

# Prevalence of mental disorders and uptake of mental health services in Tyrol

An analysis of epidemiological literature and administrative data from the Tyrolean health insurance

Final report



**VILLAGE**



**Ludwig Boltzmann Institut**  
Health Technology Assessment

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Ludwig Boltzmann Institut  
Health Technology Assessment

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**List of abbreviations**

|              |  |
|--------------|--|
| ADHD.....    | Attention deficit hyperactivity disorder   |
| ATC.....     | Anatomical Therapeutic Chemical Classification System                            |
| ATHIS.....   | Austrian health interview survey   |
| CAMH.....    | child and adolescent mental health   |
| COPMI.....   | children of parents with a mental illness  |
| EHIS.....    | European health interview survey   |
| EW.....      | Inhabitants  |
| f.....       | female   |
| ICD-10 ..... | International Statistical Classification of Diseases and Related Health Problems |
| m.....       | male   |
| n.a .....    | not applicable   |
| TGKK.....    | Tyrolean health insurance  |

# Summary

## Background and aim

Different approaches can be followed for early identifying and supporting children with mentally ill parents. One is to get into contact with the children via the parents in the adult mental health care settings. To explore this strategy further, information on the prevalence of mental disorders and the users of mental health benefits is required. The report aims to provide evidence on the epidemiology of mental disorders as well as on the characteristics on the uptakes of mental health benefits that are provided within the health care sector in Tyrol.

**epidemiology and uptake of benefits analysed for planning purpose**

## Methods

Data on the prevalence of mental disorders in Tyrol are based on a review of published literature. For analysing the characteristics of mental health benefit uptake, administrative data from the Tyrolean health insurance (TGKK), which covers 80% of the Tyrolean population, are analysed using descriptive statistical analysis methods.

**literature review and analysis of data from TGKK**

The administrative data cover benefits that are (co-)funded by the TGKK including: a) mental health services (hospital inpatient and day care, outpatient psychiatrist services, psychotherapy, inpatient rehabilitation, psychological services; b) medication and c) sick-leave because of a mental health problem

**TGKK-funded services, medication and sick-leaves are analysed**

## Results

Robust epidemiological data for Tyrol are lacking. Based on mental health service uptake in 2011 it was estimated that 3% of the Austrian population suffers from severe mental disorder which would be roughly 22,500 people in Tyrol. The most common type of mental disorder in Austria overall is depression (10-year prevalence: 15% of the population). The point-prevalence of mental disorders in adolescents is 24%. Some Tyrolean-specific data on addictive disorders exist showing that 4% of Tyroleans seem to have problematic alcohol consumption and up to 0.4% (lower than the Austrian average) had a risky consumption of opiates. The suicide rate in Tyrol was 13.7 per 100,000 in 2017, which equals the Austrian average.

**robust epidemiological data lacking**

**3% may be severely ill**

**¼ of adolescents has mental health problem, Tyrolean suicide rate on Austrian average**

Overall, almost 86,000 TGKK-insured patients received at least one type of benefit in 2017. This represents 14.5% of all insured. Five % of patients were younger than 19 years, almost 60% were between 19 and 64 years old and the remainder was older than 64 years. Two third of recipients were females.

**15% of insured received benefit**

**2/3 females**

85% of patients received medication, 63% without any further benefits. A third used mental health services and 10% were on sick leave because of a mental health problem. Services most often used were those provided by outpatient psychiatrist (roughly one fifths of patients). Regarding medication, almost half of the prescriptions were issued for anti-depressants, followed by anti-psychotic drugs (17%) and sedatives (15%). The percentage of insured who were prescribed medication rises with age and is higher in female than male insured except for persons younger than 19 years.

**85% used medication 50% anti-depressants prescriptions**

**1/3 used services**

**19-64 years old:  
drugs are leading benefit,  
¼ psychiatrist,  
13% psychotherapy,  
5% in psychiatric ward**

In patients who are potential parents of dependent children (age group 19-64 years old), the vast majority (80%) were prescribed medication and half of the patients received medication only. A quarter had contacted an outpatient psychiatrist and 13% received psychotherapy. Five percent were treated in psychiatric inpatient or day care. The most frequently occurring ICD-10 diagnoses were F1, F4 and F3. The median length of hospital stay was 15 days.

**juveniles:  
psychotherapy,  
psychological services +  
drugs most relevant**

Besides the 19-64 year olds, we analysed 0-18 year old benefit user because mentally ill children often have mentally ill parents. In young patients, slightly more males than females received benefits. Benefits, juvenile patients most often received, were psychological assessment (33% of patients) medication (30%) and psychotherapy (27%). 10% were treated in inpatient or day-care.

**proportion of insured  
benefit recipients stable  
but changes in type of  
benefits used**

The overall number of benefit recipients has risen between 2012 and 2017, however the percentage of insured who received benefits remained almost stable. More persons had contact with outpatient psychiatrists, received psychotherapy or were on sick-leave in 2017 compared to 2012, while those who received inpatient or day-care decreased. The number of patients who were prescribed medication rose between 2012 and 2014 and has since then slightly decreased.

## Discussion

**medication most  
relevant benefit used**

While we know little on the prevalence of mental disorders in Tyrol, benefit uptake data show that 15% of insured received some TGKK-funded mental health benefit. In terms of frequency, medication plays the most important role, while services are utilised less often. Benefit use shows familiar gender patterns with female insured using most benefits more frequently than males except in children and adolescents.

**familiar gender patterns  
in using benefits**

**number of patients to  
be reached in each  
setting differs**

Benefit use patterns show that most parents may be reached via the general practitioner (almost 90% of drugs are prescribed by general practitioners) and only 5% on a psychiatric hospital ward. The latter are, however, the most severely ill who may have higher needs for support for themselves and their children.

**juvenile benefit use  
patterns differ from  
other studies**

In comparison to other studies, similar patterns in adult users were observed, while some differences were identified in juvenile users (e.g. lower rates of hospitalised juveniles and higher rates of medication users than Austrian averages, higher rates of psychotherapy compared to earlier studies).

**data only show part  
of the picture**

Limitations of the study are that the data cover only a part of all mental health services available in Tyrol (e.g. information on hospital outpatient care or psycho-social services is lacking) and only 80% of the population. The analysis does not allow conclusions on the prevalence of mental disorders because many people with mental health problems do not seek professional support in mental health care. Administrative data have some limitations regarding the validity of the information on diagnoses.

## Conclusion

**pros and cons for each  
setting where parents  
may be reached**

Around 15% of the TGKK-insured persons receive mental health benefits from the benefit spectrum described above. The proportion of mentally ill parents that one may be able to reach via adult mental health care differs considerably according to the setting chosen. Additionally, severity and type of illness differ by setting. Each setting involves different organisational challenges for implementing and evaluating support. Administrative data are a useful piece of information for assisting planning but do not replace robust epidemiological data.

**data support informed  
decision**



# Zusammenfassung

## Hintergrund und Ziel

Die frühzeitige Wahrnehmung und Unterstützung von Kindern psychisch erkrankter Eltern kann durch unterschiedliche Ansätze erfolgen. Eine mögliche Herangehensweise ist es, über die erwachsenenpsychiatrische Versorgung in Kontakt mit den Kindern und deren Familien zu kommen. Um diesen Ansatz genauer zu prüfen, sind Informationen über die Prävalenz von psychischen Erkrankungen und die Inanspruchnahme von Leistungen erforderlich. Der Bericht zielt darauf ab, die Epidemiologie psychischer Erkrankungen sowie Merkmale der PatientInnen, die Leistungen in der psychiatrischen Versorgung in Tirol, die in den Bereich des Gesundheitswesens fallen, in Anspruch nehmen, darzustellen.

## Methode

Die Daten zur Prävalenz von psychischen Erkrankungen in Tirol basieren auf einer Literaturanalyse. Die Untersuchung der Inanspruchnahme von Leistungen erfolgt mittels deskriptiver statistischer Analysen der Verwaltungsdaten der Tiroler Gebietskrankenkasse (TGKK), bei der 80 % der Tiroler Bevölkerung krankenversichert sind.

Die Verwaltungsdaten umfassen folgende, von der TGKK (mit-) finanzierte psychiatrische Leistungen: a) Dienstleistungen (stationäre und tagesklinische Behandlung, Leistungen niedergelassener PsychiaterInnen, psychotherapeutische Leistungen, stationäre Rehabilitation, psychologische Leistungen) b) Medikamente und c) Krankenstände aufgrund einer psychischen Erkrankung.

## Ergebnisse

Für Tirol liegen kaum zuverlässige publizierte epidemiologische Daten vor. Basierend auf der Nutzung psychiatrischer Leistungen wurde 2011 geschätzt, dass 3 % der österreichischen Bevölkerung an einer schweren psychischen Erkrankung leiden. Dies würde in etwa 22.500 Personen in Tirol betreffen. Die häufigste Form der psychischen Erkrankung in Österreich ist die Depression (10-Jahresprävalenz: 15 % der Bevölkerung). Die Punktprävalenz von psychischen Erkrankungen bei Jugendlichen in Österreich beträgt 24 %. Zu den Suchterkrankungen liegen einige Tiroler Daten vor. Demnach weisen 4 % der TirolerInnen einen problematischen Alkoholkonsum auf und bis zu 0,4 % (weniger als der österreichische Durchschnitt) haben einen riskanten Konsum von Opiaten. Die Selbstmordrate in Tirol lag 2017 bei 13,7 pro 100.000 EinwohnerInnen und entsprach dem Österreichschnitt.

Insgesamt erhielten 2017 ca. 86.000 TGKK-versicherte PatientInnen mindestens eine Leistung aus dem oben beschriebenen Leistungsspektrum. Dies entspricht 14,5 % aller Versicherten. 5 % der PatientInnen waren jünger als 19 Jahre, etwa 60 % waren zwischen 19 und 64 Jahre alt, gut ein Drittel war älter als 64 Jahre. Zwei Drittel der Personen waren Frauen.

85 % der PatientInnen erhielten Medikamente, 63 % ohne zusätzliche Leistungen. Ein Drittel der PatientInnen nahm eine der genannten Dienstleistungen in Anspruch und 10 % waren aufgrund einer psychischen Erkrankung im Krankenstand. Von den Dienstleistungen wurde am häufigsten Leistungen eines niedergelassenen Psychiaters in Anspruch genommen (etwa ein

**Epidemiologie und Inanspruchnahme für Planungszwecke analysieren**

**Literaturauswertung und Analyse von TGKK-Daten**

**Dienstleistungen, Medikamente und Krankenstände werden analysiert**

**keine zuverlässigen epidemiologischen Daten**

**3 % vielleicht schwer psychisch erkrankt**

**¼ der Jugendlichen psychisch erkrankt**

**Suizide in Tirol im Österreichschnitt**

**15 % der Versicherten erhielten psychiatrische Leistung; 2/3 Frauen**

**85 % bekamen Medikamente (vor allem Antidepressiva), 1/3 nahm Dienstleistung in Anspruch**

Fünftel der PatientInnen). Bei den Medikamenten wurde fast die Hälfte der Rezepte für Antidepressiva ausgestellt, gefolgt von Antipsychotika (17 %) und Beruhigungsmitteln (15 %). Der Prozentsatz der Versicherten, denen ein Arzneimittel verschrieben wurde, stieg mit zunehmendem Alter und ist bei Frauen höher als bei Männern, mit Ausnahme von Personen unter 19 Jahren.

**19-64-jährige  
potenzielle Eltern:  
Großteil bekommt  
Medikamente,  
¼ war bei PsychiaterIn,  
13 % Psychotherapie,  
5 % stationär**

PatientInnen, die potenziell Eltern eines minderjährigen Kindes sind (Altersgruppe 19-64 Jahre), erhielten fast alle Medikamente (80 %) und die Hälfte der PatientInnen erhielt ausschließlich Medikamente. Ein Viertel suchte eine/n niedergelassenen PsychiaterIn auf und 13 % erhielten eine Psychotherapie. Fünf Prozent wurden stationär auf einer psychiatrischen Abteilung oder in der psychiatrischen Tagesklinik behandelt. 50 % der stationär behandelten PatientInnen wurden nach 15 Tagen entlassen. Die am häufigsten dokumentierten ICD-10-Diagnosen bei Entlassung waren F1, F4 und F3.

**jüngste Altersgruppe:  
am häufigsten  
psychologische  
Leistung, Medikamente  
und Psychotherapie**

Neben den 19-64-jährigen PatientInnen wurden auch die 0-18-jährigen LeistungsbezieherInnen genauer untersucht, da Kinder und Jugendliche, die psychiatrische Leistungen in Anspruch nehmen häufig Eltern mit psychischen Problemen haben. Bei den unter 19-jährigen PatientInnen gab es etwas mehr männliche als weibliche LeistungsbezieherInnen. Die am häufigsten erhaltenen Leistungen waren psychologische Diagnostik (33 % der PatientInnen), medikamentöse Behandlung (30 %) und die Psychotherapie (27 %). 10 % wurden stationär oder in einer Tagesklinik behandelt.

**Anteil versicherter  
Leistungsempfänger  
seit 2012 stabil aber  
Unterschiede in Art  
der Leistung**

Die Gesamtzahl der LeistungsempfängerInnen ist zwischen 2012 und 2017 gestiegen, jedoch blieb der Prozentsatz der Versicherten, die Leistungen bezogen haben, nahezu stabil. Im Vergleich zu 2012 hatten 2017 mehr Versicherte Kontakt mit niedergelassenen PsychiaterInnen, erhielten eine Psychotherapie oder waren in Krankenstand, während weniger Personen stationär oder tagesklinisch behandelt wurden. Die Zahl der Versicherten, denen Medikamente verschrieben wurden, ist zwischen 2012 und 2017 gestiegen und hat sich seitdem leicht verringert.

## Diskussion

**Medikamente sind  
häufigste Leistung  
  
bekannte  
Geschlechtermuster  
bei Leistungsnutzung**

Während wir wenig über die Prävalenz von psychischen Erkrankungen in Tirol wissen, zeigen die Inanspruchnahmedaten, dass 15 % der Versicherten eine von der TGKK finanzierte psychiatrische Leistung erhielten. Bezogen auf die Häufigkeit in Anspruch genommener Leistungen, spielen Medikamente die wichtigste Rolle, während Dienstleistungen seltener in Anspruch genommen werden. Die Daten zeigen bekannte Geschlechtermuster, nach denen weibliche Versicherte die meisten Leistungen häufiger in Anspruch nehmen als männliche, mit Ausnahme von Kindern und Jugendlichen.

**Anzahl der erreichbaren  
PatientInnen ist  
abhängig von der  
Einrichtung/Leistung**

Die Muster der Inanspruchnahme von Leistungen zeigen zudem, dass die meisten Eltern über die Allgemeinmedizin (diese verschreiben fast 90 % aller Psychopharmaka) und nur 5 % über eine psychiatrische Station erreichbar wären. Letztere sind jedoch die am schwerwiegendsten Erkrankten, die höchstwahrscheinlich einen höheren Bedarf an Unterstützung für sich und ihre Kinder haben.

**Inanspruchnahme von  
Leistungen 0-18-Jährige  
unterscheidet sich zu  
anderen Studien**

Im Vergleich zu früheren Studien zu Inanspruchnahme psychiatrischer Leistungen in Österreich wurden ähnliche Muster bei Erwachsenen, jedoch Unterschiede bei Leistungen für Kinder und Jugendliche festgestellt. (z. B. niedrigere Krankenhausraten und höhere Raten von Medikamentenverschreibungen als im österreichischen Durchschnitt, höhere Psychotherapieraten im Vergleich zu 2011).

Einschränkungen der Studie bestehen darin, dass die Daten nur einen Teil aller in Tirol verfügbaren psychiatrischen Leistungen (z. B. fehlen psychosozialen Dienste oder Leistungen in Krankenhausambulanzen) und nur 80 % der Bevölkerung abdecken. Die Analyse von Leistungsanspruchnahme lässt keine Rückschlüsse auf die Häufigkeit von psychischen Erkrankungen zu, da viele Menschen mit psychischen Problemen keine professionelle Unterstützung in Anspruch nehmen. Verwaltungsdaten haben außerdem einige Limitationen in Bezug auf die Validität der Diagnosen.

### **Fazit**

Rund 15 % der TGKK-Versicherten nehmen psychiatrische Leistungen im Gesundheitssystem aus dem oben definierten Spektrum in Anspruch. Die Anzahl psychisch erkrankter Erwachsener, die potenziell Eltern minderjähriger Kinder sind und Angebote in der Erwachsenenpsychiatrie in Anspruch nimmt, ist je nach Art der Leistung sehr unterschiedlich. Ebenso unterscheiden sich die Form und Schwere der Erkrankung der PatientInnen je nach Setting. Jedes Setting der Erwachsenenpsychiatrie bringt unterschiedliche organisatorische Herausforderungen für die etwaige Implementierung und Evaluierung einer Unterstützung der Familien bzw. der Kinder mit sich. Verwaltungsdaten unterstützen die Planung mit nützlicher Information, ersetzen aber nicht zuverlässige epidemiologische Daten.

**Daten zeigen nur einen Teil des gesamten Bildes**

**Settings, in denen Eltern erreicht werden können, haben unterschiedliche Vor- und Nachteile**

**Daten unterstützen informierte Entscheidung**



# 1 Background

It is estimated that one in four children currently lives with a parent with mental illness worldwide<sup>1</sup> [1-5]. These children are also likely to experience a low quality of life due to their family circumstances. While some cope very well with this situation, others experience negative long-term emotional difficulties with substantial lifelong impacts for individuals, governments and the wider society. However, significant barriers exist to the early identification of children, and they often remain invisible particularly within the health, (adult) mental health and social care systems. As a result, their needs often are unmet and they may be isolated from accessing support. This is further exacerbated by a lack of coordinated and collaborative care that could enhance provision of formal and informal support for children and their families.

**1 in 4 children live with a parent with mental illness**

**little support**

The research project ‘How to raise the village to raise the child? Supporting children who have parents with a mental illness in Austria’ addresses this problem area and seeks to improve child wellbeing outcomes for children of parents with a mental illness. The project addresses early identification and the enhancement of support networks around the child and their family in Austria. This will be achieved through the co-development, implementation and evaluation of two practice approaches concerned with the identification of children, and with creating child-focused support networks that are based on the ‘child’s voice’ and on principles of collaborative care. The project will be located in the Austrian region of Tyrol and runs over a period of four years. It will be implemented by an international research team.

**‘village project’ aims to early identify and support these children**

Different approaches can be put into place to improve the early identifying of children. One strategy is to identify these children via parental access to the adult mental health care system. To explore this strategy further, information on: the prevalence of mental illness, the characteristics of the mental health care system in Tyrol, and the users of mental health services is required. While system characteristics have been addressed in a separate report [6], the epidemiology of mental illness and uptake of mental health benefits will be the focus of this report.

**adult mental health care as one potential setting for identification is explored**

Simultaneously, this report will explore different health settings within adult mental health care to better understand possible approaches to improve identification of children. This will have implications for the implementation and evaluation of the co-developed practice approach. Additionally, epidemiology and service use data will support informed decision making to guide the project and practice approaches.

**epidemiology and use of mental health services as decision support**

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<sup>1</sup> This report focuses on children of parents with a mental illness who will be referred to as ‘children’ or ‘these children’ for the remaining of the report.



## 2 Aim and research questions

This report aims to provide information on the prevalence of mental illness and to characterise the users of the mental health care services in Tyrol. As has been outlined elsewhere [6], the mental health care system in Tyrol (and in Austria generally) is rather fragmented as the health-, social care- the educational and partly even the criminal justice sector all play important roles in terms of funding and service provision. Currently, there are no data available that cover the use of the entire mental health care system in all the different sectors in Tyrol. Regarding receipt of benefits, this report therefore focusses on that part of the mental health care system which legally belongs to the health care sector. While mental health care services within the health care sector are also funded and governed by different payers (health insurance, regional government, federal government), there is one payer – the Tyrolean health insurance (TGKK) – that is involved in most types of mental health care services within the health care sector and covers 80% of the Tyrolean population<sup>2</sup>. The precise aim of the report in terms of benefit uptake is therefore to describe the uptake of mental health care benefits that are (co)-funded by the Tyrolean health insurance.

**aims: prevalence of mental illness and benefit use characteristics in population insured with Tyrolean health insurance (TGKK)**

The questions that will be addressed are

- ✧ What is the prevalence of mental disorders in children, adolescents and adults and the prevalence of children with a parent with mental disorders in Tyrol?
- ✧ What is the uptake of mental health care benefits that are (co)funded by the Tyrolean health insurance?
- ✧ What are the characteristics of benefit users in terms of age, gender, district of living, and type of mental disorder?
- ✧ What are the developments of benefit uptake over the last 6 years (2012-2017)?
- ✧ What suggestions can be drawn from the use patterns to get into contact with parents with a mental disorder and their children via the adult mental health services?

**questions**

---

<sup>2</sup> people covered include actively employed, unemployed, people on means-tested minimum income schemes and retired people as well as their relatives if they are not covered by another health insurance.





## 3 Method

### 3.1 Definition of terms

Firstly, the term ‘mental disorders’ in this report refers to all mental, behavioural and neurodevelopmental disorders listed in the ICD-10 classification<sup>3</sup> in the category ‘F’ which are:

- ✿ F00-F09: Mental disorders due to known physiological conditions;
- ✿ F10-F19: Mental and behavioural disorders due to psychoactive substance use;
- ✿ F20-F29: Schizophrenia, schizotypal, delusional, and other non-mood psychotic disorders;
- ✿ F30-F39: Mood [affective] disorders;
- ✿ F40-F48: Anxiety, dissociative, stress-related, somatoform and other nonpsychotic mental disorders;
- ✿ F50-F59: Behavioural syndromes associated with physiological disturbances and physical factors;
- ✿ F60-F69: Disorders of adult personality and behaviour;
- ✿ F70-F79: Intellectual disabilities;
- ✿ F80-F89: Pervasive and specific developmental disorders;
- ✿ F90-F98: Behavioural and emotional disorders with onset usually occurring in childhood and adolescence;
- ✿ F99: Unspecified mental disorder

Secondly, regarding use of benefits, the data from the TGKK cover a broad range of benefits. For clarity, we define the different types of benefits in the following way:

- ✿ *‘mental health service’*: this term is used as a summary term to describe mental health services that can be used by a person who is covered by the TGKK. Services included are: (1) hospital services (inpatient and day-care), (2) services provided by an outpatient psychiatrist, (3) psychotherapy services, (4) services provided by psychologists, and (5) rehabilitation services. The term ‘mental health service’ does *not* include products such as medication or cash benefits.
- ✿ *‘hospital services’*: this term includes hospital inpatient and day-care services (excluding hospital outpatient services) that have been documented with an ICD-10-F diagnosis (Mental, Behavioural and Neurodevelopmental disorders) at discharge regardless of hospital ward (psychiatric and non-psychiatric).
- ✿ *‘outpatient psychiatrist services’*: these include services provided by an outpatient psychiatrist in a ‘single-doctor practice’. Both, services that are fully covered by the TGKK (provided by psychiatrists who have a contract with the TGKK) and those for which the TGKK pays a partial refund (‘private psychiatrists’) are included. Service uptakes from both, adult and child/adolescent psychiatrists are included.

**mental disorders  
according to  
ICD-10-F classification**

**variety of  
mental health benefits:**

**mental health  
care services  
= summary term  
for services excluding  
drugs and cash benefits**

**‘hospital services’  
include inpatient and  
day care treatment**

**‘outpatient  
psychiatric services’  
= services provided  
by psychiatrists**

---

<sup>3</sup> international classification of diseases

|  |   |
|--|---|
| <p><b>'psychotherapy services'</b><br/>= TGKK (co-) funded<br/>therapy sessions</p>  | <p>✿ <i>'psychotherapy services'</i>: this includes psychotherapy provided by a registered psychotherapist (either by private therapists for whose sessions patients claimed a partial refund, or by therapists whose sessions were directly funded by the TGKK and provided in the form of in-kind benefits). All types of therapies that are accepted by the TGKK are included, regardless of type of psychotherapy-school<sup>4</sup>.</p>   |
| <p><b>'psychologist services'</b><br/>= publicly paid<br/>psychological benefits</p> | <p>✿ <i>'psychologist services'</i>: this term includes services provided by registered clinical psychologists who either have a contract with the TGKK, or who work in an organisation that has a contract with the TGKK for providing a limited number of therapeutic services including psychological services.</p>  |
| <p><b>rehabilitation</b></p>   | <p>✿ <i>'rehabilitation services'</i>: these include inpatient psychiatric-psychosomatic rehabilitation services that are funded by the social insurance<sup>5</sup>.</p>   |
| <p><b>'medication'</b><br/>= drugs within<br/>ATC-codes N05 and N06</p>              | <p>✿ <i>'medication'</i>: this term includes all types of drugs for treating mental disorders (within the ATC-codes<sup>6</sup> N05 and N06) that have been funded by the TGKK. In detail, the following classes of drugs are included: (1) N05A: antipsychotic drugs, (2) N05B: anxiolytics, (3) N05C: hypnotics and sedatives, (4) N06A: antidepressants, (5) N06B: psychostimulants, agents used for ADHD and nootropics, (6): N06DA: anticholinesterase drugs, (7): N06DX: other anti-dementia drugs. Drugs which have been entirely privately funded (most importantly, those with prices below the prescription fee) or drugs provided/dispensed by the hospital directly (from the hospital pharmacy) to the patient are not included.</p> |
| <p><b>'sick leave' =<br/>absenteeism based on<br/>ICD-10-F diagnosis</b></p>         | <p>✿ <i>'sick leave'</i>: includes absenteeism from work with legally regulated financial support based on a documented ICD-10-F-diagnosis (see 'mental disorders').</p>  |
| <p><b>'benefits':<br/>summary term</b></p>   | <p>✿ <i>'benefits'</i>: summary term used to describe all above-mentioned types of cash or in-kind benefits.</p>  |

Finally, the term 'ICD-10-F diagnosis' refers to mental, behavioural and neurodevelopmental disorders listed in the ICD-10 classification in the group 'F' (see 'mental disorders')

## 3.2 Description of the data

### epidemiology based on journal publications

For describing the epidemiological characteristics of mental ill-health in Tyrol, secondary literature (journal publications) on epidemiological data from Austria are used as a source. The description of the number of children of parents with a mental illness is also based on published sources (e.g. data on young carers) as well as on demographic data.

<sup>4</sup> Access to therapies (co-)funded by the TGKK is limited and regulated by external bodies (e.g. by the "Gesellschaft für Psychotherapeutische Versorgung")

<sup>5</sup> Rehabilitation is funded by different insurance bodies including the TGKK and can be used free of charge by insured patients after referral

<sup>6</sup> ATC = anatomical therapeutic chemical classification system

The description of benefit uptake is based on pseudonymised administrative data provided by the TGKK based on Austrian data protection requirements. For each year between 2012 and 2017, on average, 576,531 persons were covered by the TGKK. However, not all persons covered by the TGKK are living in Tyrol. This is due to characteristics of the health insurance system, whereby a person's insurance fund depends on the location and type of employer (see [6] for details of the health insurance system in Austria). Thus, people who are employed by a Tyrolean company are insured with the TGKK even if they live outside Tyrol. Vice versa, some Tyrolean inhabitants will be insured by other existing health insurance funds. However, the TGKK covers the majority of insured persons in Tyrol, representing nearly 80% of the population [7].

The data include the following types of benefits:

1. mental health services:
  - a. hospital inpatient and day care admissions if an ICD-10-F diagnosis (mental, behavioural and neurodevelopmental disorders) has been registered at discharge;
  - b. rehabilitation services if an 'ICD-10-F-diagnosis' has been registered;
  - c. contacts with outpatient medical specialists in the mental health field (psychiatrists, child and adolescent psychiatrists);
  - d. psychotherapy services;
  - e. psychological services (e.g. assessment);
2. prescribed medication (ATC N05 and N06 codes);
3. sick leaves for which an ICD-10-F diagnosis has been documented.

The data covers a time period from 2012 to 2017 and include demographic data on age (presented in pre-defined age-groups) and gender as well as on district of living.

Whenever mental health care benefits are described in the following sections, this refers to the above listed benefits that are (co-) funded by the TGKK.

### 3.3 Data analysis

After an extensive data cleaning and validity testing process, a descriptive statistical analysis was performed. Depending on the type of data counts, percentages, medians, and means were calculated. Regarding age, the pre-defined age groups were further aggregated into three age groups (0-18 years; 19-64 years; 65+ years) representing a) children and adolescents, b) people in working age that may be potential parents of a dependent child and c) retired people. Proportions related to the entire population of insured persons were calculated by frequency weighting of the given population data and corrected for the number of affected cases. Significance tests and coefficients of correlation were calculated, but in view of the exploratory nature of the study, lacking pre-specified hypotheses, did not seem useful in the interpretation of the results. All analyses were performed with the statistical environment R version 3.4.3 [8].

**benefit uptake based on Tyrolean health insurance data (TGKK)**

**~580,000 persons covered by TGKK**

**benefits covered by data**

**time period: 2012-2017**

**descriptive statistical analysis of data**



## 4 Results

### 4.1 Prevalence of mental disorders

#### 4.1.1 Adults

##### Overview

Generally, robust epidemiological data on the prevalence and incidence of mental disorders in adults based on representative population-based surveys are neither available for Austria in general nor for the region of Tyrol in particular. However, the existing literature on prevalence and incidence is summarised.

Based on the type and intensity of service use and/or drugs prescribed, it was estimated that between 200,000 and 350,000 persons (3% of the Austrian population) were suffering from severe mental health problems in 2009 [9]. This would equal roughly 22,500 persons in Tyrol.

A recently published systematic review on the prevalence of mental disorder in Austria [10] showed that between 9% (point prevalence) and 15% (10-year prevalence) of the adult population may be affected by depression, 6.5% suffer from anxiety disorders, and 2.5% are affected by seasonal depressive disorders. The review also presented studies showing that over 30% of patients in non-psychiatric hospital wards were suffering from mental health conditions (most frequent: dementia, depression, substance abuse) and that more than 70% of institutionalised persons (in nursing homes and prisons) were diagnosed with a mental disorder.

According to the Austrian health interview survey (ATHIS), 5.7% of the Austrian population (aged 15+) was diagnosed with depression in the 12 months prior to the interview (415,000 persons) in 2014. This survey is based on the European health interview survey (EHIS) and collects data on self-reported mental and physical health status. A further 1.9% (139,000) were affected by depression based on subjective assessment. Females were twice as often diagnosed than males in all age groups, however there was no gender difference in self-reported depression. Prevalence of self-reported depression increases with age [11]. The ATHIS-survey data do not provide information on other types of mental disorders, except addictive disorders which are described separately.

##### Addiction

According to the ATHIS survey, 4% of the Austrian population aged 15+ showed problematic alcohol consumption<sup>7</sup> patterns in 2014 (5% males and 3% females). The problematic consumption patterns are most prevalent in 15-29 and 60+ years old persons [11]. It was estimated that at least 10% of Austrian children and adolescents have a parent with alcohol abuse [12].

Regarding illegal drugs, it was estimated that in 2014/15 between 29,000 and 32,600 persons had a risky consumption of opiates (503 to 564 persons per 100,000 inhabitants) in Austria. Around half of them live in Vienna and three quarters of them are male.

**robust epidemiological data missing**

**3% of Austrians may have severe mental health problems**

**systematic review: 9% of adults may have depression**

**30% of patients in non-psychiatric wards have mental health problems**

**health interview: 5.7% of population diagnosed with depression (1-year prevalence)**

**4% show problematic alcohol consumption, 10% of children may have alcohol abuse parent**

**~500/100,000 have risky consume of opiates**

<sup>7</sup> defined as weekly consumption of 20 g pure alcohol on average per day in women and 40 g per day in men (weekly consumption divided by 7)

**fewer young illegal drug consumers**

Between 12,000 and 17,000 persons consume illegal drugs intravenously. 41% are between 25 and 34 years old, while 49% are older than 34 years. The percentage of young people who consume illegal drugs has decreased [13].

**4% of Tyroleans have problematic alcohol consumption**

For Tyrol, it was shown that around 23,700 persons in Tyrol had a problematic alcohol consumption in 2009 (4%), however, this information is based on self-declaration, and thus likely to represent an underestimation. The prevalence was much higher in the north-eastern Tyrol region (Kitzbühel, Kufstein) (9%) than in other Tyrolean regions (2-3%), however, differences between districts should be interpreted with caution due to the small sample size in the survey [14].

**200-540/100,000 with risky opiate consumption**

Furthermore, it has been estimated that in the period 2007 to 2009 between 960 and 2,590 people (15 to 64 years) in Tyrol had a risky consumption of opiates (200 to 540 per 100,000 inhabitants). This is lower than the Austrian average (which is dominated by Vienna) and slightly lower than the average of Austrian regions excluding Vienna. Around a quarter of the people with risky consumption were female [14]. 155 persons with drug addictions (32 per 100,000 inhabitants) were in inpatient care and 1,530 (318 per 100,000) in long-term outpatient care. The primary drugs that people in inpatient care consumed were opioids. In outpatient care, cannabis was the primary drug for 47%, while opioids were the primary drug for 29%. Between 40% and 60% of people with risky opiate consumption were in substitution therapy, three quarters of them were supported in the districts Innsbruck-Stadt and Innsbruck-Land [14].

**rate lower than in other Austrian regions**

### Suicide

**decreasing suicides in Austria**

Around 1,300 people per year commit suicide in Austria, from which around two third are males. The suicide rate in 2014 was 25.5 and 7.1 per 100,000 inhabitants in males and females respectively. Overall, the suicide rate has decreased by 50% since 1980, but stayed quite stable in the recent past in females, while it further decreased in males. Suicide rates increase with age (although in adolescents, suicide is one of the most frequent causes of mortality) (Figure 4.1-1). There are no reliable data on suicide attempts available. Based on international data, the number of suicide attempts for Austria may be around 13,000 to 39,000 [11].

**increase with age**

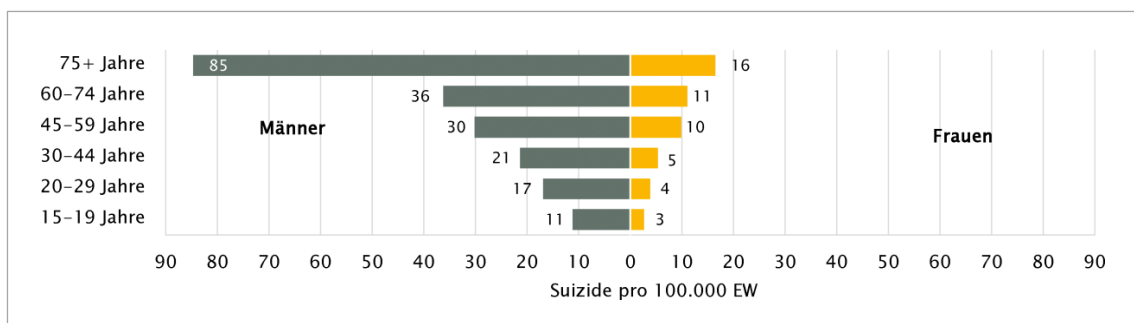


Figure 4.1-1: Suicide rates in Austria by age and gender, 2005-2014 (Source: [11])

EW: inhabitants (Einwohner)

In Tyrol the number of persons who committed suicide has on the whole decreased over the previous ten years (2007: 124; 2017: 103), however the figures fluctuate between the years; overall more males than females committed suicide (2017: 75 males and 28 females). The rate per 100,000 inhabitants was 13.7 in 2017 which equalled the Austrian average [15].

**Tyrol 13.7 suicides per 100,000**

### Sick leave

Sick leave due to mental health problems has increased considerably over the last years. Between 2005 and 2014 an increase by 84% was reported (from 51,000 to 94,000 cases). The increase in females and males was 89% and 76% respectively. In contrast to other types of diseases, the duration of sick-leave due to mental health problems has increased from 30 days on average in 2005 to 39 days in 2014 [11].

**increase in sick-leaves due to mental health problems**

## 4.1.2 Children and adolescents

The most robust epidemiological data for mental disorders in children and adolescents exists for the age group of 10 to 18 years old. As shown in a recent large scale epidemiological study, the point and ‘10-18 year-period’ prevalence rates of any psychiatric disorder in Austrian adolescents aged 10 to 18 years were 23.93% ( $\pm 4.2$ ) and 35.82% ( $\pm 4.8$ ) respectively [16]. The most prevalent psychiatric disorders are anxiety disorders, followed by neurodevelopment disorders, depressive disorders and elimination disorders (see Table 4.1-1).

**adolescents: ¼ has psychiatric disorder (point prevalence)**

While there were no gender differences for lifetime diagnosis overall, some differences were shown across diagnostic groups. Diagnostic groups that were more prevalent in boys than in girls were ADHD (15.4% in boys and 5.2% in girls) and disruptive, impulse control and conduct disorders (7.44 and 1.26% respectively). On the contrary, for some internalising disorders, lifetime prevalence rates were higher in girls: anxiety disorders (19.53 vs. 9.52%); trauma and stress-related disorders (4.94 vs. 1.30%); feeding and eating disorders (5.47 vs. 0.64%). Additionally, non-suicidal self-injury behaviour and suicidal behaviour was more prevalent in girls than in boys [16].

**externalising disorders more prevalent in males, internalising more in females**

Table 4.1-1: Prevalence of psychiatric disorders in Austrian adolescents

| Life-time prevalence | Type of disorder   |
|----------------------|--|
| 10-15%               | Anxiety disorders  |
| 5-10%                | Neurodevelopment disorders (incl. ADHS), depressive disorders, elimination disorders (enuresis, encopresis)  |
| 1-5%                 | Feeding and eating disorders, obsessive-compulsive disorders, trauma and stressor-related disorders, disruptive impulse-control and conduct disorders, non-suicidal self-injury behaviour, suicidal behaviour disorder |

Source: [16]

|   |  |
|---|--|
| <p><b>estimated prevalence in children + adolescents: 18%</b></p>         | <p>In contrast to adolescents, no epidemiological data of this quality exists for children under the age of 10. Some sources, however, present estimations for 0 to 19 years old overall. In an unpublished study cited in [17], the prevalence of mental disorders in Austrian children and adolescents was estimated based on international epidemiological studies. The authors concluded that the prevalence is 17.5%. This relates to 299,946 persons aged 0 to 19 who generally require support because of a mental health problem. It is additionally estimated that from those, 9.7% (166,256) suffer from a defined psychiatric disorder and would require treatment. According to a German study (BELLA-KiGGS-study), which allows some conclusions for Austria due to system and cultural similarities, around 15% of 3 to 17-years old have an increased risk for mental disorders, and around half of them had manifest disorders or were borderline. Risks and disorders were more prevalent in boys than in girls [18].</p> |
| <p><b>half of them require treatment</b></p>                              |  |
| <p><b>decreasing numbers of suicides</b></p>                              | <p>The number of children and adolescents who committed suicide is low in Austria. It decreased from 110 in 1980 to 32 in 2013. 90% of those children were between 15 to 19-years old. As with adults, the rate in 2013 was higher in boys (14.9 per 100,000) than in girls (2.6 per 100,000) [18].</p>  |
| <p><b>almost 10% of school sample showed problematic internet use</b></p> | <p>In relation to mental illness, in children and adolescents the only Tyrolean specific data on the epidemiology identified is a study on the use of digital media (internet and computer games) in 400 Tyrolean school children who were on average 15.2 years old. 7.7% of the adolescents in the sample showed criteria for problematic internet use and 3.3% for pathological internet use. 5.4% of the sample reported pathological computer game usage. Males were more likely than females to be intensive users [19].</p>   |

### 4.1.3 Children who have parents with a mental disorder

|   |  |
|---|--|
| <p><b>no precise data on number of children of parents with mental disorder</b></p>                             | <p>There are no detailed data available on the number of children who have a parent with a mental illness in Austria. Based on other country's estimations, the number of children who live with a mother with a mental illness has been estimated at around 67,000 for Austria [20], however the sources for this figure are unclear. A Styrian study showed that mental health problems of parents were the third leading types of problems that were registered in child and youth service cases at that time. [21].</p>              |
| <p><b>at least 6,000 young people actively care for parents with a mental illness</b></p>                       | <p>An Austrian study on caregiving children aged 10-14 years showed a prevalence of 4.5% of young carers in the study sample (Lower Austria, Vienna) of whom 69.8% were female. Based on extrapolation, the number of caregiving children in Austria was estimated to be 42,700, but authors noted that this is likely underestimated. 14% of the caregiving children said that their relative had a mental illness [22]. This would equal roughly 6,000 children who actively care for a relative with a mental illness in Austria.</p> |
| <p><b>if 25% of children live with a mentally ill parent → 27,000 children &lt;15 yrs in Tyrol affected</b></p> | <p>According to Tyrolean demographic data, 108,000 children below the age of 15 live in families in Tyrol. Data for the age group 16 to 19 years have not been presented in the statistics. International figures have shown that 25% of children are living with a parent with mental illness worldwide [1-5]. This would equal 27,000 children &lt; 15 years in Tyrol.</p>   |



## 4.2 Uptake of Tyrolean health insurance-funded mental health care benefits: Overview

### Benefits overall

In the time period 2012 to 2017, at each year, an average 84,274 patients used at least one of the included mental health services (hospital treatment, rehabilitation, outpatient psychiatrists, psychotherapy and psychological services) and/or received medication and/or were on sick leave with a documented ICD-10-F-diagnosis. This represents 14.6% of all persons insured with the TGKK.

**15% of TGKK-insured received mental health benefits**

In 2017, the number of patients receiving at least one type of these benefits was 85,722, representing 14.5% of the insured population. Five percent of patients were between 0 and 18 years old, 58% were between 19 and 64 years old, and 37% were  $\geq 65$  years. This represents 4% of all insured 0-18 years old, 13% of the 19-64 years old, and slightly more than a third of the insured 65+ population. Almost two third of the patients were female (64%) and one third was male, accounting for 18% and 11% of all insured females and males respectively (Table 4.2-1). The gender ratio is particularly unbalanced in the age group of 65+ where 70% of the patients were females and only 30% were males representing 40% and 26% of all insured females and males in this age group respectively.

**2017:**  
**~86,000 users;**  
**2/3 female;**  
**60% between 19-64 yrs**

### Mental health care services

Between 2012 and 2017, at each year, 25,353 patients on average received at least one type of mental health service (hospital inpatient or day care treatment, rehabilitation, outpatient psychiatric services, psychotherapy and psychological services), representing 4.4% of the insured population. In 2017, this equalled 26,905 patients (31% of all patients receiving a mental health benefit) representing 4.6% of the insured population (Table 4.2-1). The proportion of service recipients is higher in the youngest age group (0-18 years) among which 80% received at least one of the listed services than in older patients. It is lowest in the 65+ group, among which only 12% received at least one of the services. Three quarters of the patients receiving a service (19,953) received only one type of service, and the remainder received more than one type of service.

**5% of insured received services**

### Medication

A high proportion of patients were prescribed medication for treating mental illness (ATC-code N05 or N06). Across the entire 6-year period, on average 73,245 patients were prescribed medications, representing 13% of the eligible insured population. In 2017, 73,143 patients (85% of all patients) were prescribed such type of medication, representing 12% of the insured population. 2% of the patients receiving medication were in youngest age group, 55% were 19-64 years old and 43% were older than 64 years. While overall, a higher proportion of patients receiving medication was female (65%) as compared to males (35%), there were no marked gender differences within the individual age groups concerning the proportion of males and females who were prescribed medication.

**2017:**  
**12% of insured were prescribed medication**

**63% of benefit recipients exclusively received drugs**

Furthermore, in 2017, 54,031 of all patients received medication only. Two third of them were females. They represent 63% of all patients and 9% of the insured population. The proportion of those who were exclusively prescribed drugs increased with age. While it is only 16% in the youngest age group, half of the patients in group 19-64 years, and 88% in those that are 65+ received exclusively drugs respectively. Concerning gender differences, the proportion who received medication only in female and male patients was 65% and 59% respectively.

### Sick leave

**10% of benefit recipients were on sick leave**

Finally, on average 7,924 patients each year were on sick leave with a documented ICD-10-F diagnosis representing 2.7% of the eligible population (persons in paid employment and unemployed persons) between 2012 and 2017. In 2017, there were 8,560 patients on sick leave (57% females, 43% males). This represents 10% of the patients and 2.9% of the eligible population (Table 4.2-1).

Table 4.2-1: Characteristics of TGKK-benefits recipients (2017)

|                             |         | n             | %            | % of insured (n insured) |
|-----------------------------|---------|---------------|--------------|--------------------------|
| <b>all patients</b>         |         | <b>85,722</b> | <b>100</b>   | <b>14.5 (n=591,167)</b>  |
| <b>age</b>                  | 0-18    | 4,492         | 5.24         | 3.59 (n=124,984)         |
|                             | 19-64   | 49,494        | 57.74        | 13.25 (n=373,481)        |
|                             | 65+     | 31,736        | 37.02        | 34.23 (n=92,702)         |
| <b>gender</b>               | females | 54,771        | 63.9         | 17.86 (n=284,519)        |
|                             | males   | 30,949        | 36.1         | 10.88 (n=306,646)        |
| <b>Service users</b>        |         | <b>26,905</b> | <b>31.39</b> | <b>4.55 (n=591,167)</b>  |
| <b>age</b>                  | 0-18    | 3,586         | 13.3         |                          |
|                             | 19-64   | 19,594        | 72.8         |                          |
|                             | 65+     | 3,725         | 13.8         |                          |
| <b>gender</b>               | females | 16,034        | 59.6         |                          |
|                             | males   | 10,869        | 40.4         |                          |
| <b>medication user</b>      |         | <b>73,134</b> | <b>85.33</b> | <b>12.37 (n=591,167)</b> |
| <b>age</b>                  | 0-18    | 1,363         | 1.9          |                          |
|                             | 19-64   | 40,437        | 55.3         |                          |
|                             | 65+     | 31,343        | 42.9         |                          |
| <b>gender</b>               | female  | 47,601        | 65.1         |                          |
|                             | male    | 25,541        | 34.9         |                          |
| <b>people on sick leave</b> |         | <b>8,650</b>  | <b>10.09</b> | <b>2.9 (n=302,350)*</b>  |
| <b>age</b>                  | 0-18    | 365           | 4.2          |                          |
|                             | 19-64   | 8,282         | 95.7         |                          |
|                             | 65+     | 3             | 0.1          |                          |
| <b>gender</b>               | females | 4,958         | 57.3         |                          |
|                             | males   | 3,692         | 42.7         |                          |

\* figure refers to percentage of persons who are eligible for sick leave (people in paid employment or unemployed; n=302,350 in 2017)

### 4.3 Uptake of hospital services

Over the entire time period, on average 5,486 patients each year received hospital inpatient or day-care services that were coded with an ICD-10-F code at discharge. These patients accounted for 1% of the entire insured population. The majority of them (99%) were in inpatient care. The number of patients who were treated in outpatient hospital services is unknown (see section 3.2).

In 2017, the number of patients who received hospital inpatient or day care was 5,145 (6% of all patients, representing 0.9 of the insured population) from which 98% were in inpatient care. 10% were between 0-18 years old, 70% were 19-64 years old and 20% were  $\geq 65$  years of age (Table 4.3-1). The proportion of patients who received hospital treatment decreased with age and was 11%, 7%, and 3% in the three age groups respectively (data not shown).

**1% of insured in hospital inpatient or day care**

**majority in inpatient care; percentage of hospital users decreases with age**

Table 4.3-1: Characteristics of patients who used hospital services (2017)

|                           |                 | <b>n=5,145</b>                      | <b>%</b> |
|---------------------------|-----------------|-------------------------------------|----------|
| <b>Age (years)</b>        | 0-18            | 522                                 | 10.1     |
|                           | 19-64           | 3,578                               | 69.5     |
|                           | 65+             | 1,045                               | 20.3     |
| <b>gender</b>             | female          | 2,666                               | 51.8     |
|                           | male            | 2,479                               | 48.2     |
| <b>diagnosis</b>          | F0              | 570                                 | 11.3     |
|                           | F1              | 1,344                               | 26.5     |
|                           | F2              | 391                                 | 7.7      |
|                           | F3              | 1191                                | 23.5     |
|                           | F4              | 1,206                               | 23.8     |
|                           | F5              | 68                                  | 1.3      |
|                           | F6              | 169                                 | 3.3      |
|                           | F7              | 21                                  | 0.4      |
|                           | F8              | 32                                  | 0.6      |
|                           | F9              | 74                                  | 1.5      |
| <b>district of living</b> |                 | <b>n (n/1,000 eligible persons)</b> |          |
|                           | Innsbruck-Stadt | 1,146 (12)                          | 22.3     |
|                           | Innsbruck-Land  | 1,000 (8)                           | 19.4     |
|                           | Kufstein        | 728 (9)                             | 14.2     |
|                           | Schwaz          | 468 (7)                             | 9.1      |
|                           | Imst            | 398 (9)                             | 7.7      |
|                           | Kitzbühel       | 371 (8)                             | 7.2      |
|                           | Lienz           | 342 (10)                            | 6.7      |
|                           | Landeck         | 240 (7)                             | 4.7      |
|                           | Reutte          | 196 (8)                             | 3.8      |
|                           | non-Tyrol       | 256 (n.a.)                          | 5.0      |

*n.a.: not applicable*

**more male than female patients received hospital care**

**in insured overall, highest proportion of hospital user in oldest population, gender differences**

There was an almost equal gender distribution within all hospitalised patients (52% females; 48% males), however, the proportion of patients who received hospital treatment was slightly higher in males (8%) than in females (5%). Yet, this pattern differed between age groups. In the youngest age group, the proportion receiving inpatient treatment was slightly higher in females than in males (13.4% vs. 10.1%), while the ratio was the opposite in those aged 19-64 years (5.6% females vs. 9.8% males), and 65+ (3% females; 3.9% males).

Relating the numbers of hospital service users to the total population of insured patients shows that the highest proportion receiving hospital mental health services was within the oldest age group, whereas the lowest share was in the young population. A higher proportion of insured females in both the oldest and youngest population groups were treated in hospitals, while in insured persons aged 19-64, the proportion receiving hospital care is higher in males than in females (Figure 4.3-1).

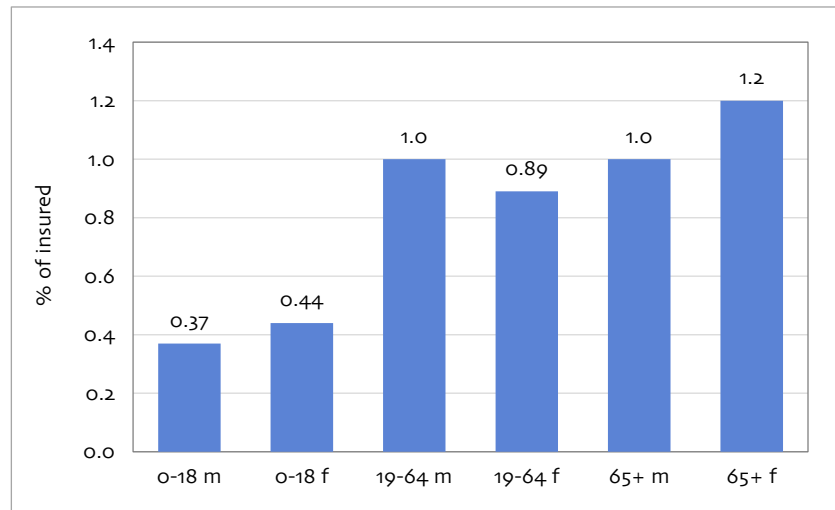


Figure 4.3-1: Hospitalised patients in percentage of insured by age and gender (2017)  
m: males, f: females

**more than half of hospitalised persons live in most populated districts**

56% of people who were treated in inpatient wards were living in the most populated districts: Innsbruck-Stadt (n=1146; 23%), Innsbruck-Land (n=1,000; 20%), or Kufstein (n=728; 13%) (Figure 4.3-2). The percentage of hospitalised people who were living in other Tyrolean districts was less than 10% each, owing to the lower number of inhabitants in those districts. 256 persons (5%) were either living outside Tyrol or had an unknown location of residence (Figure 4.3-2). Regarding hospitalised persons per 1,000 eligible persons, the highest rates can be observed in residents in Innsbruck-Stadt (12/1,000 TGKK-insured inhabitants) and Lienz (10/1,000), followed by Imst (9/1,000) and Kufstein (9/1,000). Landeck residents had the lowest rate of hospitalised people per 1,000 eligible persons (7/1,000) (Table 4.3-1).

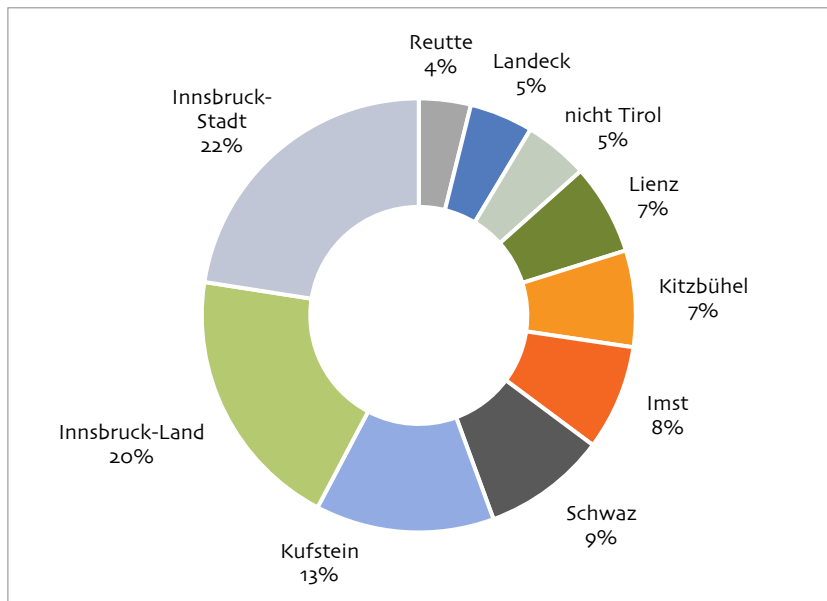


Figure 4.3-2: District of living in people admitted to inpatient care (2017)

The most frequent diagnoses of people who were in hospital treatment were: F1 (mental and behavioural disorders due to psychoactive substance use; 27%), F4 (anxiety, dissociative, stress-related, somatoform and other nonpsychotic mental disorders; 24%), F3 (mood [affective] disorders; 24%), F0 (mental disorders due to known physiological conditions; 11%), and F2 (Schizophrenia, schizotypal, delusional and other non-mood psychotic disorders; 8%). The frequency of all other diagnostic groups was below 5% (Table 4.3-1).

There are age-specific differences regarding diagnoses. F1-diagnoses (mental and behavioural disorders due to psychoactive substance use), F8-diagnoses (pervasive and specific developmental disorders) as well as F9-diagnoses (behavioural and emotional disorders with onset usually occurring in childhood and adolescence) are more frequent in the youngest age group than in the other groups. In contrast, F0-diagnoses (mental disorders due to known physiological conditions) are very frequent in the 65+ group, while they are negligible in the younger patients, signifying the high number of people with dementia in the hospitalised elderly people (Figure 4.3-3).

Furthermore, gender-specific differences can be observed. Overall, the most frequent diagnoses in females were F3 (mood [affective] disorders; 29%), F4 (27%), and F1 (mental and behavioural disorders due to psychoactive substance use; 17%), while in males, F1 was the most commonly documented diagnosis (37%), followed by F4 (anxiety, dissociative, stress-related, somatoform and other nonpsychotic mental disorders; 20%), and F3 (18%). Moreover, gender by age interactions can be observed within each age group. In the young patients, F8 (pervasive and specific developmental disorders) and F9-diagnoses (behavioural and emotional disorders with onset usually occurring in childhood and adolescence) were considerably more often documented in male than in female patients, while in females, F6-diagnoses were more likely. In 19-64 years old males, F1-diagnoses (mental and behavioural disorders due to psychoactive substance use) were more frequent than in females of the same age, while F3 (mood [affective] disorders) and F4-diagnoses (anxiety, dissociative, stress-related, somatoform and other nonpsychotic mental disorders) were more often documented in female than in male patients (Figure 4.3-3).

**F1, F3, F4 diagnoses most frequent (3/4 of all diagnoses)**

**F1, F8, F9 more frequent in youngest patients**

**F0 most frequent in 65+ patients**

**F4 most frequent in females, F1 in males**

**differences between age groups**

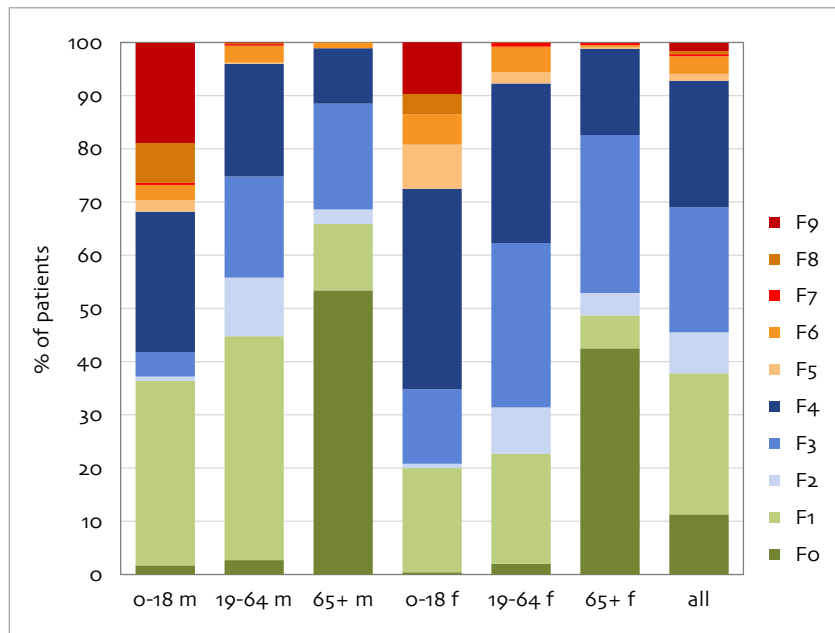


Figure 4.3-3: Distribution of diagnoses in patients who received hospital care by age and gender (2017)

F00-F09: Mental disorders due to known physiological conditions; F10-F19: Mental and behavioural disorders due to psychoactive substance use; F20-F29: Schizophrenia, schizotypal, delusional, and other non-mood psychotic disorders; F30-F39: Mood [affective] disorders; F40-F48: Anxiety, dissociative, stress-related, somatoform and other nonpsychotic mental disorders; F50-F59: Behavioural syndromes associated with physiological disturbances and physical factors; F60-F69: Disorders of adult personality and behaviour; F70-F79: Intellectual disabilities; F80-F89: Pervasive and specific developmental disorders; F90-F98: Behavioural and emotional disorders with onset usually occurring in childhood and adolescence; F99: Unspecified mental disorder; m: males; f: females

50% had one admission and stayed 14 days

young patients and males stay shorter

2/3 in psychiatric ward, rest in other wards

in young patients: only 20% in CAMH wards

Patients receiving inpatient care in 2017 had, on average 1.94 hospital stays, however, data show a wide range, with a maximum of 44 stays, whereby 50% of the patients had only one hospital stay. There was no difference in the median number of stays between age groups or gender. The duration of stay ranged from one day to 301 days, whereby 50% of the patients were discharged after 14 days. The median duration of stay was considerably lower in the youngest age group, showing that 50% of the patients aged 0-18 years are discharged after four days. Furthermore, males had a shorter median duration of stay (12 days) than females (15). The gender difference is particular pronounced in the youngest age group (males: 2 days, females: 7 days).

Almost two thirds of the patients who were treated in hospitals had been admitted to a psychiatric ward, the remainder was treated in other hospital wards, most frequently at an internal medicine ward (22%). 4% were treated at a paediatric ward. Other wards played a very minor role (mostly below 1%). The frequency of treatment at non-psychiatric wards differed according to age groups. Among the people in the youngest age group, more than a third were treated at a paediatric ward, while only a fifth were admitted to a child and adolescent psychiatric ward. People aged 19-64 were most frequently admitted to psychiatric ward (74%), while a fifth was treated in an internal medicine ward. In the oldest group (65+), internal medicine wards were used by a third of the patients, while slightly more than a half were admitted to psychiatric wards (Figure 4.3-4).

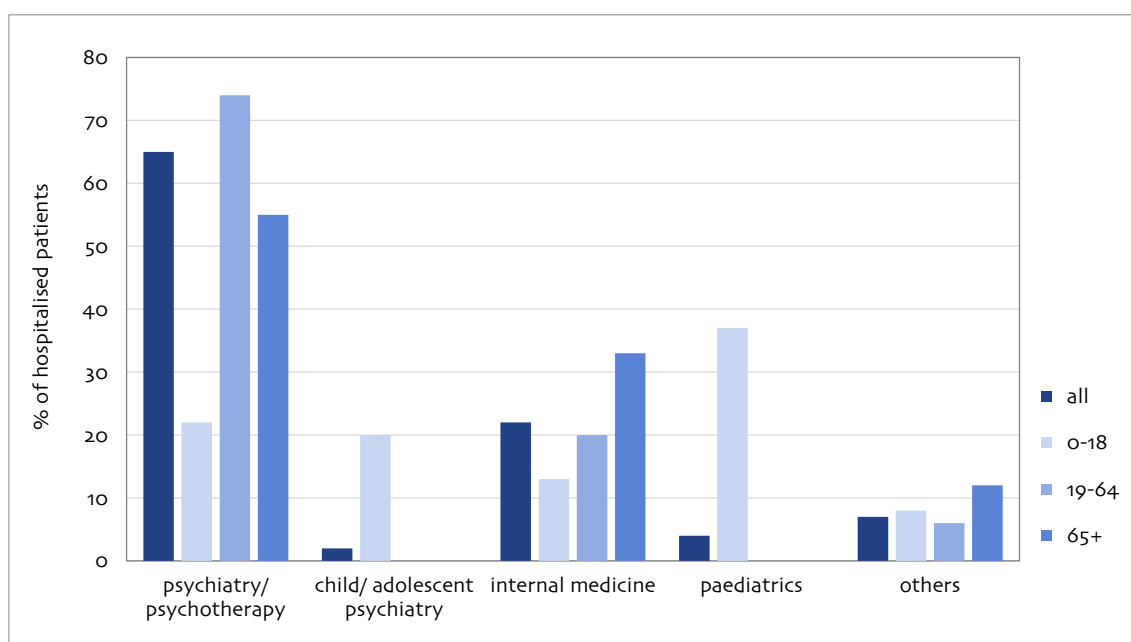


Figure 4.3-4: Type of wards in hospitalised patients by age (2017)

## 4.4 Uptake of outpatient services

Outpatient services that are covered by the data are those provided by (1) outpatient psychiatrists (adult psychiatrist, child and adolescent psychiatrist), (2) psychotherapists and (3) psychologists.

### 4.4.1 Services provided by outpatient psychiatrists

Over the 6-year study period, each year, 15,309 patients on average had contact with an outpatient specialist in the field of psychiatry (adult psychiatrist, child and adolescent psychiatrist). This represents 2.7% of the insured population. In 2017, the number of patients who contacted such a specialist was 16,170, representing 2.7% of the insured population. The majority (96%) visited an adult psychiatrist. The proportion who contacted an outpatient psychiatrist was almost similar among female (18%) and male (20%) patients respectively. Concerning age groups, the proportion of patients who had contact with an outpatient psychiatrist was highest in those aged 19-64 years (26%), followed by the youngest age group (18%), while only 9% of people aged 65+ visited an outpatient psychiatrist (Table 4.4-1).

**2.7% of insured contacted psychiatrists**

**highest proportion in patients aged 19-64**

Almost 60% of the patients were living in the districts Innsbruck-Stadt, Innsbruck-Land, and Kufstein, however the highest rates of patients per 1,000 eligible persons were observable in residents from Reutte (47/1,000 eligible persons), followed by Innsbruck-Stadt (39/1,000), Schwaz (27/1,000), and Kufstein (27/1,000). Inhabitants from Lienz showed the lowest population rates (17/1,000). 94 patients (0.6%) did not live in Tyrol or had an unknown residence. (Table 4.4-1),

**60% live in Innsbruck Stadt/Land and Kufstein**

Table 4.4-1: Characteristics of patients with outpatient psychiatrist contacts (2017)

| n=16,170             |                                   | n                                   | %    |
|----------------------|-----------------------------------|-------------------------------------|------|
| Gender               | females                           | 9867                                | 61.0 |
|                      | males                             | 6,302                               | 39.0 |
| Age                  | 0-18                              | 791                                 | 4.9  |
|                      | 19-64                             | 12,604                              | 77.9 |
|                      | 65+                               | 2,775                               | 17.2 |
| field of psychiatry* | adult psychiatrist                | 15,572                              | 96.2 |
|                      | child and adolescent psychiatrist | 610                                 | 3.8  |
| district of living   |                                   | <b>n (n/1,000 eligible persons)</b> |      |
|                      | Innsbruck-Stadt                   | 3,761 (39)                          | 23.3 |
|                      | Innsbruck-Land                    | 3,516 (26)                          | 21.7 |
|                      | Kufstein                          | 2,260 (27)                          | 14.0 |
|                      | Schwaz                            | 1,808 (27)                          | 11.2 |
|                      | Reutte                            | 1,230 (47)                          | 7.6  |
|                      | Imst                              | 1,138 (25)                          | 7.0  |
|                      | Kitzbühel                         | 1,118 (25)                          | 6.9  |
|                      | Landeck                           | 661 (19)                            | 4.1  |
|                      | Lienz                             | 584 (17)                            | 3.6  |
|                      | Non-Tyrol                         | 94 (n.a.)                           | 0.6  |

\* 12 patients had contact with both, adult and child and adolescent psychiatrist and are therefore counted twice; overall number of patients who contacted at least one type of psychiatrist = 16,170; n.a.: not applicable

number of contacts/  
patient varies widely

The number of contacts with outpatient psychiatrists in 2017 ranged from 1 to 107, whereby 50% of patients had 4 contacts<sup>8</sup>. There was no gender-difference concerning the average or median number of contacts, however, the median number of contacts was lower in the youngest age group (2) and in the oldest patients (3) than in those aged 19-64 years (4).

more insured females  
than males contacted  
psychiatrist

Regarding the gender-age patterns in relation to the total population insured, the highest proportion of outpatient psychiatric service user was within 19-64 years old insured. In all age groups except the youngest, a higher proportion of insured females had outpatient psychiatrist contacts than males (see Figure 8-3 in annex/section 8).

#### 4.4.2 Services provided by psychotherapists

different funding  
arrangements for  
psychotherapy

Psychotherapy is funded in different forms in Tyrol. A limited capacity of fully funded therapy is available, provided and organised by external organisations. Furthermore, patients can pay privately and apply for partial refund retrospectively or it can be fully privately paid. The former two types are described in the following paragraphs, while the latter is not covered in the data.

<sup>8</sup> Patients without any contact are excluded in this calculation



In the 6-year study period, on average 7,189 persons each year (1.2% of the insured population) received psychotherapy that was either entirely or co-funded by the TGKK. In 2017, the number of persons receiving psychotherapy that was organised in one of these models, was 7,895, representing 9.21% of the patients and 1.34% of the insured population. Two thirds of these persons were female. 15% of the patients were younger than 19 years, 81% of were between 19 and 64 years, and 3% were older than 64 years. Slightly more than half of the patients received psychotherapy from private psychotherapists with a partial refund from the health insurance. The remainder received fully publicly funded psychotherapy. Two third of the patients who received psychotherapy lived in the most populated districts Innsbruck-Stadt, Innsbruck-Land, and Kufstein. Innsbruck-Stadt and Innsbruck Land were also the districts where rates of patients/1,000 eligible persons was highest. (Table 4.4-2).

**1.3% of insured received (co-) funded psychotherapy**

**2/3 female  
very few >64 years**

**ratio fully funded:  
co-funded ~ 50:50**

Table 4.4-2: Characteristics of patients who received psychotherapy (2017)

|                                    |                                  | n                                  | %    |
|------------------------------------|----------------------------------|------------------------------------|------|
| <b>Gender (n=7,894)</b>            | females                          | 5,428                              | 69.0 |
|                                    | males                            | 2,466                              | 31.0 |
| <b>Age (n=7,895)</b>               | 0-18                             | 1,208                              | 15.3 |
|                                    | 19-64                            | 6,424                              | 81.4 |
|                                    | 65+                              | 263                                | 3.3  |
| <b>Type of therapist (n=7,895)</b> | Private (with public co-payment) | 4,190                              | 53.0 |
|                                    | Fully publicly funded            | 3,965                              | 47.0 |
| <b>district (n=7,895)</b>          |                                  | <b>n (n/1000 eligible persons)</b> |      |
|                                    | Innsbruck-Stadt                  | 2,299 (24)                         | 29.1 |
|                                    | Innsbruck-Land                   | 2,071 (16)                         | 26.2 |
|                                    | Kufstein                         | 872 (10)                           | 11.0 |
|                                    | Schwaz                           | 724 (11)                           | 9.2  |
|                                    | Imst                             | 587 (13)                           | 7.4  |
|                                    | Kitzbüchel                       | 430 (10)                           | 5.5  |
|                                    | Landeck                          | 326 (10)                           | 4.1  |
|                                    | Lienz                            | 263 (8)                            | 3.3  |
|                                    | Reutte                           | 168 (7)                            | 2.1  |
| Non-Tyrol                          | 155 (n.a.)                       | 2.0                                |      |

n.a.: not applicable

Within all age groups and funding arrangements, females were more likely to receive therapy than males. The proportion of patients who receive therapy in patients aged 65+ is almost negligible regardless of funding. Moreover, the youngest patients were more likely to receive fully funded therapy than the other age groups. Concerning the percentage of persons who received co-funded therapies, this is almost equal within the youngest age group and those aged 19-64 years (Figure 4.4-1).

**young patients more likely receive fully funded therapy**

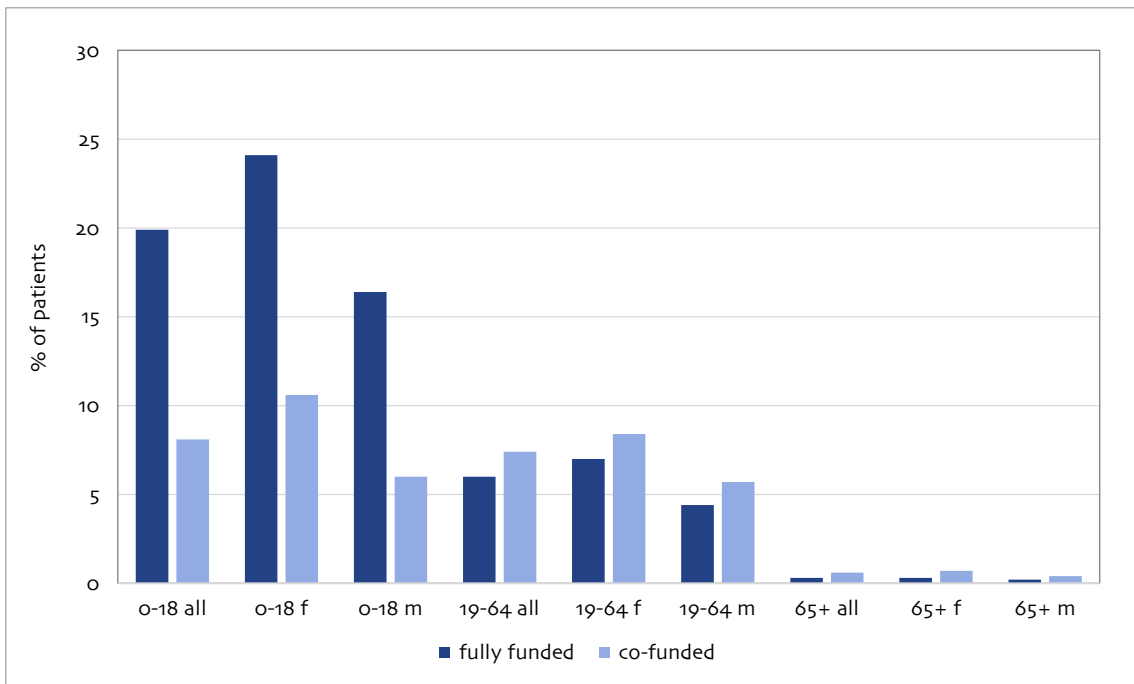


Figure 4.4-1: Percentage of patients receiving psychotherapy by age, gender and type of funding (2017)

m: males; f: females

**higher proportion of female than male insured had therapy**

Regarding the gender-age patterns in relation to the total insured population, the highest proportion of psychotherapy user was within 19-64 years old insured. In all age groups, a higher proportion of insured females than males received psychotherapy (see Figure 8-3 in annex/section 8).

### 4.4.3 Services provided by psychologists

**0.3% of insured had paid psychological assessment**

Between 2012 and 2017, on average 1,698 persons each year underwent a TGKK-funded psychologic assessment provided by a clinical psychologist. The number of patients accounts for 0.3% of the insured population. In 2017, diagnostic services were provided for 1,795 persons (2.09% of all patients), representing 0.25% of the insured population.

**mostly in youngest patients**

The majority of these persons (82%) were younger than 19 years, and overall more males (61%) than females (39%) received psychological diagnostic service. While in the youngest age groups, 40% of males had a diagnostic service compared to only 24% of females, there were no gender differences in the other age groups (Table 4.4-3). More than half of the persons who had a psychologic assessment were living in Innsbruck-Land (22%), Innsbruck-Stadt (18%), Schwaz (15%), and Imst (11%) (Table 4.4-3).

**small number of young patients had other psychological service**

In the period 2012 to 2017, on average 131 persons each year received publicly funded psychological service in a multidisciplinary care organisation for children. In 2017, 212 persons received this type of service (0.25% of patients; 0.04 of insured population). All of them were in the youngest age group and the majority (71%) were males.

Table 4.4-3: Characteristics of patients who received psychological services (2017)

|   |                 | n     | %     |
|---|-----------------|-------|-------|
| <b>Psychological assessment (n=1,795)</b>   |                 |       |       |
| <b>Gender</b>                               | females         | 703   | 39.2  |
|   | males           | 1,092 | 60.8  |
| <b>Age</b>                                  | 0-18            | 1,469 | 81.8  |
|   | 19-64           | 198   | 11.0  |
|   | 65+             | 128   | 7.1   |
| <b>District</b>                             | Innsbruck-Land  | 395   | 22.1  |
|   | Innsbruck-Stadt | 321   | 17.9  |
|   | Schwaz          | 271   | 15.1  |
|   | Imst            | 200   | 11.1  |
|   | Kufstein        | 150   | 8.4   |
|   | Lienz           | 134   | 7.5   |
|   | Landeck         | 113   | 6.3   |
|   | Kitzbühel       | 93    | 5.2   |
|   | Reutte          | 80    | 4.5   |
|   | nicht Tirol     | 38    | 2.1   |
| <b>Other psychological services (n=212)</b> |                 |       |       |
| <b>Gender</b>                               | females         | 61    | 28.8  |
|   | males           | 151   | 71.2  |
| <b>Age</b>                                  | 0-18            | 212   | 100.0 |
|   | 19-64           | 0     | 0.0   |
|   | 65+             | 0     | 0.0   |

## 4.5 Uptake of inpatient rehabilitation

**less than 1% of insured received inpatient rehab**

**F3 and F4 most frequent diagnoses**

In the 6-year study period, 553 patients received inpatient rehabilitation based on an ICD-10-F-code on average each year. This represents 0.79% of all patients and 0.11% of the total insured population. Almost all (97%) were between 19 and 64 years old. The female:male ratio was 59:41 percent respectively. In more than half of the patients, an F3-diagnosis was documented, followed by F4 (39%). All other diagnoses groups were very uncommon (Figure 4.5-1). The frequencies differ considerably from diagnoses in hospital care.

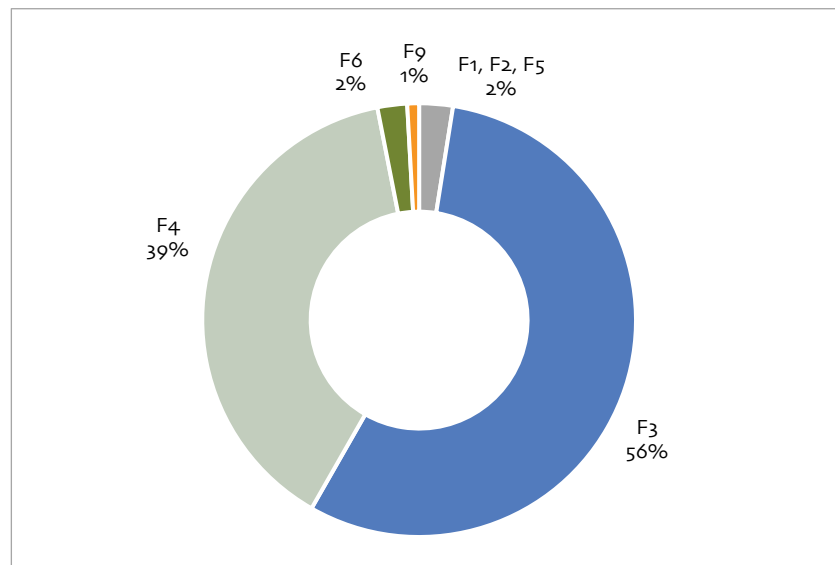


Figure 4.5-1: Diagnoses in rehabilitation users (2017)

## 4.6 Use of medication

**13% of insured were prescribed ATC N05 or N06 medication**

**most frequently anti-depressants and anti-psychotics**

**gender differences in prescriptions**

As stated earlier (section 4.2), over the entire time period an average of 73,245 patients each year were prescribed publicly funded medication for treating mental illness within the ATC-code N05 or N06 (13% of insured population). In 2017, the number of patients who were prescribed these drugs was 73,143 (12% of the insured population) accounting for 85% of all patients receiving mental health benefits.

The type of publicly paid drugs which patients were prescribed most frequently were antidepressants (prescribed to 62% of patients), followed by anti-psychotic and anti-dementia drugs which were prescribed to a fifth and 16% of all patients respectively. Within each drug class, more drugs were prescribed to females than males (reflecting the higher number of female patients overall). Furthermore, females were more likely than males to be prescribed antidepressants, anti-dementia drugs as well as hypnotics/sedatives, while anti-psychotics and psychostimulants/agents used for ADHD/nootropics were slightly more frequently prescribed in males than in females (Figure 4.3-3).

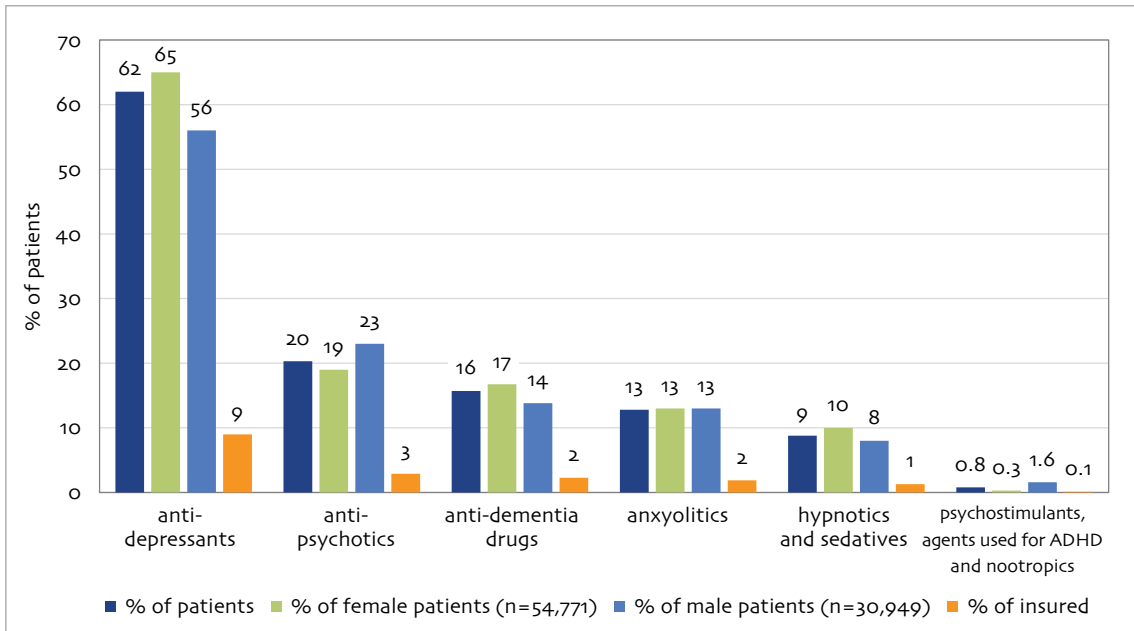


Figure 4.6-1: Percentage of patients who were prescribed drugs by type of drug class (2017)

Overall, 890,576 prescriptions were issued in 2017. Almost half of all prescriptions were for anti-depressants (47%). The second and third leading types of drugs were anti-psychotics (17%) and hypnotics and sedatives (15%), which were however, prescribed much less frequently (Figure 4.6-2).

**roughly half of all prescriptions were antidepressants**

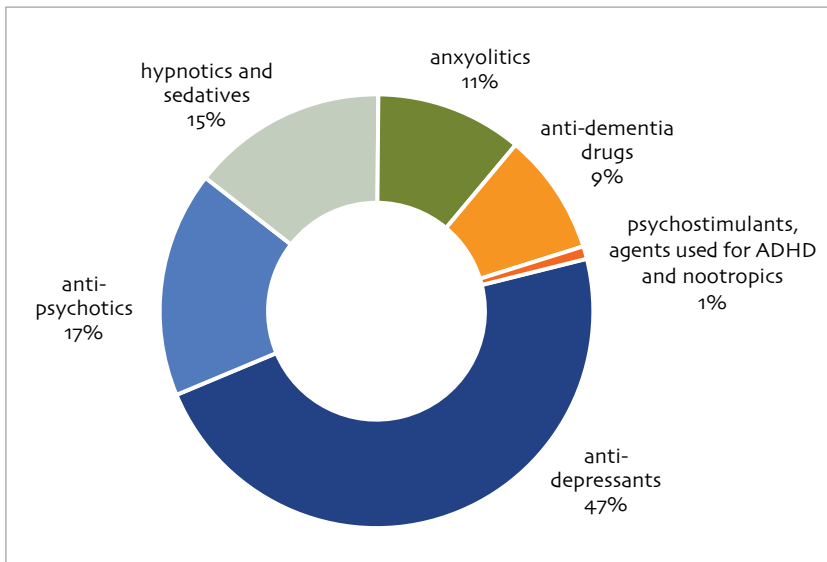


Figure 4.6-2: Frequencies of prescriptions by drug class (2017)

Regarding gender-age patterns in relation to all insured persons, by far the highest proportion of medication users was within 65+ years old insured. In all age groups except the youngest, a higher proportion of insured females were prescribed drugs. The difference is particularly pronounced in the oldest patient group (see Figure 8-2 in annex).

**highest proportion in elderly population**

## 4.7 Sick leaves

**3% of eligible population on sick leave**

In the years 2012 to 2017, on average 7,924 people per year were on sick leave based on an ICD-10-F diagnosis, representing 2.7% of the eligible population (persons in paid employment and unemployed persons). The number of people on sick leave in 2017 was 8,650 (10% of the patients/2.9% of the eligible population).

**some on sick-leave without further service use**

There were 3,114 persons (4% of all patients) who were on sick-leave but did not receive any other services or medication and 1,672 patients on sick-leave (2%) only received medication but none of the insurance (co)-funded mental health service.

**50% were 14 days absent**

**mean duration increased**

Days on sick leave were 54 in mean, and 14 in median, i.e. 50% were on sick leave for at most 14 days<sup>9</sup>. The male mean (55d) was slightly higher but not significantly, than the female mean (53d), with equal medians of 14 days. The median duration of sick leave showed a decreasing trend (16 days in 2012, 14 days in 2017), yet the mean duration increased from 50 to 54 days respectively, indicating a growing variation in duration, i.e. more quite short and long durations in recent years.

## 4.8 Changes over time

**more benefit recipients over time**

When analysing the trends between 2012 and 2017 regarding mental health benefit uptakes, the following patterns can be observed. Firstly, the number of persons who received any kind of benefit has risen in absolute terms (from 81,222 in 2012 to 85,722 in 2017; + 5%).

**more service recipients over time (esp. from psychiatrists and psychotherapists)**

Similarly, there has been a general rise in the number of patients who received at least one type of mental health service, which is mostly due to an increasing number of patients who received treatment from outpatient psychiatrists and psychotherapy. On the contrary, the number of patients treated in inpatient or day-care in hospitals has slightly fallen (Figure 4.8-1). Finally, the number of patients on sick leave rose from 7,354 to 8,650 between 2012 and 2017 (+ 18%).

**recently slight decrease of drug users**

**differences according to drug type**

In terms of medication, the overall number of patients receiving drugs for treating mental disorders has risen between 2012 and 2014, but has since then slightly decreased. Concerning different classes of drugs, there has been an increasing number of patients who were prescribed antipsychotics and psychostimulants/agents used for ADHD/nootropics, while fewer patients were prescribed anxiolytics as well as hypnotics/sedatives in 2017 as compared to 2012 (Table 4.8-1).

<sup>9</sup> patients who were not on sick-leave were excluded from the analysis

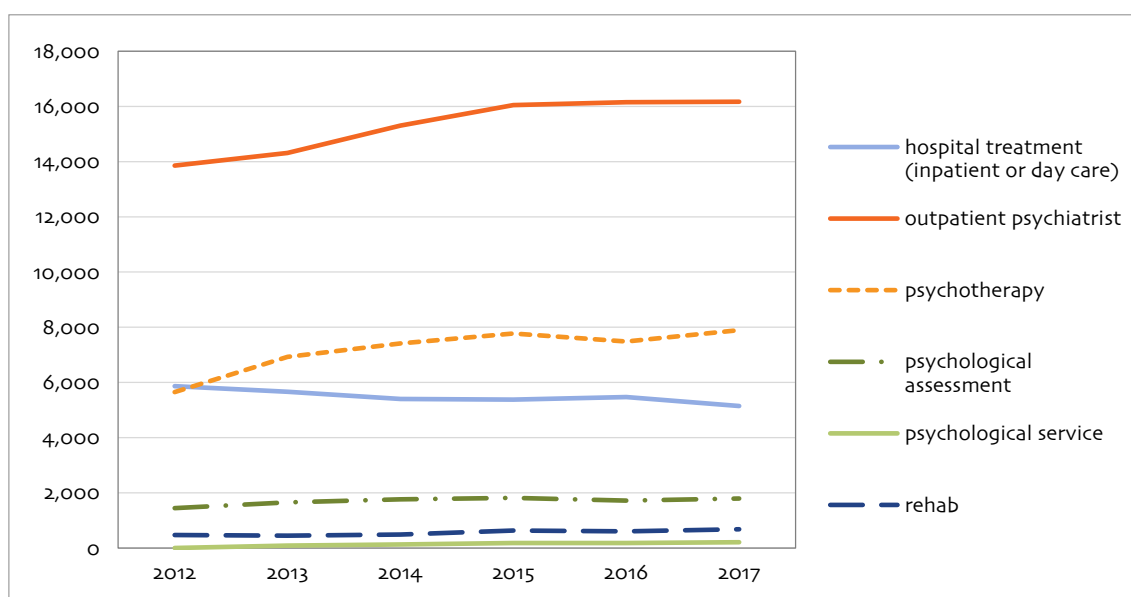


Figure 4.8-1: Number of patients by types of services 2012-2017

Table 4.8-1: Patients receiving medication 2012-2017

| Type of medication   | 2012   | 2013   | 2014   | 2015   | 2016   | 2017   | total   | % change 2012-2017 |
|--|--------|--------|--------|--------|--------|--------|---------|--------------------|
| <b>antipsychotics</b>  | 16,154 | 16,684 | 17,134 | 17,542 | 17,534 | 17,363 | 102,411 | +8                 |
| % of insured population                                      | 2.9    | 2.9    | 3      | 3      | 3      | 2.9    | 3       |                    |
| <b>anxiolytics</b>   | 12,114 | 12,556 | 12,727 | 12,251 | 11,341 | 10,953 | 71,942  | -10                |
| % of insured population                                      | 2.2    | 2.2    | 2.2    | 2.1    | 1.9    | 1.9    | 2.1     |                    |
| <b>hypnotics and sedatives</b>                               | 8,964  | 8,741  | 8,821  | 8,482  | 7,956  | 7,602  | 50,566  | -15                |
| % of insured population                                      | 1.6    | 1.5    | 1.5    | 1.5    | 1.4    | 1.3    | 1.5     |                    |
| <b>antidepressants</b>                                       | 52,181 | 52,989 | 53,493 | 53,366 | 53,483 | 53,142 | 318,654 | +2                 |
| % of insured population                                      | 9.3    | 9.3    | 9.3    | 9.2    | 9.1    | 9      | 9.2     |                    |
| <b>psychostimulants, agents used for ADHD and nootropics</b> | 485    | 490    | 563    | 572    | 620    | 674    | 3404    | +39                |
| % of insured population                                      | 0.1    | 0.1    | 0.1    | 0.1    | 0.1    | 0.1    | 0.1     |                    |
| <b>anti-dementia drugs</b>                                   | 13,576 | 13,062 | 13,592 | 13,240 | 13,552 | 13,453 | 80,475  | -1                 |
| % of insured population                                      | 2.4    | 2.3    | 2.4    | 2.2    | 2.3    | 2.2    | 2.3     |                    |
| <b>All</b>   | 72,083 | 72,826 | 74,092 | 73,785 | 73,539 | 73,143 | 439,468 | +1,5               |
| % of insured population                                      | 12.9   | 12.8   | 12.9   | 12.7   | 12.6   | 12.4   | 12.7    |                    |

Regarding the total number of prescriptions, there was a rise in antidepressant prescriptions (which stabilised in the previous years) and in antipsychotics, while hypnotics/sedatives showed a falling trend in the number of prescriptions. Prescriptions for the remaining drug classes remained rather stable (Figure 4.8-2).

**trend in number of prescriptions depends on drug type**

However, it should be considered that the total population of insured persons has risen from 559,833 to 591,167 (+ 6%) between 2012 and 2017. Therefore, when comparing the proportion of insured persons who received mental health benefits between 2012 and 2014, the percentage remained rather stable (14.5% in 2012 and in 2017 respectively with a slight increase in between).

**insured population increased**

**percentage of insured benefit users remained rather stable but differences between types of benefits**

Yet, concerning the single types of benefits, some upward or downward trends can be observed. For example, the percentage of insured persons who were prescribed publicly funded medication for treating mental disorders decreased, while the proportion of those who received services (hospital care, outpatient services, rehabilitation) increased. The latter is mainly driven by an increase in the proportion of insured persons receiving outpatient psychiatric care or psychotherapy. Furthermore, the proportion of eligible persons who were on sick leave based on an ICD-10-F diagnosis also slightly increased (Figure 4.8-3).

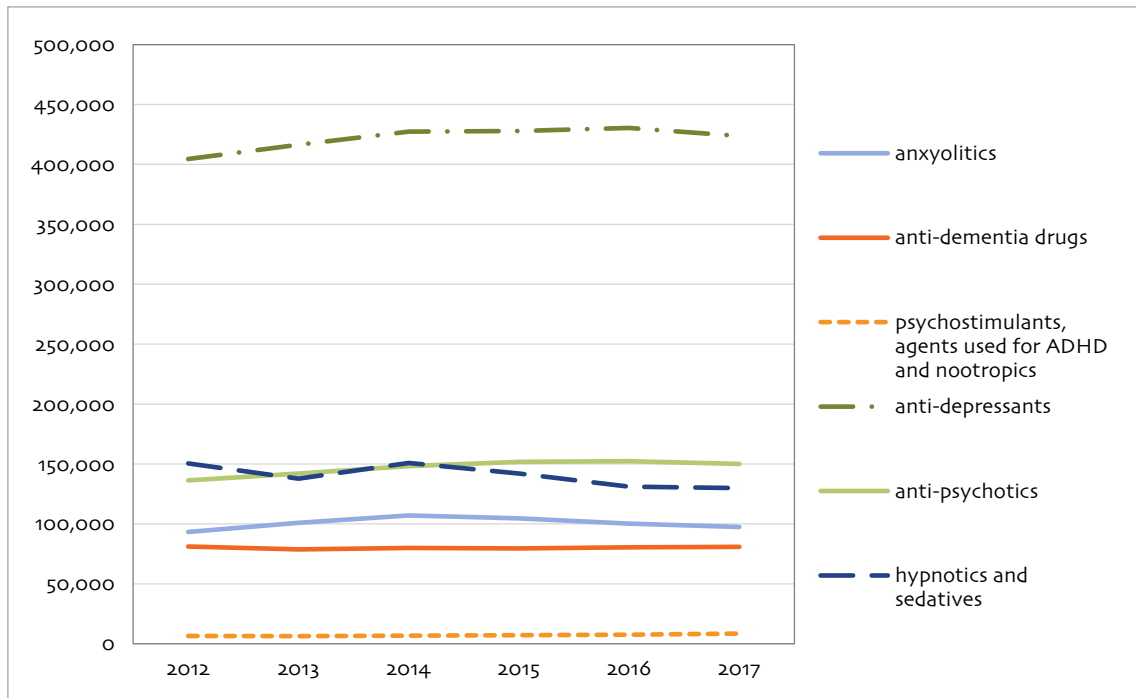


Figure 4.8-2: Prescriptions 2012 to 2017

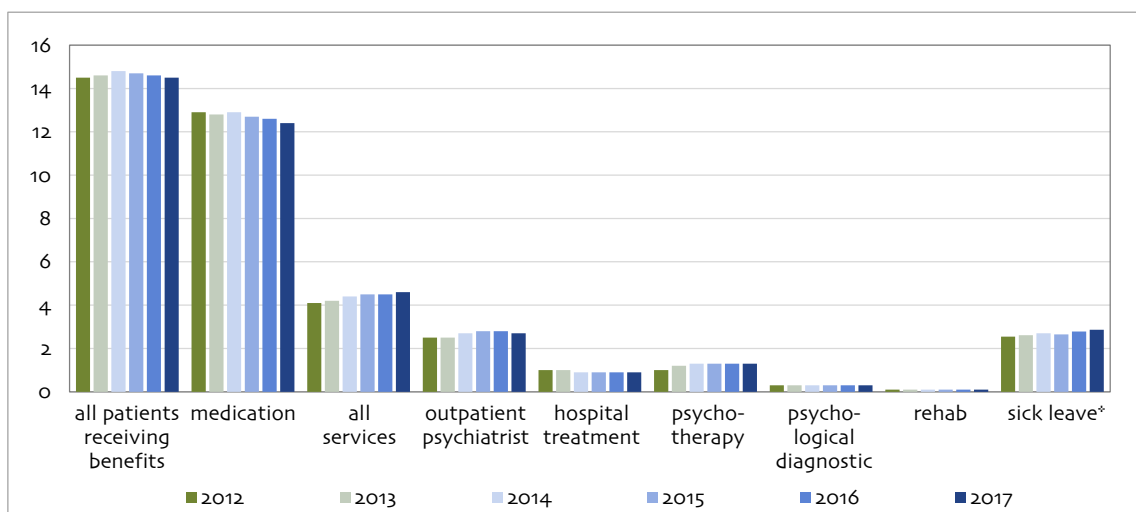


Figure 4.8-3: Percentage of insured persons receiving benefits 2012-2017

\*% refers to eligible population for sick-leave (people in paid employment and unemployed)



## 4.9 Sub-group analysis: 19-64 years old benefit recipients

Most of potential parents of a dependent child will be in the age group of 19-64 years old, hence this age group of service users is of particular interest for reaching children who have a parent with a mental disorder. In this section we will therefore analyse the characteristics of this age group in terms of frequency and type of service uptake, place of living, diagnoses and gender.

On average, 49,335 patients aged 19-64 years received some kind of benefit each year during period 2012-2017. In 2017, more than half of all patients (58%) fell within this age group (n=49,494). 62% of the patients in the age group 19-64 years were females in 2017. Patients aged 19-64 years represent three quarters of all patients who received a mental health service and – regarding the individual types of services – more than two third of all patients who received hospital treatment, outpatient psychiatric services, psychotherapy or rehabilitation respectively. Only in terms of clinical psychological diagnostic services, the group of 19-64 years old played a marginal role, as these services are mostly provided for children and adolescents (Table 4.9-1).

Regarding the frequency within the 19-64 years old patients who received benefits, 40% used some type of mental health service (hospital, outpatient service, rehabilitation). The most frequently used services were outpatient psychiatric services, used by more than a quarter of this group. 13% went to psychotherapy, however, only 7% were admitted to hospital inpatient or day-care treatment, and only 1% used inpatient rehabilitation (Table 4.1-1). Concerning psychotherapy, 45% had fully funded therapy and the remainder received co-funding. Furthermore, less than a fifth of the 19-64 years old was on sick leave based on a registered ICD-10-F diagnosis.

**age group 19-64 years  
old of particular interest**

**50,000 benefit users  
in 2017**

**2/3 female**

**most relevant age group  
for service use**

**40% used at least  
one service, most often  
outpatient psychiatrist**

**7% hospital treatment**

Table 4.9-1: Benefit uptake of patients aged 19-64 years (2017)

|                                     | n all patients<br>(n=85,722) | n 19-64 years old<br>(%) | % within 19-64 years old<br>(n=49,494) |
|-------------------------------------|------------------------------|--------------------------|--|
| <b>Service use</b>                  |                              |                          |  |
| Any service use                     | 26,905                       | 19,594 (73)              | 40                                     |
| ✳ Hospital treatment                | 5,145                        | 3,578 (70)               | 7                                      |
| ✳ Outpatient psychiatrist           | 16,170                       | 12,604 (78)              | 26                                     |
| ✳ Psychotherapy                     | 7,895                        | 6,424 (81)               | 13                                     |
| ✳ Clinical-psychological diagnostic | 1,795                        | 198 (11)                 | 0.4                                    |
| ✳ Rehabilitation                    | 678                          | 657 (97)                 | 1.3                                    |
| <b>Medication</b>                   |                              |                          |  |
| Medication users                    | 73,143                       | 40,437 (55)              | 82                                     |
| Medication only users               | 54,031                       | 25,310 (47)              | 51                                     |
| <b>Other benefits</b>               |                              |                          |  |
| Sick leave                          | 8,650                        | 8,282 (96)               | 17                                     |

There were no marked gender differences regarding service use among the 19-64 years old overall. However, some differences exist within single service categories: A higher proportion of male (10%) than female (6%) patients was admitted to hospital, while psychotherapy was more frequently used by female (15%) than by male patients (10%) (Figure 4.9-1).

**higher proportion  
of male than female  
patients in hospital  
and vice versa for  
psychotherapy**

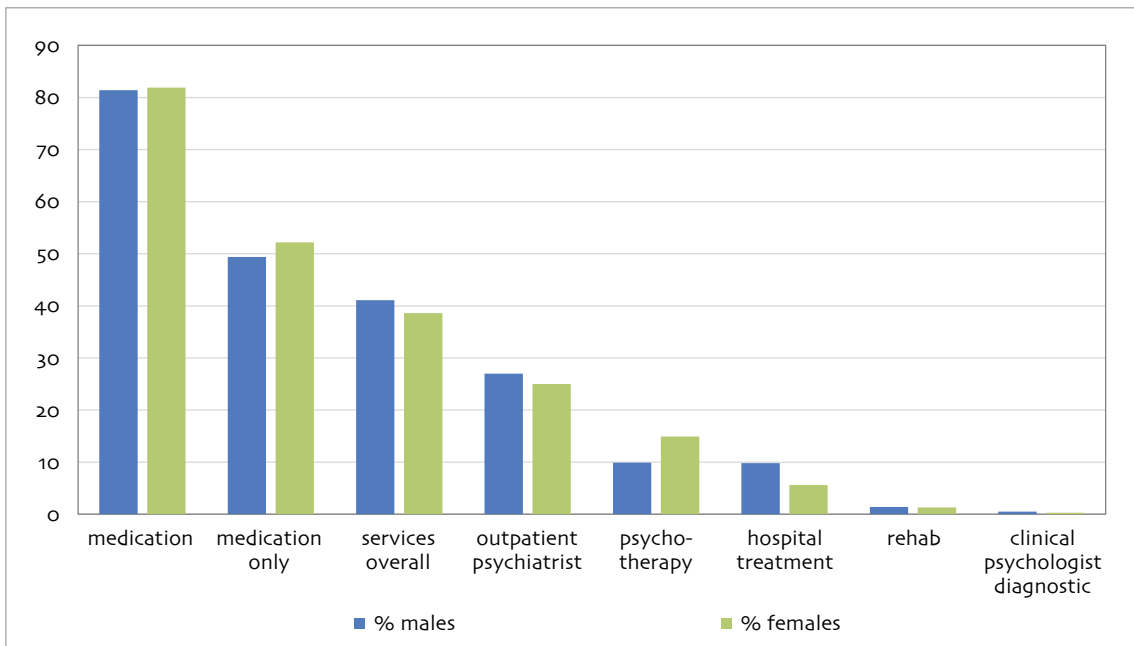


Figure 4.9-1: 19-64 year old benefits recipients by gender (2017)

**F1, F4 and F3 most common diagnoses**

The most frequently occurring diagnoses in 19-64 old hospitalised patients were F1 (32%), F4 (25%) and F3 (25%) (Figure 4.9-3).

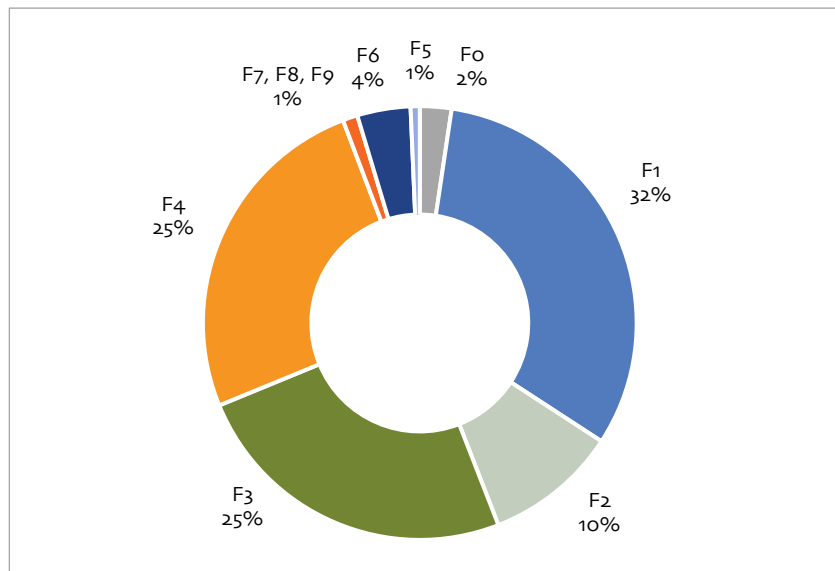


Figure 4.9-2: ICD-10-F-diagnoses in 19-64 old hospitalised patients (2017)

**gender differences in diagnoses**

There were marked gender differences in some diagnostic groups: While in males, F1 and (to a smaller extent) F2 were more frequently documented, F3, F4 and (to a smaller extent) F6 were more often documented in females (Figure 4.9-3).

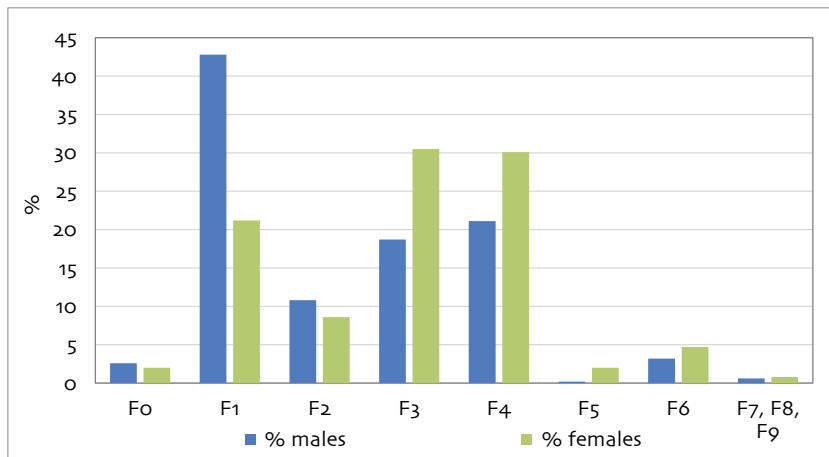


Figure 4.9-3: Diagnoses in 19-64 years old hospitalised patients by gender (2017)

Three quarters of the 19-64 years old who received inpatient care were treated in psychiatric wards, while one quarter was treated in other wards (e.g. internal medicine), showing that 19-64 years old patients were more frequently treated in psychiatric wards than patients in other age groups (see 4.3). Furthermore, 19-64 years old stayed on average 27 days in hospital, however with a wide range of duration of stay ranging from one to 284 days. 50% of the patients were discharged after 15 days.

**1/4 of hospital patients in non-psychiatric wards**

**50% stayed 15 days**

Almost all of the 19-64 years old (82%) were prescribed medication for treating mental disorders, more than half were exclusively prescribed medication and did not receive any other type of benefit (Table 4.9-1).

**vast majority was prescribed drugs**

While there were no gender differences regarding the proportion of patients aged 19-64 years who were prescribed medication overall, some gender specific patterns concerning the type of medication prescribed can be observed: The proportion who received anti-psychotics and anxiolytics was higher in males than in females, whereas a higher percentage of females than males were prescribed anti-depressants. The other class drugs did not show gender differences (Figure 4.9-4).

**some gender differences in prescribed drug classes**

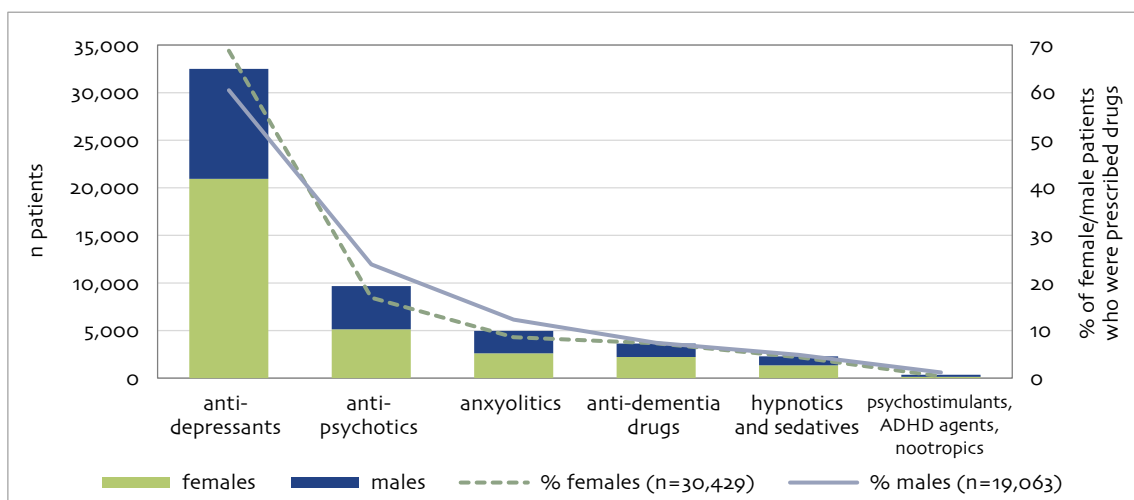


Figure 4.9-4: 19-64 year old patients with drug prescriptions by drug type (2017)

## 4.10 Sub-group analysis: children and adolescents

**mentally ill children and adolescent may have mentally ill parents**

A high percentage of children and adolescents with a mental illness – particularly in the severely ill – have a parent with a mental illness [23, 24]. Children and adolescents who use mental health benefits may therefore be another group of service users that may be relevant for identifying children with a parent with mental illness.

**5% of patients <19 years more males than females**

Between 2012 and 2017, an average of 4,063 patients who were younger than 19 years received at least on kind of benefit each year. In 2017, there were 4,492 patients, accounting for 5.2% of all patients who received a benefit and 3.59% of all persons insured with the TGKK. Slightly more males (54%) than females (46%) in this age group received a benefit. The majority of them (80%) used at least one type of mental health service and 30% were prescribed medication. Around 16% were prescribed medication only without receiving any other type of benefit. 522 patients <19 years (5% of all patients in this age group) received hospital treatment in 2017, almost all of them (97%) were in inpatient care. 50% of the latter were discharged after 4 days.

**5% treated in hospital, 30% prescribed drugs**

**F4, F1 and F9 were most frequent diagnoses**

The most frequent ICD-10-F diagnoses in hospitalised children and adolescents were: F4/Anxiety, dissociative, stress-related, somatoform and other nonpsychotic mental disorders (32%), F1/Mental and behavioural disorders due to psychoactive substance use (27%), and F9/Behavioural and emotional disorders with onset usually occurring in childhood and adolescence (14%). A fifth of the hospitalised children and adolescents were treated in a child and adolescent psychiatric department, 22% were in adult psychiatry, and more than half (57%) were treated in non-psychiatric wards (mostly paediatrics). The population rate of juveniles in hospital was 418 per 100,000 insured persons in the same age.

**18% of young patients contacted outpatient psychiatrist, 27% had psychotherapy, 1/3 had psychological assessment**

791 patients aged 0-19 years (18% of all patients and 0.6% of all insured in this age group) had a contact with an outpatient psychiatric specialist, three quarters of them visited a child and youth outpatient psychiatrist. Furthermore, 27% of all patients (1,208; 1% of insured 0-18 years old) received psychotherapy, and most of them (70%) went to publicly paid therapists. Finally, 33% of the 0-18 year old patients had an assessment from a registered clinical psychologist, and some (5%) received other psychological services as part of a multidisciplinary therapy (Figure 4.10-1).

**higher proportion of females than males: psychotherapy; vice versa: psychological services**

Some gender differences can be observed. Overall, the percentage of patients aged 0-18 who received a mental health service was slightly higher in males than among females. Furthermore, while the proportion of children and adolescents who received psychotherapy was higher among females than among males, the ratio was reversed concerning psychological services. On the contrary, there were hardly any gender differences concerning the prescription of medication (Figure 4.10-1).

Results

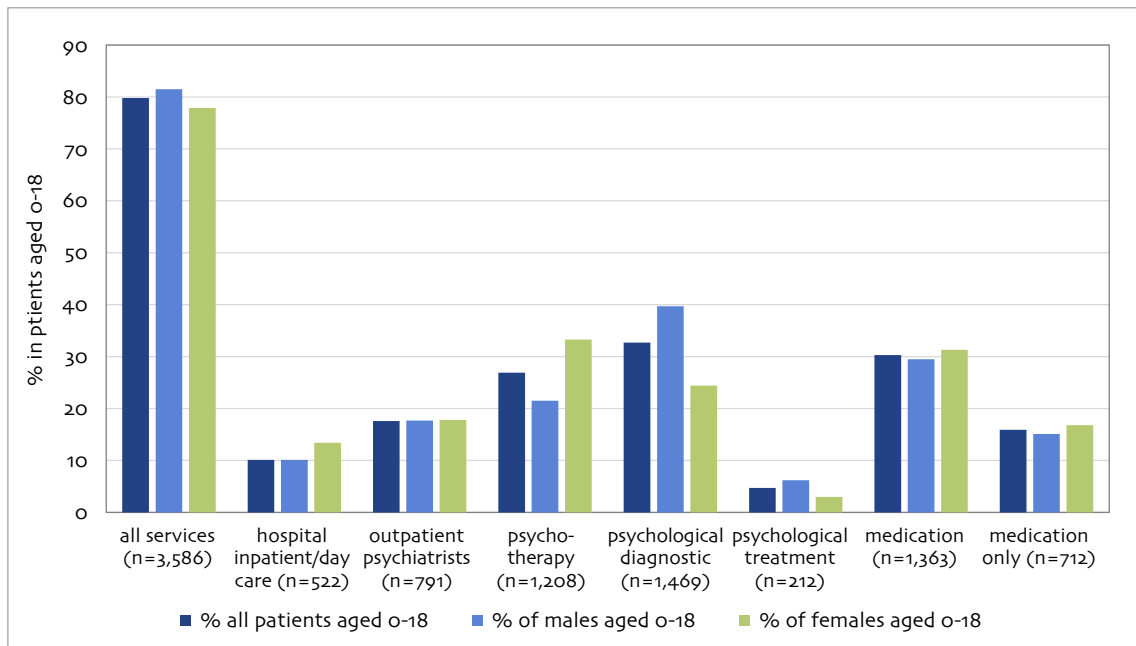


Figure 4.10-1: Uptake of mental health benefits in 0-18 years old by type of benefit and gender (2017)



## 5 Discussion

In this report the use of mental health service and benefits that are provided within the health sector and (co-) funded by the TGKK and the prevalence of mental disorders have been described.

Regarding epidemiology, no robust data on the prevalence of mental disorders are available in Austria, except for the subgroup of adolescents between 10 and 18 years. However, the latter do not differentiate between different Austrian regions. Consequently, the information on the prevalence of mental disorders in Tyrol is rather scarce. Concerning addictive disorders, the available evidence indicates that the proportion of people who has alcohol problems differs between the Tyrolean regions. Concerning risky consumption of drugs, this seems to be below the Austrian average in Tyrol. For all other types of mental disorders, the prevalence can only be estimated based on Austrian estimations, indicating that 3% of the Tyrolean population (~22,500) may be affected by severe mental health problems, and that the most prevalent type of disorders is depression, which may affect up to 9% of the adult Tyrolean population (~54,700).

The results of the analysis of benefits uptake show that a broad range of mental health services and benefits have been used by persons insured with the TGKK, however there are considerable differences in the magnitude of benefit uptake between the different types of benefits and in terms of characteristics of patients who used them.

Benefits that were used most frequently were medications. The vast majority of patients (85%) included in our data were prescribed drugs for treating mental disorders and in a large proportion (almost two third) medication was the only type of benefit which these patients received, although they may have received other services in the past. Patients who were prescribed medication accounted for quite a noticeable proportion of the total insured population in 2017 (12%). These patients may have used services from other sectors (e.g. services that are provided by organisations in the social sector), or received outpatient mental health care in hospitals, or they may have contacted other medical specialists. This may be particularly the case in older patients, amongst whom the proportion of medication-only users is particularly high (88%). Because a large proportion of them were prescribed anti-dementia drugs, many of them may suffer from dementia and therefore being in long-term care rather than being treated in the healthcare system; or they may use other services in the health system as has been shown in an earlier study [25]. By contrast, in younger medication-only users, additional service use in other sectors is less likely. This is because mentally ill patients in working age who use services outside the health sector are usually more severely ill than those who do not use those services and hence, would most probably also have been treated in hospital. This suggests that there is a high proportion of patients <65 years that have received pharmacological treatment only to tackle their mental health problems. The actual medication users may even be higher because the data do not show prescribed medications with prices below the prescription fee that would be paid entirely privately.

The frequencies of types of drugs described follow the known patterns with anti-depressants being the drug class that patients have been described most often (62% of patients), accounting for 50% of all prescriptions, while the proportion of patients who were prescribed other types of drugs were 20% and below for each drug class respectively.

**report describes benefit uptake and prevalence**

**no robust epidemiological data for Tyrol**

**~22,500 Tyroleans may be severely mentally ill**

**depression most prevalent**

**magnitude of benefit use differs according to benefit type**

**medication most frequently used**

**often medication use only in year of observation but patients may have received non-TGKK funded services**

**familiar drug class prescription patterns**

|   |   |
|---|---|
| <p><b>mental health services utilised less frequently</b></p> <p><b>&lt;20% contacted psychiatrist</b><br/><b>&lt;10% had psychotherapy</b></p> <p><b>n hospital outpatient service user + private payers unknown</b></p> | <p>In contrast to medication, mental health services were utilised much less frequently. Overall, less than a third of all patients (&lt; 5% of all insured persons) used some of the services described in 2017. While this is not surprising for hospital mental health care, which would generally be reserved for severe cases, it is less easily interpretable for the other types of available services. For example, less than a fifth of the patients had a contact with an outpatient psychiatrist who was (co-) funded by the TGKK, and less than 10% received a publicly (co-) funded psychotherapy. A number may have used hospital outpatient services. Others may have contacted private doctors or therapists and fully paid the service privately as has, for example outlined for children and adolescents in other Austrian regions [26]. Such cases would not be represented in our data.</p>  |
| <p><b>very few were in rehab</b></p> <p><b>3% of eligible pop on sick-leave</b></p>   | <p>Furthermore, the proportion of patients who were in inpatient rehabilitation is almost negligible. Finally, while a very high number of persons were prescribed medication for treating mental disorders, the number of patients who were on sick leave based on a documented ICD-10-F diagnosis was low, accounting for only 10% of the patients and less than 3% of the eligible population.</p>   |
| <p><b>overall percentage of insured benefit users rather stable, but more outpatient service use and decreasing drug prescriptions</b></p>  | <p>Over time, the overall proportion of the insured population that received benefits in the area of mental health remained rather stable. However, different trends could be observed within single types of benefits. While for some benefits (e.g. psychotherapy, outpatient psychiatric services), the number of patients has increased in absolute terms since 2012, it has slightly decreased for other types of benefits (e.g. medication). Beside a lower use, a reason for the decreasing medication prescriptions could be that the proportion of prescriptions for medication below the prescription fee has increased, which would then result in a lower number of publicly funded prescription, while the overall use of medication would be unchanged.</p>   |
| <p><b>most benefits more often used by females than males</b></p>   | <p>Several gender differences can be observed. Generally, twice as many females than males received benefits. The absolute number of female recipients is higher than the number of males for each single type of benefit, except for clinical psychological services which were used by more males than females. However, the proportion of patients who received a benefit was sometimes higher in males than in females. For example, a higher proportion of male patients than female patients had contact with an outpatient psychiatrist, or was treated in a hospital. On the contrary, a higher proportion within female patients than within male patients used psychotherapy. Similarly, regarding medication, a higher proportion of females than males were prescribed medication, and the percentage of patients who received medication only was also higher among females than among males. Some of these patterns derive from different age distributions in female and male patients, with many more females than males in the older age group. Given that both, anti-dementia medication as well as dementia itself are related to higher age, this partly explains the higher proportion of medication only patients in females.</p> |
| <p><b>but higher proportion used hospital and outpatient psychiatrists within males, than within females</b></p>  |   |
| <p><b>sometimes gender-age interactions</b></p>   |   |
| <p><b>gender patterns different when referred to insured population</b></p>   | <p>Gender comparisons depend also on the reference population, i.e. if compared to all patients or to all insured persons. As the example of hospital care has shown, the percentage of hospitalised patients in the highest age (65+) was higher in males than in females, whereas in relation to all insured, in the highest age group more 65+ year old females than males were hospitalised.</p>  |
| <p><b>higher proportion of female insured aged 19+ received benefits</b></p>  | <p>Generally, a higher proportion of insured females than males received services in all age groups except for the population &lt;19 years. Regarding individual service types, the only service that was used more often by male than by female insured in the age groups <math>\geq 19</math> years was hospital care.</p>  |



Concerning the types of medication, prescription patterns in the Tyrolean population seem to show familiar gender-differences: In absolute terms, within each drug class, more females than males were prescribed drugs except for ‘psychostimulants/agents used for ADHD/nootropics’ which have been prescribed more often to males than to females. However, concerning the latter class, the absolute number of patients who received these drugs was overall very low. The picture is more diverse when analysing the proportion within males and females that were prescribed drugs. While the percentage of patients who were prescribed anti-depressants was higher in females than in males, the ratio was reversed for anti-psychotics. Within the other drug classes, these types of gender differences are less pronounced.

Additionally, there are some age-specific differences concerning service use. Generally, quite a high proportion (42%) of patients was younger than 19 years or older than 64 years. If our primary contact point are parents with a mental illness, both of those groups will be less relevant for our study as they either will not have children yet or their children are grown-up. However, this leaves still a relevant proportion of patients (58%) who may potentially be parents of a dependent child. In 2017, this equalled almost 50,000 patients.

Yet, as has been observed for all patients, within this specific age group, a high proportion (51%) only received medication and no other type of benefit. Since 89% of those drugs are prescribed by general practitioners [27], the primary health care system (GPs and primary health care centres, once they exist) would be the level of service provision which to approach, if a high proportion of patients should be reached. On the contrary, only 7% (~3,600 patients) within the 19-64 years old were treated in a hospital in 2017, whereas more than three times as many (12,400) contacted an outpatient therapist. Getting into contact with parents via the hospital system therefore on the one hand may mean that only a very small proportion of parents with a mental illness will be reached, but on the other hand we would reach those with more severe mental illnesses (most frequently with F1, F3 or F4-diagnosis) who may have higher needs for support for themselves and their children.

Concerning hospital care, it also needs to be considered that one quarter of the 19-64 years old patients are not treated in a psychiatric ward. Approaching potential parents via adult hospital psychiatric services would therefore mean that only 2,700 out of all 50,000 people (5%) who received mental health benefits could have been possibly contacted in 2017.

The duration of hospital stays showed a high range, however 50% were discharged after 15 days, indicating that the parents within our project would ideally have to be contacted immediately. Yet, within two weeks after admission, one would still be able to at least reach 50% of the patients. Finally, 50% of the patients were only admitted once during 2017, meaning that they would have to be contacted during their first admission if most of the parents that receive hospital inpatient care are to be reached. Another option may be to get into contact with them in the outpatient hospital setting, however, figures on the number of patients using these services are lacking.

Our data demonstrate that most of the patients who use mental health benefits live in the districts Innsbruck-Stadt, Innsbruck-Land and Kufstein, indicating that we may be able to reach a vast majority of parents by focusing on the most populated Tyrolean districts. However, the rates of service users per insured population were sometimes higher in lower populated districts than in the more densely populated ones.

**medication use shows familiar gender patterns: females more likely to receive anti-depressants, males anti-psychotics**

**differences in other drug classes less pronounced**

**58% of patients potential parents of dependent child**

**half of them received medication only → GP plays important role**

**only 7% treated in hospital**

**low proportion of all patients but more severely ill**

**¼ in non-psychiatric ward -> leaves few patients to be reached in psychiatry**

**contact should be soon after admission or via outpatient unit because 50% discharged after 14 d**

**by focus on populated areas high proportion to be reached**

|   |  |
|---|--|
| <p><b>gender, medication and hospital use patterns comparable to former analysis with similar method</b></p>          | <p>In 2011, an analysis of health insurance data was published based on 2009-data from all insurance funds and covering a similar range of services [9]. When comparing our results with the 2009 data, similar gender ratio in terms of absolute number of benefit recipients can be identified. Furthermore, similar patterns of prescribed medications can be observed. Additionally, the trend of increasing numbers of sick leaves based on an ICD-10-F diagnosis that was described in the Austrian report, seems to also be true for TGKK-patients, however, the percentage of patients on sick leave within the total eligible population has hardly changed. The average duration of sick leave was higher in our analysis (54 days in 2017) than in the Austrian analysis from 2009 (40 days) and also higher than in a more recent analysis from 2011 [11] which indicated an average duration of 39 days in 2014 across Austria. The percentage of insured persons who received hospital treatment was not directly comparable between the two analyses, but seems roughly similar. Furthermore, internal medicine wards were the most frequently used non-psychiatric wards in both analyses [9].</p> |
| <p><b>longer duration of sick-leave in our analysis</b></p>   |  |
| <p><b>lower hospitalisation rates in juveniles in our data than in other studies</b></p>                              | <p>An analysis of hospital admissions of children and adolescents with a diagnosis of a mental disorder (ICD 10-F) in Austria showed that the rate per 100,000 juvenile persons has risen since the 1990s (300 admissions per 100,000 juvenile persons were registered in 1992 rising to 740 per 100,000 in 2008). Authors presented a number of reasons, one of which being the increasing capacity in hospital child and adolescent psychiatry [18]. When comparing the Austrian rates with our results, a considerably lower rate (418 per 100,000 0-18 year olds) in the TGKK-insured children and adolescents was found. This may be due to differences in prevalence, but also due to lower number of available beds or patient preferences, or due to differences in the data sources used.</p>   |
| <p><b>gender distribution and frequency of diagnosis in hospitalised juveniles different from earlier studies</b></p> | <p>An earlier study [28] showed an almost equal gender distribution (48.5% males, 51.5% females) in children and adolescents who were hospitalised in a Tyrolean clinic between 1989 and 2007, while in our data more juvenile males than females were treated in hospitals. Furthermore, the frequencies of diagnoses were different between the two studies. In the earlier study, the most frequent diagnosis was F9 (mental disorders with onset in childhood or adolescence; 40%), followed by F4 (neurotic, stress-related and somatoform disorders) which was diagnosed in 35% of the cohort. Around 5% of admissions each fell into the categories F1 (psychoactive substance abuse), F3 (affective disorders), and F8 (development disorders) respectively. In our data, F4 was the most frequent diagnosis (32%), followed by F1 (27%) and F9 (14%). One reason for the difference may be that both the demographic characteristics and the spectrum of diagnoses or the diagnostic procedures may have changed over time.</p>   |
| <p><b>use of psychotherapy in young patients increased</b></p>  | <p>As can be observed from comparing our results with an older report on psychotherapy use in children and adolescents, the uptake of psychotherapy has increased: In 2011, 114 children/adolescents received psychotherapy that was fully publicly paid. Additionally, for 575 children/adolescents the Tyrolean health insurance paid an allowance to subsidise private costs. These represented 0.007% and 0.38% of Tyroleans &lt;19 years respectively which were the lowest rates compared to other Austrian regions [17]. Although our data are not directly comparable because they only cover TGKK-insured children and adolescents, the population rates for psychotherapy in this age group seem to have increased (0.7% and 0.3% of the total Tyrolean insured population &lt;19 years received fully funded or co-funded therapy respectively via the TGKK in 2017).</p>   |
| <p><b>more publicly funded therapy use</b></p>  |  |

The epidemiological study in adolescents (10-18 years) from Wagner et al. [16] showed that from those adolescents with a mental illness who received treatment, 8% received inpatient care and around 14% received medication. In our analysis of the youngest age group (0-18 years), the percentage who received medication was twice as high, while the percentage of hospitalised patients was roughly similar (10%). The difference in medication use may be due to differences in the age groups analysed but also due to differences in the data sources (self-reporting versus administrative prescription documentation) or treatment preferences.

The report does not allow judgements on whether the available services meet the needs of people with mental disorders and/or whether sufficient capacities are available. First of all, information on the prevalence and severity of mental disorders in Austria is limited. Furthermore, many people with mental disorders may not seek help within the professional mental health care system. As has been shown for adolescents, less than 50% of adolescents with a mental disorder have accessed professional support. For anxiety disorders, eating disorders, compulsive disorders and non-suicidal self-injury behaviour take-up rates were only between 10 and 27%. Higher service uptake was found for diagnostic groups that are related to externalising behaviour than for those that belong to internalising behaviour [16].

### Limitations

The report has a number of limitations. First of all, due to funding regulations, only a part of mental health services in Tyrol and benefits are covered by the administrative data of the TGKK. For a full picture, mental health services that are provided within the social or educational sector would have to be included. Some information gaps within the health sector also remain, most importantly there is no available documentation on the number of hospital outpatient mental health care users and the number of patients who contacted a general practitioner because of mental health problems. Additionally, fully privately paid services within the health sector (e.g. entirely privately paid psychotherapy) are not covered by the data. However, although only representing a part of the whole system, the services that are covered in this report play an important role in the overall mental health system, both in terms of relevance in the process of care and costs. Furthermore, concerning the question, whether health care sector-based adult mental health care services may be a good contact point for children with parents with mental illnesses, this analysis provides valuable information on the quantities and characteristics of service use.

Secondly, data was exclusively provided by the TGKK, but not the entire Tyrolean population is insured with the TGKK. However, roughly 80 % of the Tyrolean population are covered, and the characteristics described are therefore applicable to the vast majority of the population. Furthermore, we were primarily interested in the relative differences between the different types of benefits and settings used rather than the precise absolute numbers. The former likely does not differ very much between different insurance funds.

Many people with mental health problems do not get into contact with the support system covered by our data or may pay for services entirely privately. These persons are therefore not included in the data. Consequently, the results neither allow conclusions on the prevalence of mental disorders, nor do they provide a full picture of parents with a mental illness that may be relevant for our study.

**in our study more juvenile medication user**

**report does not answer whether services meet needs and are sufficient**

**many people with disorders do not use services**

**report covers only TGKK-funded services**

**knowledge gap: service use in social and educational system, hospital outpatient setting, privately paid service**

**TGKK-data cover only 80% of Tyrolean population**

**but relative numbers valuable**

**conclusions on prevalence not possible**

**focus on 2017 because of relevance for planning**

In the interest of the readers' convenience, the detailed analysis is mostly restricted to the year 2017, while data from earlier years have mainly been used to describe overall time trends. The rationale for focusing primarily on 2017 is that this represents the most recent year which seemed most appropriate to be used for further planning of the project. Moreover, the time trend has not shown marked changes over the previous 6 years. Therefore, separate results for the years 2012 to 2016 were not presented.

**no information of benefit users' children because of data characteristics and limited data linkage options**

The analysis gives an overview on the quantitative dimensions of service/benefit use, yet there is no information available on how many of the patients described have children, how many children they have or their age. This is because of the characteristics of the insurance system and the limited options of data linkage: children are generally 'co-insured' with their parents, yet usually with one parent. If persons use mental health services, it would only be visible if they also have children, if the child is co-insured with that parent. If the child is, however, co-insured with the other parent, we would not know from our data that the person who used a service also has children. Other options have been explored. For example, using the health insurance number as a unique identifier for linking the insurance data with the register of residence. However, residence records are only available for each residence separately with no linkage to other family members. Hence, this option does not solve our problem either. Additionally, since 2014, a new civil registry (Personenstandsregister) exists which includes information on a person's children. However, this type of information is only included for children born after 2014, hence, we would only have information on the number and age of children up to three years of age. Apart from that there would be prohibitive legal difficulties for linking insurance data with those types of registries in Austria.

**probably 2,400 hospital users live with at least one child**

In addition to the very crude estimations on the number of children with a parent with mental disorder that we have identified in the literature (see 4.1.3), the information on people treated in hospitals that we gained from our analysis may be used to estimate the number of children who have parents with severe mental illnesses in Tyrol. Based on international data, up to 2/3 of hospitalised persons live at least with one child [29, 30]. Our analysis showed that 3,600 people aged 19-64 were treated in hospitals in 2017. This would mean that up to around 2,400 of them may live at least with one child. Further approaches to estimate the prevalence of children with a parent with mental illness will be explored during later stages of the project.

**administrative data have limitations because collected for a different purpose**

**info on diagnoses to be interpreted cautiously**

Finally, as we are dealing with administrative data, it needs to be noted that they have been collected for a different purpose (mainly for reimbursing service providers) and thus the limitations that are usually inherent in these types of secondary data need to be considered. For example, the diagnoses are documented for administrative purposes and are not necessarily exhaustively validated by health care professionals. Thus, they may deviate from the actual complete diagnoses. In our analysis this is particularly a limitation in older patients, because multi-morbidity is highly prevalent in this age group and administrative diagnosis documentation may not precisely capture the full health status. Finally, in the (hospital) outpatient setting, diagnoses have so far generally not been documented which results in some knowledge gaps concerning service use in certain settings.

## 6 Conclusion

The aim of our research project is to develop and implement an evidence-informed approach of better identifying and supporting children who have parents with mental disorders in a participatory manner, and to evaluate the practices that have been implemented. One of the challenges within this project is to identify the setting that would be most appropriate for getting into contact with these children and their parents and that would at the same time make evaluation of the implemented practice approaches feasible.

The purpose of the report has therefore been to get to know the prevalence of mental disorders in Tyrol and to explore whether getting into contact with our target groups via the adult mental health care system – in particular via those services that are part of the health care sector – would be a feasible and potentially successful strategy for implementation and evaluation and what the advantages and disadvantages of the individual service settings within that system are. For achieving that objective, we used administrative data from the main social health insurance fund in Tyrol, which is the TGKK.

The results indicate that the percentage of parents with mental illness that we may be able to reach differs considerably according to the setting that we choose. If we want to get into contact with as many parents as possible, the primary care setting is most promising, whereas we will only reach a very small and selected group of parents if we choose the hospital psychiatric system. However, those may be the most severely ill with the highest need for support. The more the study population should represent different levels of severity of disease, the more service types and levels of care we will have to take into consideration. Including more service types, however, makes the logistics of evaluation more resource consuming the more so, as within each service category (e.g. outpatient psychiatrists) many sites exist that are spread across entire Tyrol.

Concerning sample size for the evaluation at a later stage, the analysis suggests that a meaningful number of patients would be available within all service settings except for inpatient rehabilitation. Finally, the analysis has shown that administrative data can be a useful piece of information for planning service implementation and evaluation.

**identifying setting for getting into contact with children challenging**

**administrative data analysis and epidemiological data should help to make informed decisions in project**

**highest number to be reached in primary health care setting, few, but more severely ill in hospital**

**approaching more settings make logistics challenging**

**meaningful sample size to be reached in most settings**



## 7 Literature

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## 8 Annex

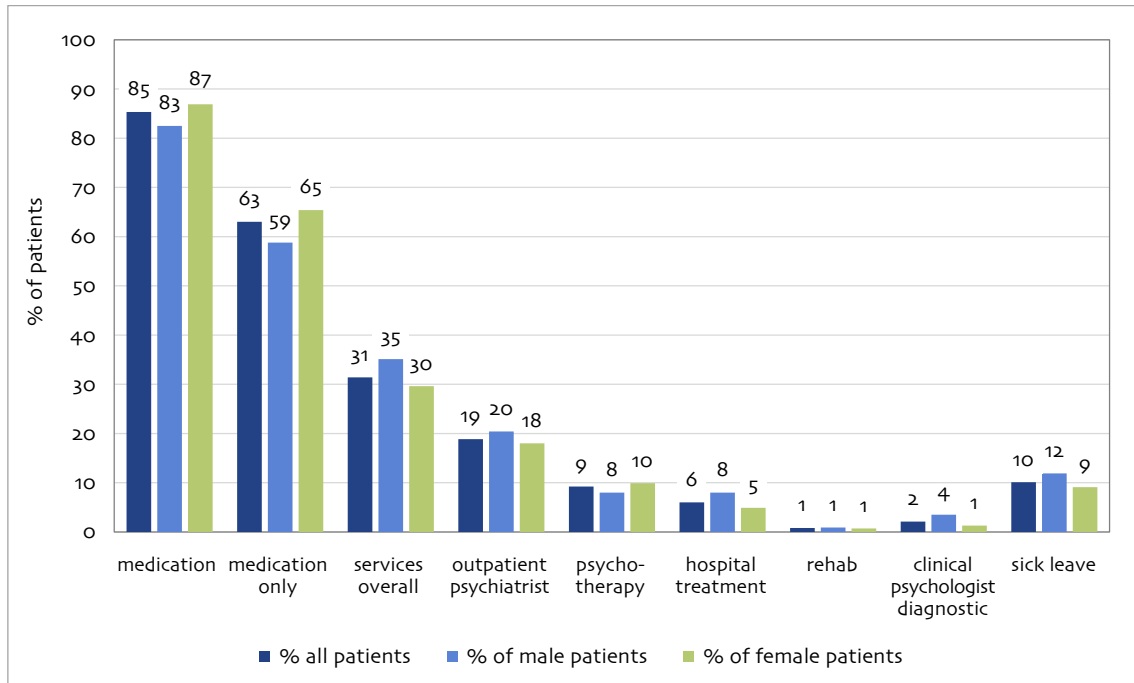


Figure 8-1: Percentage of patients who received benefits by type of benefit (2017)

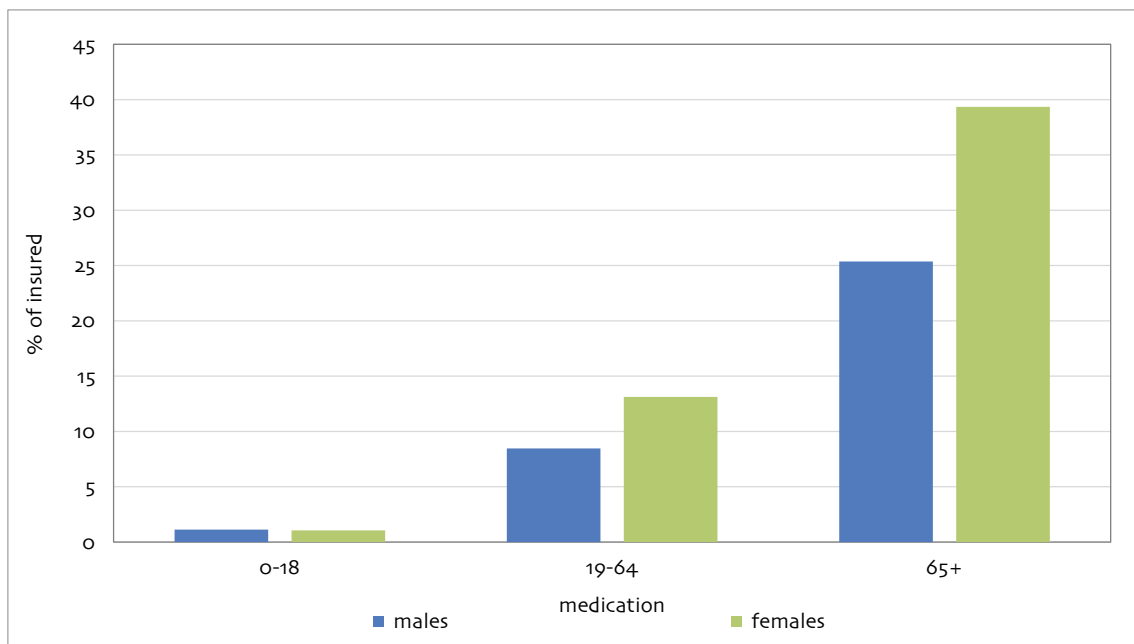


Figure 8-2: Percentage of insured who were prescribed medication by age and gender (2017)

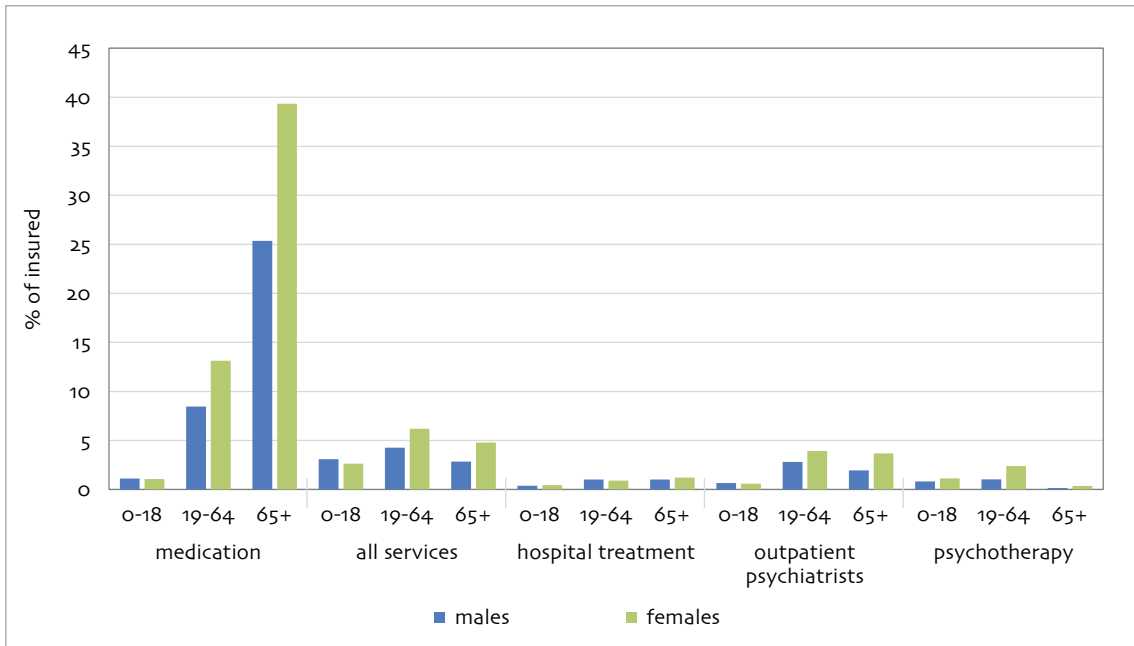


Figure 8-3: Percentage of insured who used mental health services (selection) by age and gender (2017)





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