limitations

This study applies to a subset of psychiatric patients receiving care in a university hospital and therefore does not necessarily represent patients in primary care or without any treatment. It analyzes the Internet use reported by patients and did not measure actual Internet usage. Participants for this study were recruited from a single centre with a participation rate of 66%, resulting in a limited sample size. However, as patients from all treatment settings were included a broad spectrum of mental disorders and disease severity were covered.

Since the Internet follows a rapid evolution a prospective study design would be helpful for the evaluation of changes within patients over time.

#### Conclusions

The importance of the Internet in mental health related contexts is unquestionable for psychiatric patients regardless of their diagnosis. Information seeking is the predominant Internet function in mental health related Internet use, whereas social media is of secondary relevance. Patients with high Internet use show the most frequent application of such. The possibilities for coping and self-management on the Internet are seen with ambivalence by the participants of this survey.

The results reported in this current study illustrate that Internet access is readily available for the majority of mental health patients, but the utilization of social media remains unfamiliar for many of them. This should be taken into account when developing Internet-based therapy or self-management programs for patients suffering from psychiatric disorders.

#### Additional files

**Additional file 1:** Sample questions.

**Additional file 2:** Analysis of relationship between illness severity (CGI) and Internet use.

#### Competing interests

The authors declare that they have no competing interests.

#### Authors' contributions

SK and FT collected the data. SK performed the statistical analysis and drafted the manuscript. CRK designed and coordinated the study, provided supervision with the data analysis and interpretation and revised the manuscript. All authors read and approved the final manuscript.

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## Sprachen

Englisch:	fließend in Wort und Schrift
Französisch:	fließend in Wort und Schrift (DALF, Niveau C1)
Spanisch:	gute Kenntnisse

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