Anxiety disorders among adolescents and young adults: Prevalence and mental health care service utilization in a regional epidemiological study in Germany

Hannah C.M. Niermann [a], Catharina Voss [a,b], Lars Pieper [a,c], John Venz [a,c], Theresa M. Ollmann [a], Katja Beesdo-Baum [a,c,*]

[a] Behavioral Epidemiology, Institute of Clinical Psychology and Psychotherapy, Technische Universität Dresden, Dresden, Germany
[b] Department of Child and Adolescent Psychiatry, Psychotherapy and Psychosomatics, University Medical Center Hamburg-Eppendorf, Hamburg, Germany
[c] Center for Clinical Epidemiology and Longitudinal Studies (CELOS), Institute of Clinical Psychology and Psychotherapy, Technische Universität Dresden, Dresden, Germany

ARTICLE INFO

ABSTRACT

Background: Anxiety disorders are among the most prevalent mental disorders. While it is known that a majority of individuals with anxiety disorders remains untreated, actual treatment rates for adolescents and young adults in Germany remain largely unknown.
Methods: As part of the Behavior and Mind Health (BeMIND) study, examining a random community sample of 14–21-year-olds (Dresden; Germany; $N = 1,180$), the lifetime prevalence for DSM-5 anxiety disorders and lifetime service utilization rates were determined by a standardized interview (DIA-X-5/CIDI).
Results: In the present sample, 23.3 % of adolescents and young adults fulfilled DSM-5 criteria for at least one lifetime anxiety disorder. Of those, 39.1 % used any health care services, most frequently they visited an outpatient psychotherapist/psychologist (23.0 %). Individuals with agoraphobia were most likely to use any in- or outpatient specialized service (64.8 %), while individuals with a specific phobia were least likely (22.3 %). Having a comorbid disorder or being female increased the likelihood of seeking help.
Conclusion: The results showed that approximately 2/3 of adolescents and young adults suffering from an anxiety disorder did not seek help and only few report contacts with a psychotherapist. Given the adverse long-term consequences of anxiety disorders, these findings suggest to improve efforts on increasing intervention awareness and treatment possibilities for these individuals.

1. Introduction

Anxiety disorders are among the most prevalent and earliest developing mental disorders (Beesdo-Baum & Knappe, 2012; Jacobi et al., 2004; Kessler, Ruscio, Shear, & Wittchen, 2010). They frequently take a chronic and impairing course, co-occur with other mental disorders (Beesdo-Baum et al., 2015; Kessler et al., 2010) and show increased homotypic (i.e., a particular mental disorder predicts itself at a later time point) and heterotypic (i.e., a particular mental disorder predicts another disorder at a later time point) transitions of mental disorders from childhood over adolescence to adulthood (Copeland et al., 2013). Even though anxiety disorders can be effectively treated with

evidence-based therapies (Carpenter et al., 2018), the majority of individuals suffering from an anxiety disorder have been shown to remain untreated (Heinig, Wittchen, & Knappe, 2021; Mack et al., 2014; Merikangas et al., 2011).

Rates of service utilization in adults with an anxiety disorder based on DSM-IV criteria vary worldwide between 8 %–45 % based on 12-months data of the World Mental Health Survey (Alonso et al., 2018). Comparable results were found in other large scale studies in adult population based on DSM-III and DSM-IV criteria (The Netherlands: Bijl & Ravelli, 2000; Australia: Burgess et al., 2009; USA: Mackenzie, Reynolds, Cairney, Streiner, & Sareen, 2012; Canada: Roberge, Fournier, Duhoux, Nguyen, & Smolders, 2011). Regarding adults in Germany,

* Corresponding author at: Technische Universität Dresden, Institute of Clinical Psychology and Psychotherapy, Behavioral Epidemiology, Chemnitzer Str. 46, 01187, Dresden, Germany.
E-mail address: Katja.Beesdo-Baum@tu-dresden.de (K. Beesdo-Baum).

Table 1

Lifetime (LT) and 12-month (12-M) prevalence estimates for anxiety disorders, separately for sex and age groups.

	Total (N = 1180)						Sex (N = 1180)							
							Male (N = 495)						Female (N = 685)	
	LT			12-M[a]			LT			12-M[a]			LT	
DSM-5 Diagnoses	N	%w	95 % CI	N	%w	95 % CI	N	%w	95 % CI	N	%w	95 % CI	N	%w
Any AD	279	23.3	20.8–26.0	204	16.5	14.4–18.9	78	16.8	13.5–20.7	45	9.8	7.2–13.1	201	30.4
Panic Disorder	58	4.6	3.5–6.0	51	4.0	3.0–5.4	9	2.0	1.0–4.0	8	1.7	0.8–3.6	49	7.4
Generalized AD	50	4.3	3.2–5.7	27	2.1	1.4–3.2	12	2.6	1.4–4.6	4	0.9	0.3–2.5	38	6.1
Social AD	82	6.6	5.3–8.2	63	4.8	3.7–6.2	17	3.6	2.2–5.8	9	1.9	1.0–3.8	65	9.9
Agoraphobia	14	1.2	0.7–2.1	10	1.0	0.5–1.8	3	0.6	0.2–2.2	2	0.5	0.1–2.3	11	1.8
Separation AD	26	1.9	1.3–2.9	8	0.7	0.3–1.4	3	0.7	0.2–2.1	1	0.2	0.0–1.2	23	3.2
Any Specific Phobia	159	13.5	11.5–15.7	112	9.1	7.5–11.0	50	10.7	8.0–14.1	28	6.1	4.1–8.9	109	16.5
- Animal	54	4.2	3.2–5.6	41	3.0	2.2–4.2	11	2.5	1.3–4.7	5	1.3	0.5–3.2	43	6.0
- Blood-Injection-Injury	37	3.3	2.3–4.6	19	1.5	0.9–2.4	14	3.2	1.8–5.5	7	1.4	0.6–3.1	23	3.4
- Natural Environment	50	4.5	3.3–6.0	32	2.7	1.9–3.9	22	4.6	2.9–7.0	11	2.2	1.2–4.1	28	4.3
- Situational	20	1.7	1.0–2.6	15	1.2	0.7–2.1	7	1.3	0.6–2.9	5	1.0	0.4–2.5	13	2.0
- Other	36	3.2	2.3–4.5	24	2.0	1.3–3.0	12	2.7	1.5–4.9	5	1.2	0.5–2.9	24	3.7
- Other Phobic AD (only 1 agoraphobic situation)	10	0.9	0.5–1.7	8	0.8	0.4–1.6	3	0.7	0.2–2.2	2	0.5	0.1–2.1	7	1.1
Number of comorbid AD[b,c]														
0	195	71.5	65.6–76.8	149	74.6	67.8–80.4	65	82.6	71.3–90.1	39	85.6	69.9–93.8	130	64.9
1	62	21.0	16.4–26.6	44	19.7	14.6–26.1	10	14.5	7.6–25.8	5	12.6	5.0–28.5	52	24.9
≥ 2	22	7.4	4.8–11.3	11	5.6	3.1–10.0	3	2.9	0.9–9.0	1	1.8	0.2–12.5	19	10.1
Comorbid Any Depressive Disorder[c,d]	100	35.2	29.5–41.5	32	15.6	10.9–21.8	17	24.8	15.6–37.1	6	15.2	6.5–31.3	83	41.4
Comorbid Any Substance Use Disorder[c,e]	94	37.4	31.3–43.8	55	29.4	22.9–36.9	26	38.7	27.5–51.2	15	38.5	24.0–55.4	68	36.6
Comorbid Any Depressive and Any Substance Use Disorder[c,d,e]	41	16.1	11.8–21.6	9	4.9	2.4–9.9	7	11.7	5.5–23.2	2	6.5	1.6–23.6	34	18.7
Panic attacks[c,f]	101	36.0	30.2–42.3	70	33.8	27.2–41.1	22	29.8	19.9–42.0	11	24.7	13.3–41.2	79	39.7

Notes: AD = Anxiety Disorder; [a] The comorbidity for the 12-M prevalence rates for any Anxiety Disorder are also based on 12-M comorbidity rates. [b] Different subtypes of Specific Phobia not counted. [c] among those with any Anxiety Disorder; [d] including Major Depressive Disorder and Persistent Depressive Disorder (Dysthymia); [e] including Tobacco, Alcohol, and Illegal Substance Use Disorder; [f] including all panic attacks, also those considered within Panic Disorder. N = unweighted number; %w = weighted column percentage.

similar rates of service utilization when suffering from an DSM-IV based anxiety disorder have been observed with a rate of 49 % for lifetime (Mack et al., 2014) and 24 % for 12-months service utilization (Alonso et al., 2018; Mack et al., 2014). Summarizing, more than half of all individuals with an anxiety disorder have never been in contact with any mental health care service and even if professional service was used it happened with a delay. In an adult sample, for example, it took on average six years after the onset of an anxiety disorder before professional service was used (Mack et al., 2014).

Service utilization rates have also been suggested to vary according to sex and comorbidity. Females with anxiety disorders report more often the use of health care services than males (Burgess et al., 2009; Kovess-Masfety et al., 2014; Mack et al., 2014; Merikangas et al., 2011; Roberge et al., 2011; Runge, Beesdo, Lieb, & Wittchen, 2008). For example Runge et al. (2008) found in a random community-based sample of 14–34 year olds service utilization in 45 % of females and 27 % of males. Additionally, the co-occurrence of a mental disorder, particularly comorbidity of a depressive disorder, increases the perceived service need as well as the likelihood to seek help (Mack et al., 2014; Meredith, Sherbourne, Jackson, Camp, & Wells, 1997; Mojtabai, Olfson, & Mechanic, 2002; Scott, Mackenzie, Chipperfield, & Sareen, 2010).

Adolescents and young adults have high lifetime prevalence estimates for any anxiety disorder (i.e. up to 31 %; Beesdo-Baum & Knappe, 2012; Merikangas et al., 2010). However, service utilization rates among these younger age groups remains largely unknown. It has been suggested that only one third or even fewer adolescents and young adults with an DSM-IV based anxiety disorder seek help (rates between 18 % and 31 % ; Essau, 2005; Merikangas et al., 2011; Runge et al., 2008), of which approximately only one third consult a psychotherapist who can provide evidence-based treatment for an anxiety disorder

(Runge et al., 2008).

Beyond the results of previous studies mainly based on DSM-IV criteria with a few exceptions (prevalence rates for anxiety disorders based on DSM-5 criteria: Chen, Chen, Lin, Shen, & Gau, 2019; Wagner et al., 2017), current data are necessary to identify the treatment gap based on the new criteria for DSM-5 anxiety disorders (American Psychiatric Association (APA), 2013). Here, separation anxiety disorder and the specifier panic attack should be included (Wittchen, Heinig, & Beesdo-Baum, 2014). The focus on adolescents and young adults is essential because more than 50 % show the first onset of anxiety disorders before the age of 14 (Kessler et al., 2005, 2007). Additionally, an immediate treatment offer seems to be important to stop the homotypic and heterotypic transition to adulthood (Copeland et al., 2013) as well as the long-term negative functional outcomes of anxiety disorders (Asselmann, Wittchen, Lieb, & Beesdo-Baum, 2018; Copeland, Wolke, Shanahan, & Costello, 2015).

Therefore, the goal of the present descriptive epidemiological study is to explore rates of service utilization in adolescents and young adults with anxiety disorders to inform future approaches to reduce treatment gaps. Specifically, the current study explores (1) lifetime prevalence estimates for DSM-5 anxiety disorders and (2) lifetime and disorder-specific service utilization rates among adolescents and young adults from a regional general population sample in Germany – a country with free access to specialized treatment.

2. Methods

2.1. Sample

A random sample of 14–21 year-olds, stratified by age and sex, was drawn from the population registry of the city of Dresden (Germany) in

Sex (N = 1180)				Age groups (N = 1180)											
Female (N = 685)				14–17 years (N = 635)							18–21 years (N = 545)				
LT	12-M[a]			LT			12-M[a]			LT			12-M[a]		
95 % CI	N	%w	95 % CI	N	%w	95 % CI	N	%w	95 % CI	N	%w	95 % CI	N	%w	95 % CI
26.8–34.1	159	23.7	20.5–27.2	125	18.6	15.8–21.9	91	13.1	10.8–16.0	154	26.6	22.9–30.6	113	18.8	15.7–22.4
5.5–9.7	43	6.5	4.8–8.7	25	3.5	2.3–5.1	22	3.1	2.1–4.7	33	5.4	3.8–7.6	29	4.7	3.2–6.8
4.4–8.3	23	3.5	2.3–5.2	15	2.4	1.4–4.0	8	1.2	0.6–2.4	35	5.6	4.0–7.8	19	2.8	1.7–4.4
7.7–12.5	54	7.9	6.0–10.2	32	4.7	3.3–6.6	27	3.8	2.6–5.5	50	8.0	6.0–10.5	36	5.5	3.9–7.6
1.0–3.3	8	1.4	0.7–2.9	4	0.5	0.2–1.5	1	0.1	0.0–0.9	10	1.6	0.8–3.1	9	1.5	0.8–3.0
2.1–4.9	7	1.2	0.6–2.6	16	2.1	1.3–3.5	2	0.2	0.1–0.9	10	1.7	0.9–3.3	6	1.0	0.4–2.2
13.7–19.6	84	12.4	10.0–15.3	75	11.4	9.1–14.2	56	8.3	6.4–10.7	84	14.9	12.0–18.3	56	9.7	7.4–12.6
4.4–8.1	36	4.9	3.5–6.8	31	4.4	3.1–6.2	25	3.4	2.3–5.0	23	4.1	2.7–6.3	16	2.8	1.7–4.6
2.2–5.1	12	1.6	0.9–2.9	16	2.5	1.5–4.0	10	1.5	0.8–2.8	21	3.8	2.4–6.0	9	1.5	0.7–3.0
2.9–6.3	21	3.2	2.1–5.0	27	4.5	3.1–6.5	18	2.9	1.8–4.7	23	4.4	2.9–6.7	14	2.6	1.5–4.4
1.1–3.5	10	1.5	0.8–2.9	10	1.7	0.9–3.1	7	1.1	0.5–2.4	10	1.7	0.9–3.2	8	1.3	0.6–2.8
2.5–5.6	19	2.8	1.8–4.4	12	1.8	1.0–3.2	9	1.3	0.7–2.5	24	4.2	2.7–6.3	15	2.4	1.4–4.1
0.5–2.5	6	1.0	0.5–2.4	5	0.8	0.3–2.1	3	0.5	0.2–1.7	5	0.9	0.4–2.3	5	0.9	0.4–2.3
57.7–71.5	110	69.8	61.8–76.7	90	73.2	64.6–80.4	67	73.6	63.2–82.0	105	70.7	62.7–77.6	82	75.1	66.0–82.4
19.2–31.6	39	22.9	16.9–30.3	28	21.3	14.9–29.5	23	25.2	17.0–35.6	34	20.9	15.0–28.5	21	17.1	11.0–25.6
6.4–15.7	10	7.3	3.9–13.3	7	5.5	2.5–11.5	1	1.2	0.2–8.2	15	8.4	5.0–13.7	10	7.8	4.1–14.2
34.5–48.8	26	15.7	10.7–22.6	41	30.4	22.9–39.1	13	13.1	7.6–21.7	59	37.6	29.9–46.0	19	16.7	10.6–25.5
29.8–43.9	40	25.4	18.9–33.1	28	21.6	15.2–29.8	19	20.8	13.4–30.7	66	45.0	36.9–53.5	36	33.6	24.8–43.7
13.5–25.3	7	4.2	2.0–8.9	13	9.8	5.7–16.3	4	4.2	1.5–10.9	28	19.2	13.4–26.8	5	5.3	2.1–12.8
32.8–47.0	59	37.8	30.2–46.1	42	32.4	24.6–41.3	31	33.8	24.5–44.5	59	37.8	30.0–46.2	39	33.8	25.3–43.6

2015 to become part of the prospective-longitudinal Behavior and Mind Health (BeMIND) study. The age span of 14–21 year-olds was chosen to cover the core incidence phase for a range of mental disorders including various anxiety disorders (Kessler et al., 2007). We divided the age span at age 18, because it represents the legal age in Germany and decided therefore to refer to the age group of 14–17 year-olds as adolescents and the age group of 18–21 year-olds as young adults. Sampled individuals who met the following criteria were eligible to participate: (i) living in a household in Dresden during the time of testing, (ii) age 14–21, (iii) sufficient German language skills, (iv) no institutionalization. Invitation letters were sent by the study team to 6,321 individuals (in minors addressed also to their legal guardians), with a maximum of two reminder letters. 14.1 % of these individuals were not eligible, mostly because they did not reside under the provided address. From the remaining 5,428 individuals, 1,180 individuals completed the BeMIND baseline assessment, resulting in a participation (response) rate of 21.7 %; the cooperation rate (i.e., ratio of all participants interviewed out of all eligible participants ever contacted) was 43.4 % (American Association for Public Opinion Research; AAPOR, 2016). The detailed description of the BeMIND-study design, sampling, participant flow, and baseline sample characteristics can be found elsewhere (Beesdo-Baum et al., 2020). Written informed consent (for those aged 18 years or older) or assent (for those younger than 18 years) was obtained after complete study information. For minors, all legal guardians also provided written informed consent. The study protocol was reviewed by the ethics committee of the Technische Universität (TU) Dresden (EK381102014).

2.2. Measures

2.2.1. Diagnostic status

Diagnostic status of the participants was determined using an updated version of the Munich Composite International Diagnostic Interview (DIA-X/M-CIDI; Wittchen & Pfister, 1997), a fully standardized and computer-assisted personal interview for the assessment of a wide range of mental disorders (DIA-X-5; Hoyer et al., 2020). It provides reliable and valid information from age 14 onwards (Hoyer et al., 2020;

Wittchen, Lachner, Wunderlich, & Pfister, 1998). The DIA-X-5 assessed both lifetime and 12-month diagnoses for anxiety and other mental disorders according to the criteria of the DSM-5 (American Psychiatric Association (APA), 2013). The interviews were conducted face-to-face by trained clinical (psychology/medical) interviewers. Following a section on demographic factors, each diagnostic section began with one or several stem questions which were followed after positive endorsement with further questions assessing all diagnostic criteria for the respective diagnosis. Ages of onset and recency, persistence, impairment, distress, and help seeking were also assessed. For the purpose of the current study, the focus was on the following diagnoses of anxiety disorders: panic disorder, generalized anxiety disorder, social anxiety disorder, agoraphobia, separation anxiety disorder, and specific phobia (see Table 1). Test-Retest reliability (Cohens Kappa) for anxiety disorders ranged between 0.29 for social anxiety disorder to 0.76 for specific phobia. Comorbidities included other anxiety disorders, depressive disorders comprising major depressive disorder and persistent depressive disorder (dysthymia), as well as substance use disorders comprising tobacco, alcohol, and illicit substance use disorders. Test-Retest reliability (Cohens Kappa) was 0.81 for any depressive disorder and 0.75 for any substance use disorder. For anxiety diagnoses, full DSM-5 diagnostic criteria had to be met during the lifetime; for 12-month diagnoses, the recency (last occurrence) had to be reported for the last 12 months. For a 12-month diagnosis of major depression and the substance use disorders, it was assured that lifetime cases met the necessary number of diagnostic symptoms also during the last 12 months. Co-occurring panic attacks were considered as severity marker given that a panic-attack specifier can be coded in DSM-5 (American Psychiatric Association (APA), 2013).

2.2.2. Service utilization

Any lifetime service utilization was assessed towards the end of the DIA-X-5 interview (section Q), and with the help of corresponding lists for institutions and providers. The module "service utilization" began with the following question: *"Have you ever visited/contacted any of the health care institutions (as listed in the respondent's booklet) because of*

Table 2

Any lifetime service utilization due to mental health problems (*N* = 277) and disorder-specific consultation of physician/other specialist among individuals with lifetime anxiety disorders.

| | Total | | | Sex | | | | | | Age groups | | | | | |
| | | | | Male | | | Female | | | 14−17 years | | | 18−21 years | | |
	N	%w	95 % CI	N	%w	95 % CI	N	%w	95 % CI	N	%w	95 % CI	N	%w	95 % CI
Any Anxiety Disorder															
- Any service utilization	105	39.1	33.0−45.5	25	34.5	23.9−46.9	80	41.8	34.7−49.1	41	33.2	25.2−42.3	64	41.9	33.9−50.4
- Disorder-specific	117	42.9	36.7−49.3	31	38.9	28.0−51.2	86	45.2	38.1−52.6	45	37.3	28.9−46.5	72	45.7	37.5−54.1
Panic Disorder															
- Any service utilization	25	47.3	33.6−61.5	3	46.4	11.1−85.8	22	47.6	33.1−62.5	10	38.7	20.9−60.1	15	51.4	33.0−69.4
- Disorder-specific	23	41.8	28.6−56.2	4	48.5	14.3−84.3	19	39.8	26.2−55.2	9	34.2	17.7−55.8	14	45.2	27.8−63.8
Generalized Anxiety Disorder															
- Any service utilization	25	49.8	35.1−64.6	6	53.7	22.2−82.4	19	48.1	31.7−64.9	6	41.9	17.5−70.9	19	52.2	34.4−69.4
- Disorder-specific	25	50.3	35.5−65.0	5	46.2	17.3−77.9	20	52.1	35.2−68.5	7	44.9	19.9−72.9	18	51.8	34.1−69.1
Social Anxiety Disorder															
- Any service utilization	43	51.7	40.0−63.3	7	37.5	16.5−64.7	36	57.4	44.2−69.6	16	54.0	35.7−71.2	27	50.8	36.0−65.5
- Disorder-specific	37	45.6	34.4−57.3	7	37.0	16.2−64.2	30	49.0	36.3−61.8	12	41.2	24.4−60.2	25	47.5	33.2−62.1
Agoraphobia															
- Any service utilization	11	85.5	57.0−96.3	2	81.5	0.6−100	9	87.1	51.4−97.7	2	50.8	2.5−97.7	9	93.5	53.5−99.4
- Disorder-specific	9	73.1	42.2−91.0	2	81.5	0.6−100	7	69.8	33.4−91.4	1	28.3	0.6−96.5	8	83.4	41.8−97.2
Separation Anxiety Disorder															
- Any service utilization	10	38.2	20.0−60.4	0			10	46.4	25.3−68.9	6	38.1	16.3−66.1	4	38.2	11.3−75.1
- Disorder-specific	8	31.5	15.1−54.2	0			8	38.3	18.9−62.2	4	25.6	8.7−55.4	4	36.5	10.6−73.6
Any Specific Phobia[a]															
- Any service utilization	50	33.0	25.4−41.5	15	31.7	19.2−47.6	35	33.9	25.0−44.0	22	29.7	20.1−41.6	28	34.7	24.5−46.5
- Disorder-specific[b]	32	21.0	14.9−28.8	10	20.1	10.4−35.1	22	21.7	14.4−31.2	13	18.5	10.8−29.8	19	22.4	14.2−33.4

Notes: Weighted percentages are based on individuals with a lifetime anxiety disorder (see Table 1 for respective reference sample size, keeping in mind that 2 participants did not provide any information about any service utilization use due to mental health problems (Q-Section)). N = unweighted number; %w = weighted row percentage. [a] Any Specific Phobia includes also other phobic anxiety disorders. [b] Two participants with a specific phobia from the Blood-Injection-Injury Subtype did not provide any information about disorder-specific consultation of physician or other specialist.

Table 3

Any lifetime service utilization among individuals with any lifetime anxiety disorder by type of sector/provider.

| | Total (*N* = 277) | | | Sex | | | | | | Age groups | | | | | |
| | | | | Male (*N* = 77) | | | Female (*N* = 200) | | | 14−17 years (*N* = 125) | | | 18−21 years (*N* = 152) | | |
	N	%w	95 % CI	N	%w	95 % CI	N	%w	95 % CI	N	%w	95 % CI	N	%w	95 % CI
Any lifetime service utilization	105	39.1	33.0−45.5	25	34.5	23.9−46.9	80	41.8	34.7−49.1	41	33.2	25.2−42.3	64	41.9	33.9−50.4
Outpatient health care institutions	85	31.5	25.9−37.8	18	24.5	15.5−36.5	67	35.7	28.9−43.0	30	23.5	16.8−32.0	55	35.5	27.9−43.9
Psychologist/Psychotherapist	64	23.0	18.1−28.8	12	15.7	8.7−26.6	52	27.3	21.2−34.4	23	17.4	11.7−25.2	41	25.8	19.2−33.7
Psychiatrist	17	7.1	4.3−11.4	5	7.8	3.2−18.1	12	6.7	3.7−11.6	3	2.8	0.9−8.8	14	9.2	5.3−15.5
General practitioner[a]	17	7.3	4.5−11.8	3	5.8	1.9−16.9	14	8.2	4.8−13.6	3	2.3	0.7−7.1	14	9.8	5.7−16.4
Psychiatric/ psychotherapeutic outpatient unit	21	7.5	4.8−11.4	2	1.8	0.4−7.3	19	10.8	6.9−16.6	7	5.5	2.6−11.2	14	8.5	5.0−14.1
(Social-) psychiatric service	1	0.5	0.1−3.5	0			1	0.8	0.1−5.5	0			1	0.7	0.1−5.2
Inpatient health care institutions	31	11.2	7.7−16.0	9	12.8	6.5−23.7	22	10.3	6.7−15.4	15	12.6	7.6−20.2	16	10.5	6.3−17.1
Psychiatric, psychotherapeutic, or psychosomatic clinic/ department	22	7.4	4.7−11.3	4	5.7	2.0−15.0	18	8.4	5.2−13.2	10	7.8	4.2−14.1	12	7.2	3.9−12.7
Other inpatient institutions[b]	17	6.5	3.9−10.6	5	7.1	2.8−17.1	12	6.1	3.4−10.7	8	7.1	3.5−13.9	9	6.1	3.1−12.0
Complementary health care institutions	29	10.7	7.3−15.5	7	10.6	4.9−21.4	22	10.8	7.1−16.2	12	9.9	5.6−17.0	17	11.2	6.8−17.8
Counseling centers[c]	20	7.6	4.7−11.9	3	5.8	1.9−16.9	17	8.6	5.3−13.7	7	5.2	2.5−10.8	13	8.8	4.9−15.1
Other complementary institutions[d]	12	4.3	2.4−7.6	4	4.8	1.7−12.7	8	4.0	1.9−8.1	6	5.3	2.3−11.8	6	3.8	1.6−8.5

Notes: [a] Contacted for mental health problems; [b] Neurological clinic/department, inpatient institutions for drug, medication, or alcohol problems, day care centers, homes, other inpatient institutions; [c] Counseling centers for students, education, marriage, life, health problems like sexual problems, AIDS support, drug- or alcohol use); [d] Sheltered housing groups, professional education for the disabled, special working places for the disabled, transitional homes, telephone counseling, self-help organizations, other outpatient facilities. N = unweighted number; %w = weighted column percentage.

mental health, psychosomatic, or substance use problems, either by yourself, or by advise of others (medical doctors, relatives, partner)?" Positive endorsement of this question was defined as "any lifetime service utilization" and indicated broadly any contact to any health care services because of mental health problems irrespective of type, frequency, and adequacy of the possible treatment. In case participants endorsed this entry question they were prompted to report all of the services that were used/contacted at any point in their life. The type of sector/provider that were assessed are listed in Table 3. Participants were also asked how they were treated predominantly: (i) with medication, (ii) with behavioral therapy, (iii) with other psychotherapies, (iv) nothing of the previous. Multiple endorsements were possible.

Besides the lifetime service use questions in section Q, participants entering the sections for the specific anxiety disorders, were asked whether they had talked to a physician or another professional (e.g., psychologist, psychotherapist, social worker, counsellor, nurse, clergy, chiropractor, naturopath) about their anxiety. A positive endorsement was coded as *disorder-specific service utilization*. Besides the lifetime service utilization rates of any help for mental health problems and the disorder-specific service utilization rates, service utilization rates were determined for *any in- or outpatient specialized service* of any mental health problems based on participant's answers in the section Q. This specialized service was determined based on service utilization of the following combined type of sectors/providers: (i) outpatient health care institutions: psychologist/psychotherapist, psychiatrist, psychiatric or psychotherapeutic outpatient unit, and (ii) inpatient health care institutions: psychiatric, psychotherapeutic or psychosomatic inpatient clinic/department.

2.2.3. Socio-demographic variables

The following socio-demographic variables were assessed: sex, age, nationality, and education status. Education status was assessed by asking participants first, whether they were still visiting school and if yes which type of school. Those who already finished school were asked about their degree of final education. Additionally, the current living situation, marital and work status were assessed. Perceived social class was assessed by asking one item: 'Which social class would you say you belong to?' rated on a 6-point Likert-scale from 1=lower class to 6=upper class. Further information can be found in Beesdo-Baum et al. (2020).

2.3. Analysis

Statistical analyses regarding the prevalence estimates for anxiety disorders are based on the 1,180 baseline participants. Participants with missing information in diagnostic sections of the DIA-X-5 were counted as non-cases (4/1180 participants completed only part of the anxiety disorder section). For analyses on service utilization, only cases providing data in the Q-section were used (see results for more

information). Data were calculated using weights to improve representativeness of the sample (Beesdo-Baum et al., 2020); percentages are reported weighted, but numbers are reported unweighted. Differences in prevalence and service utilization rates by age, sex, and comorbidity were tested with odds ratios (ORs) from logistic regressions with 95 % confidence intervals. Analyses were conducted in the statistical, data analysis software STATA (15.0 StataCorp, 2017).

3. Results

3.1. Sample characteristics

The mean age of the total sample ($N = 1,180$) was 17.3 years ($SD = 2.3$) and was similar for 495 male (51.7 %, 17.1, $SD = 2.3$) and 685 female participants (48.3 %, 17.4, $SD = 2.2$). Most participants had a German Nationality ($N = 1,150$; 97.1 %), received a high education (i.e. completed or still visited a high school/"A"-level secondary education, $N = 882$, 76.5 %), and rated themselves to be part of the middle social class ($N = 710$, 60.6 %). Among participants, 48.7 % ($N = 722$) still went to school, 28.6 % ($N = 231$) were university students, 10.0 % ($N=99$) were in a job training, 6.9 % ($N=61$) employed, 65.1 % ($N = 881$) lived with a parent, and 99.2 % ($N = 1,172$) had never been married. For a detailed description of the BeMIND-study sample characteristics, see Beesdo-Baum et al. (2020).

3.2. Prevalence of anxiety disorders

Within the sample, 23.3 % of adolescents and young adults fulfilled the lifetime criteria for at least one anxiety disorder according to DSM-5. The 12-month prevalence was 16.5 %. The diagnosis of any specific phobia was most frequent, followed by social anxiety disorder (Table 1). The least common anxiety diagnosis was agoraphobia for lifetime and separation anxiety disorder for the past 12 months. Females suffered twice as frequently from any lifetime or past 12-months anxiety disorder compared to males (lifetime: OR = 2.16, 95 % CI [1.59, 2.95], $p < .001$; past 12-months: OR = 2.87, 95 % CI [1.97, 4.18], $p < .001$), and 18−21 year-olds were 1.5 times more likely to suffer from any lifetime or past 12-months anxiety disorder compared to 14−17 year-olds (OR = 1.58, 95 % CI [1.19, 2.10], $p = .001$; past 12-months: OR = 1.53, 95 % CI [1.12, 2.10], $p = .008$).

Most individuals suffering from an anxiety disorder (71.5 %) fulfilled the lifetime diagnostic criteria for only one anxiety disorder, whereas 21.0 % had one comorbid anxiety disorder and 7.4 % had two or more comorbid anxiety disorders. Out of the individuals with an anxiety disorder, 35.2 % suffered also from a lifetime depressive disorder, 37.4 % from a lifetime substance use disorder, and 36.0 % from lifetime panic attacks. Comorbid lifetime depressive disorder was more frequently reported by females compared to males (OR = 2.15, 95 % CI [1.13, 4.09], $p = .020$), and 18−21 year-olds revealed more frequently a

Table 4
Lifetime use of any in- or outpatient specialized service (i.e., psychological/psychotherapeutic/psychiatric services)* among individuals with a lifetime anxiety disorder.

| | Total | | | Sex | | | | | | Age groups | | | | | |
| | | | | Male | | | Female | | | 14−17 years | | | 18−21 years | | |
	N	%w	95 % CI	N	%w	95 % CI	N	%w	95 % CI	N	%w	95 % CI	N	%w	95 % CI
Any Anxiety Disorder	85	30.9	25.3−37.0	17	22.3	13.8−34.0	68	35.9	29.1−43.2	31	24.4	17.5−32.9	54	34.1	26.6−42.4
Panic Disorder	23	41.4	28.3−55.8	2	26.1	3.9−75.2	21	45.3	31.0−60.4	10	38.7	20.9−60.1	13	42.7	25.5−61.8
Generalized Anxiety Disorder	23	46.0	31.6−61.1	5	46.2	17.3−77.9	18	46.0	29.8−63.0	5	31.7	11.6−62.3	18	50.3	32.7−67.7
Social Anxiety Disorder	38	46.0	34.7−57.7	5	26.8	9.9−55.0	33	53.6	40.6−66.1	12	37.7	21.9−56.7	26	49.4	34.8−64.2
Agoraphobia	9	64.8	31.2−88.2	1	26.7	0.0−99.7	8	79.7	44.1−95.1	1	22.6	0.4−95.3	8	74.5	27.0−95.8
Separation Anxiety Disorder	8	32.4	15.6−55.3	0			8	39.3	19.6−63.3	4	25.6	8.7−55.4	4	38.2	11.3−75.1
Any Specific Phobia	37	22.3	16.2−30.0	8	14.8	7.0−28.7	29	27.6	19.6−37.5	17	22.2	14.0−33.4	20	22.4	14.4−33.1

Notes: *Determined based on service utilization of the following type of sectors/providers: Psychologist/Psychotherapist, Psychiatrist, Psychiatric or psychotherapeutic outpatient unit, Psychiatric, psychotherapeutic or psychosomatic inpatient clinic/department. N = unweighted number; %w = weighted row percentage.

Table 5

Any lifetime service utilization and use of any in- or outpatient specialized service (i.e., psychological/ psychotherapeutic/ psychiatric services) among individuals with any lifetime anxiety disorder by comorbidity or co-occurring panic attacks.

| | Total | | | Sex | | | | | | Age groups | | | | | |
| | | | | Male | | | Female | | | 14−17 years | | | 18−21 years | | |
	N	%w	95 % CI	N	%w	95 % CI	N	%w	95 % CI	N	%w	95 % CI	N	%w	95 % CI
Any lifetime service utilization	105	39.1	33.0−45.5	25	34.5	23.9−46.9	80	41.8	34.7−49.1	41	33.2	25.2−42.3	64	41.9	33.9−50.4
Comorbid Anxiety Disorders[a]															
0	64	34.5	27.6−42.2	19	31.5	20.4−45.2	45	36.7	28.3−46.0	25	27.8	19.2−38.4	39	38.0	28.6−48.3
1	27	46.1	32.7−60.0	4	42.8	12.8−79.3	23	47.3	33.1−61.9	11	41.6	23.8−61.8	16	48.4	30.3−66.9
>= 2	14	63.0	39.0−81.9	2	75.2	0.5−99.9	12	60.9	34.9−81.9	5	73.9	22.9−96.4	9	59.5	30.8−82.9
Comorbid Depressive Disorder[a]															
No	57	33.1	26.0−41.0	18	29.9	18.9−43.9	39	35.4	26.7−45.1	25	31.0	21.5−42.3	32	34.2	24.8−45.1
Yes	48	50.1	39.5−60.8	7	47.9	23.0−73.9	41	50.9	39.6−62.2	16	38.4	24.4−54.7	32	54.8	40.9−68.0
Comorbid Substance Use Disorder[a]															
No	63	35.8	28.6−43.6	17	37.2	23.8−52.8	46	35.0	26.9−44.0	29	30.3	21.6−40.7	34	39.6	29.2−51.0
Yes	42	44.6	34.0−55.8	8	30.3	14.5−52.7	34	53.8	41.1−66.0	12	43.8	25.8−63.6	30	44.8	32.4−57.9
Comorbid Depressive and Substance Use Disorder[a]															
No	84	36.9	30.5−43.9	23	35.2	24.0−48.4	61	38.0	30.5−46.1	34	35.2	24.0−48.2	50	38.0	30.5−46.1
Yes	21	50.3	33.5−67.0	2	28.7	4.1−79.1	19	58.7	40.0−75.2	7	54.6	25.2−81.1	14	49.2	29.4−69.2
Co-occurring Panic Attacks[a]															
No	61	34.0	26.9−41.9	16	27.9	17.0−42.3	45	38.2	29.5−47.7	26	31.9	22.4−43.3	35	35.1	25.7−45.8
Yes	44	48.2	37.7−58.8	9	50.8	27.7−73.5	35	47.1	35.7−58.8	15	35.9	22.2−52.4	29	53.4	39.7−66.6
Psychological/ psychotherapeutic/ psychiatric services	85	30.9	25.3−37.0	17	22.3	13.8−34.0	68	35.9	29.1−43.2	31	24.4	17.5−32.9	54	34.1	26.6−42.4
Comorbid Anxiety Disorders[a]															
0	49	26.6	20.4−34.0	14	23.4	13.8−36.8	35	29.0	21.3−38.2	17	18.6	11.6−28.3	32	30.8	22.2−40.9
1	23	35.8	24.0−49.6	2	13.6	2.3−51.4	21	43.7	29.9−58.6	10	37.7	20.8−58.3	13	34.8	19.8−53.6
>= 2	13	57.3	34.0−77.7	1	35.8	0.1−99.7	12	60.9	34.9−81.9	4	50.5	11.3−89.1	9	59.5	30.8−82.9
Comorbid Depressive Disorder[a]															
No	41	22.7	16.8−29.9	11	16.3	8.8−28.4	30	27.5	19.6−37.0	17	20.4	12.8−30.9	24	24.0	16.2−34.1
Yes	44	45.9	35.4−56.7	6	40.1	17.5−67.9	38	48.0	36.7−59.4	14	33.5	20.3−49.9	30	50.8	37.2−64.4
Comorbid Substance Use Disorder[a]															
No	46	24.7	18.7−32.0	10	20.7	10.9−35.8	36	27.0	19.8−35.6	21	20.9	13.8−30.5	25	27.4	18.7−38.3
Yes	39	41.1	30.8−52.3	7	24.8	11.0−46.7	32	51.6	39.0−64.0	10	36.9	20.3−57.3	29	42.2	30.1−55.3
Comorbid Depressive and Substance Use Disorder[a]															
No	65	27.5	21.8−34.1	15	21.5	12.8−33.7	50	31.4	24.4−39.3	25	22.0	15.1−31.0	40	30.6	22.8−39.7
Yes	20	48.6	32.0−65.4	2	28.7	4.1−79.1	18	56.3	37.8−73.2	6	46.0	19.3−75.2	14	49.2	29.4−69.2
Co-occurring Panic Attacks[a]															
No	49	27.5	21.0−35.1	12	21.4	11.9−35.4	37	31.7	23.6−41.2	19	22.7	14.6−33.3	30	30.0	21.3−40.6
Yes	36	36.9	27.3−47.7	5	24.8	9.5−50.8	31	42.0	30.9−54.0	12	28.0	16.1−44.1	24	40.8	28.2−54.7

Note: [a] with any Anxiety Disorder. *N* = unweighted number; %w = weighted row percentage.

comorbid lifetime substance use disorder compared to 14−17 year-olds (OR = 2.97, 95 % CI [1.72, 5.13], *p* < .001).

3.3. Service utilization

Two of the 279 participants diagnosed with an anxiety disorder did not provide any information regarding service use in the Q-section. Therefore, the statistical analyses regarding service utilization rates (based on the Q-section) among individuals diagnosed with an anxiety disorder were based on 277 individuals. For service utilization rates of disorder-specific consultations of a physician or other professional, data were available of all 279 participants diagnosed with an anxiety disorder, except for specific phobia. Two participants diagnosed with a specific phobia from the Blood-Injection-Injury Subtype did not provide any information about disorder-specific consultation of physician or other professional.

Among the sample of 277 adolescents and young adults reporting a lifetime anxiety disorder, 39.1 % made use of any lifetime health care services for mental health problems. No sex (OR = 1.36, 95 % CI [0.76, 2.46], *p* = .302) or age (OR = 1.45, 95 % CI [0.87, 2.43], *p* = .155)

differences emerged. Any lifetime health care utilization was highest among individuals with agoraphobia (85.5 %) and lowest for specific phobia (33.0 %). Out of the individuals with any anxiety disorder, 42.9 % reported at least one disorder-specific consultation of a physician or another professional, which was also highest for agoraphobia (73.1 %) and lowest for specific phobia (21.0 %) (Table 2).

Among cases with a lifetime anxiety disorder, outpatient mental health care institutions were visited most frequently (31.5 %; Table 3). Lifetime rates for inpatient service use and for the complementary sector were 11.2 % and 10.7 %, respectively. The 18−21 year-olds were 1.7 times more likely to visit outpatient mental health care institutions compared to 14−17 year-olds (OR = 1.79, 95 % CI [1.03, 3.09], *p* = .038), while no sex differences (OR = 1.71, 95 % CI [0.90, 3.25], *p* = .102) emerged. No sex or age differences were observed for use of the inpatient (sex: OR = 0.78, 95 % CI [0.33, 1.87], *p* = .581, age: OR = 0.81, 95 % CI [0.37, 1.78], *p* = .600) and the complementary sector (sex: OR = 1.03, 95 % CI [0.40, 2.63], *p* = .957, age: OR = 1.14, 95 % CI [0.50, 2.59], *p* = .755). A differentiation of health care utilization according to the type of outpatient sector or provider showed that individuals with a lifetime anxiety disorder consulted most often a

psychotherapist/psychologist (23.0 %). A trend but no significant effect for sex was found (female vs. male: OR = 2.02, 95 % CI [0.97, 4.20], p = .062). No age differences (OR = 1.65, 95 % CI [0.91, 3.00], p = .101) emerged. When considering any in- or outpatient specialized service for any anxiety disorder (Table 4), a similar pattern emerged: females made nearly twice as often use of any in- or outpatient specialized service compared to males (OR = 1.95, 95 % CI [1.01, 3.73], p = .045). Also, a trend but no significant difference was observed for higher age (18−21 vs. 14−17 years: OR = 1.60, 95 % CI [0.93, 2.76], p = .090). Particularly, individuals with agoraphobia were most likely to consult any in- or outpatient specialized service (64.8 %; Table 4), whereas individuals with a lifetime specific phobia were least likely to consult any in- or outpatient specialized service (22.3 %).

Among individuals with a lifetime anxiety disorder who sought any help (N = 104), 46.7 % (N = 49; 95 % CI [36.6, 57.2]) indicated to be treated predominately with behavioral therapy and 29.5 % (N = 32; 95 % CI [20.9, 39.7]) with other forms of psychotherapy. 19.9 % (N = 19; 95 % CI [12.6, 30.0]) reported to be treated predominantly with medication of which 17.7 % (N = 17; 95 % CI [10.8, 27.6]) were also treated with behavioral or any other psychotherapy. None of the previous was reported by 30.0 % (N = 29; 95 % CI [21.1, 40.6]). One individual with any lifetime anxiety disorder who sought help, did not provide information about the content of treatment.

The occurrence of comorbid mental disorders among individuals with a lifetime anxiety disorder was associated with service use (Table 5). Lifetime service use rates for any mental health problems were higher among individuals with two or more comorbid anxiety disorders (OR = 3.23, 95 % CI [1.23, 8.45], p = .017), with a comorbid depressive disorder (OR = 2.04, 95 % CI [1.18, 3.51], p = .011), with combined comorbid depressive and substance use disorders (OR = 2.43, 95 % CI [1.10, 5.35], p = .027), as well as among individuals with co-occurring panic attacks (OR = 1.81, 95 % CI [1.05, 3.10], p = .032), compared to individuals without a comorbidity/co-occurrence. No differences in any lifetime service use rates were found when just considering comorbid substance use disorders individually (OR = 1.45, 95 % CI [0.83, 2.51], p = .188). Additionally, individuals with two or more comorbid anxiety disorders (OR = 3.69, 95 % CI [1.42, 9.58], p = .007), comorbid depressive disorder (OR = 2.88, 95 % CI [1.63, 5.09], p < .001), substance use disorders (OR = 2.13, 95 % CI [1.20, 3.76], p = .010) compared to individuals without a comorbidity, or combined comorbid depressive and substance use disorders (OR = 4.85, 95 % CI [2.12, 11.08], p < .001) compared to individuals without a multi-comorbidity, reported more consultations with any in- or outpatient specialized service. Individuals with co-occurring panic attacks showed, however, no differences in their consultations of any in- or outpatient specialized services compared to individuals without co-occurring panic attacks (OR = 1.55, 95 % CI [0.88, 2.72], p = .129).

4. Discussion

The aim of this study was to present prevalence and lifetime as well as disorder-specific service utilization rates for anxiety disorders based on the DSM-5 criteria. Using data from a regional general population sample of adolescents and young adults in Dresden, Germany, a prevalence estimate of 23.3 % for lifetime and 16.5 % for the past 12-months was found. The results further suggest that only approximately 1/3 of both adolescents and young adults with a lifetime anxiety disorder used a health care services for any mental health problem during their life, most often consulting an outpatient psychotherapist/psychologist. Individuals with agoraphobia were most likely to seek help, while individuals with specific phobia were least likely. In line with previous research (Mack et al., 2014; Meredith et al., 1997; Mojtabai et al., 2002; Scott et al., 2010), comorbidity increased the likelihood to use mental health care services. In addition and again consistent with previous research (Burgess et al., 2009; Mack et al., 2014; Merikangas et al., 2011; Roberge et al., 2011; Runge et al., 2008), females were somewhat

more likely to seek help compared to males.

Anxiety disorders are among the most prevalent mental disorders. However, actual lifetime and 12-month prevalence rates of anxiety disorders based on diagnostic criteria of the DSM-5 are lacking so far – including in Germany. The observed prevalence of 23.3 % for lifetime and 16.5 % for the past 12 months, therefore, provides a first estimate of the occurrence of DSM-5 based anxiety disorders among German adolescents and young adults. The findings are slightly higher as compared to previously reported DSM-5 based anxiety disorder lifetime (15.6 %) and point (10.2 %) prevalence estimates in a representative population-based Austrian sample of adolescents (Wagner et al., 2017), though estimates overall confirm the high prevalence of anxiety disorders (Beesdo-Baum & Knappe, 2012; Jacobi et al., 2004; Kessler et al., 2010; Polanczyk, Salum, Sugaya, Caye, & Rohde, 2015). In addition, the DSM-5 specifier panic attack was endorsed by 36 %. Despite this high prevalence and the effective, evidence-based treatment possibilities for anxiety disorders (Carpenter et al., 2018), it is concerning that only about 1/3 of young individuals fulfilling the criteria for an anxiety disorder use any mental health care services. This low service utilization rate was confirmed by other studies both internationally (Bijl & Ravelli, 2000; Burgess et al., 2009; Mackenzie et al., 2012; Merikangas et al., 2011; Roberge et al., 2011) and locally in Germany (Essau, 2005; Mack et al., 2014; Runge et al., 2008). It is in sharp contrast to the possibility to directly and freely access mental health care providers in highly developed mental health care systems such as Germany. Particularly, individuals with a specific phobia were least likely to seek help. Phobic disorders therefore seem to be both the most prevalent but also the least treated anxiety disorders, despite the availability of highly efficient and effective treatments (Zlomke and Davis, 2008).

Comorbidity and particularly multi-comorbidity increased the likelihood of seeking help. This may be due to the overall higher burden and impairment associated with comorbidities (de Lijster et al., 2018; Walker & Druss, 2017), and therefore greater recognition - by affected individuals themselves, by friends/relatives, or by health professionals - that they need help. Though, poorer treatment outcomes were found in those with comorbid disorders (Walczak, Ollendick, Ryan, & Esbjørn, 2018) which points to the need of strategies to foster earlier help-seeking, recognition, and treatment.

When directly comparing any service utilization rates reported in our study (age 14−17 years: 33.2 % vs. age 18−21 years: 41.9 %) to any service utilization rates reported within the Early Developmental Stages of Psychopathology (EDSP) study (age < 20 years: 30.6 %w vs. age 20–24 years: 33.2 %w) conducted more than 10 years ago in Germany using the same diagnostic instrument though based on DSM-IV criteria, a trend could be observed towards increased mental health care utilization rates for young individuals with an anxiety disorder in Germany. In our sample, 18−21 year-olds were somewhat more likely to consult mental health care services compared to 14−17 year-olds. Despite the likely increased treatment awareness within the last years, particularly for young adults, anxiety disorders still remain largely untreated. This is particularly alarming because most young individuals with an anxiety disorder will suffer from the same or other mental disorders later on during their life (Beesdo, Knappe, & Pine, 2009; Copeland et al., 2013). Anxiety disorders can, therefore, be seen as an important modifiable risk factor for a developmental cascade of future psychopathology (Raballo & Poletti, 2020), highlighting the need for early prevention approaches (Arango et al., 2018), early detection in prodromal phases and increased adequate treatment offers (Holmes et al., 2018).

The results of the present study emphasize that the treatment gap is still large. It also points to the need of tailored early intervention strategies, to increase adequate treatment particularly in (i) individuals with specific phobia due to the long-term negative health outcomes (Albor, Benjet, Méndez, & Medina-Mora, 2017), (ii) boys, particularly those with social anxiety disorder, (iii) individuals with comorbid disorders, and (iv) the age group 14−17 years to provide immediate health care.

4.1. Limitations

A few interpretational issues should be discussed. First, both symptoms of mental disorders and service use were assessed with participant's self-reports, which may be influenced by participant's perception and recall. Therefore, potential errors made by participants cannot be excluded, especially when designating types of services and providers. In particular, in Germany "psychiatrists" are often labeled and qualified as specialist for psychiatry and psychotherapy. As a result, participants may have had difficulties in distinguishing between psychotherapy and psychiatry (Mack et al., 2014). Second, we present mainly data of health care service use because of any mental health problem, irrespective of type, frequency, or adequacy of the received treatment, as well as irrespective of a specific tailor to an individual's anxiety disorder. However, in the present study similar service utilization rates were found for any mental health problem and for disorder-specific consultations (Table 2), suggesting that reports of service use due to any mental health problems in section Q of the DIA-X-5 interview likely reflect largely the disorder-specific consultations. Third, the participation rate was overall low and based on a regional sample which might limit the generalizability of the findings. A detailed discussion of possible reasons for the low participation can be found elsewhere (Beesdo-Baum et al., 2020). Though one key difference to a regional study in Germany with response rates above 70 % more than 15 years ago (Beesdo-Baum et al., 2015) was the limited use of standard epidemiological procedures such as home visits or telephone contacts for recruitment due to legal regulations. Yet, low participation is common in recent years especially in adolescent samples (Keeble, Baxter, Barber, & Law, 2016) and not necessarily reflective of selection bias (Morton, Bandara, Robinson, & Atatoa-Carr, 2012). In addition, the low number of individuals within each anxiety group has limited the possibility to statistically investigate sex and age differences within each anxiety disorder. However, descriptive information — separately presented for sex and age groups (see Tables 1–5) — gives first directions for future research into this matter. Fourth, no barriers were assessed that may prevent adolescents and young adults diagnosed with an anxiety disorders from seeking help. Future research should focus more closely on the assessment of treatment barriers as well as on online help-seeking behavior, which may become more relevant within this participant sample. Increased insights into factors influencing who seeks treatment and who not will help to improve recognition and tailor intervention efforts to improve mental health.

4.2. Conclusions

Overall, the present results suggest that anxiety disorders are common mental disorders and that only about 1/3 of adolescents and young adults with an anxiety disorder seek treatment, most often consulting an outpatient psychotherapist/psychologist. Given this low health care service utilization rate as well as the potential adverse long-term consequences associated with anxiety disorders, these findings highlight the need to improve recognition and intervention efforts for individuals suffering from an anxiety disorder.

Funding

Declaration of Competing Interest

The authors report no declarations of interest.

References

AAPOR. (2016). *Standard definitions: Final dispositions of case codes and outcome rates for surveys* (9th ed.). The American Association for Public Opinion Research.

Albor, Y. C., Benjet, C., Méndez, E., & Medina-Mora, M. E. (2017). Persistence of specific phobia from adolescence to early adulthood: Longitudinal follow-up of the Mexican adolescent mental health survey. *The Journal of Clinical Psychiatry, 78*(3), 340–346. https://doi.org/10.4088/JCP.15m10569

Alonso, J., Liu, Z., Evans-Lacko, S., Sadikova, E., Sampson, N., Chatterji, S., & Collaborators, W. H. O. W. M. H. S. (2018). Treatment gap for anxiety disorders is global: Results of the World Mental Health Surveys in 21 countries. *Depression and Anxiety, 35*(3), 195–208. https://doi.org/10.1002/da.22711

American Psychiatric Association (APA). (2013). *Diagnostic and statistical manual of mental disorders, fifth edition (DSM-5)* (5th ed.). Arlington, VA: American Psychiatric Association.

Arango, C., Díaz-Caneja, C. M., McGorry, P. D., Rapoport, J., Sommer, I. E., Vorstman, J. A., & Carpenter, W. (2018). Preventive strategies for mental health. *The Lancet Psychiatry, 5*(7), 591–604. https://doi.org/10.1016/S2215-0366(18)30057-9

Asselmann, E., Wittchen, H.-U., Lieb, R., & Beesdo-Baum, K. (2018). Sociodemographic, clinical, and functional long-term outcomes in adolescents and young adults with mental disorders. *Acta Psychiatrica Scandinavica, 137*(1), 6–17. https://doi.org/10.1111/acps.12792

Beesdo, K., Knappe, S., & Pine, D. S. (2009). Anxiety and anxiety disorders in children and adolescents: Developmental issues and implications for DSM-V. *The Psychiatric Clinics of North America, 32*(3), 483–524. https://doi.org/10.1016/j.psc.2009.06.002

Beesdo-Baum, K., & Knappe, S. (2012). Developmental epidemiology of anxiety disorders. *Child and Adolescent Psychiatric Clinics of North America, 21*(3), 457–478. https://doi.org/10.1016/j.chc.2012.05.001

Beesdo-Baum, K., Knappe, S., Asselmann, E., Zimmermann, P., Brückl, T., Höfler, M., & Wittchen, H.-U. (2015). The "Early Developmental Stages of Psychopathology (EDSP) study": A 20-year review of methods and findings. *Social Psychiatry and Psychiatric Epidemiology, 50*(6), 851–866.

Beesdo-Baum, K., Voss, C., Venz, J., Hoyer, J., Berwanger, J., Kische, H., & Pieper, L. (2020). The Behavior and Mind Health (BeMIND) study: Methods, design and baseline sample characteristics of a cohort study among adolescents and young adults. *International Journal of Methods in Psychiatric Research*, Article e1804.

Bijl, R. V., & Ravelli, A. (2000). Psychiatric morbidity, service use, and need for care in the general population: Results of The Netherlands Mental Health Survey and Incidence Study. *American Journal of Public Health, 90*(4), 602.

Burgess, P. M., Pirkis, J. E., Slade, T. N., Johnston, A. K., Meadows, G. N., & Gunn, J. M. (2009). Service use for mental health problems: Findings from the 2007 National Survey of Mental Health and Wellbeing. *Australian and New Zealand Journal of Psychiatry, 43*(7), 615–623.

Carpenter, J. K., Andrews, L. A., Witcraft, S. M., Powers, M. B., Smits, J. A., & Hofmann, S. G. (2018). Cognitive behavioral therapy for anxiety and related disorders: A meta-analysis of randomized placebo-controlled trials. *Depression and Anxiety, 35*(6), 502–514.

Chen, Y.-L., Chen, W. J., Lin, K.-C., Shen, L.-J., & Gau, S. S.-F. (2019). Prevalence of DSM-5 mental disorders in a nationally representative sample of children in Taiwan: Methodology and main findings. *Epidemiology and Psychiatric Sciences, 29*, e15. https://doi.org/10.1017/S2045796018000793

Copeland, W. E., Adair, C. E., Smetanin, P., Stiff, D., Briante, C., Colman, I., & Angold, A. (2013). Diagnostic transitions from childhood to adolescence to early adulthood. *Journal of Child Psychology and Psychiatry, and Allied Disciplines, 54*(7), 791–799. https://doi.org/10.1111/jcpp.12062

Copeland, W. E., Wolke, D., Shanahan, L., & Costello, E. (2015). Adult functional outcomes of common childhood psychiatric problems: A prospective, longitudinal study. *JAMA Psychiatry, 72*. https://doi.org/10.1001/jamapsychiatry.2015.0730

de Lijster, J. M., Dieleman, G. C., Utens, E. M. W. J., Dierckx, B., Wierenga, M., Verhulst, F. C., & Legerstee, J. S. (2018). Social and academic functioning in adolescents with anxiety disorders: A systematic review. *Journal of Affective Disorders, 230*, 108–117. https://doi.org/10.1016/j.jad.2018.01.008

Essau, C. A. (2005). Frequency and patterns of mental health services utilization among adolescents with anxiety and depressive disorders. *Depression and Anxiety, 22*(3), 130–137. https://doi.org/10.1002/da.20115

Heinig, I., Wittchen, H.-U., & Knappe, S. (2021). Help-seeking behavior and treatment barriers in anxiety disorders: Results from a representative German community survey. *Community Mental Health Journal*. https://doi.org/10.1007/s10597-020-00767-5

Holmes, E. A., Ghaderi, A., Harmer, C. J., Ramchandani, P. G., Cuijpers, P., Morrison, A. P., & Craske, M. G. (2018). The Lancet Psychiatry Commission on psychological treatments research in tomorrow's science. *The Lancet Psychiatry, 5*(3), 237–286. https://doi.org/10.1016/S2215-0366(17)30513-8

Hoyer, J., Voss, C., Strehle, J., Venz, J., Pieper, L., Wittchen, H. U., & Beesdo-Baum, K. (2020). Test-retest reliability of the computer-assisted DIA-X-5 interview for mental disorders. *BMC Psychiatry, 20*(1), 280. https://doi.org/10.1186/s12888-020-02653-6

Jacobi, F., Wittchen, H.-U., Holting, C., Hofler, M., Pfister, H., Muller, N., & Lieb, R. (2004). Prevalence, co-morbidity and correlates of mental disorders in the general population: Results from the German Health Interview and Examination Survey (GHS). *Psychological Medicine, 34*(4), 597–611. https://doi.org/10.1017/s0033291703001399

Keeble, C., Baxter, P. D., Barber, S., & Law, G. (2016). Participation rates in epidemiology studies and surveys: A review 2007–2015. *The Internet Journal of Epidemiology, 14*.

Kessler, R. C., Amminger, G. P., Aguilar-Gaxiola, S., Alonso, J., Lee, S., & Ustün, T. B. (2007). Age of onset of mental disorders: A review of recent literature. *Current Opinion in Psychiatry, 20*(4), 359–364. https://doi.org/10.1097/YCO.0b013e32816ebc8c

Kessler, R. C., Berglund, P., Demler, O., Jin, R., Merikangas, K. R., & Walters, E. E. (2005). Lifetime prevalence and age-of-onset distributions of DSM-IV disorders in the National Comorbidity Survey Replication. *Archives of General Psychiatry, 62*(6), 593–602. https://doi.org/10.1001/archpsyc.62.6.593

Kessler, R. C., Ruscio, A. M., Shear, K., & Wittchen, H.-U. (2010). Epidemiology of anxiety disorders. *Current Topics in Behavioral Neurosciences, 2, 21–35*.

Kovess-Masfety, V., Boyd, A., van de Velde, S., de Graaf, R., Vilagut, G., Haro, J. M., … Alonso, J. (2014). Are there gender differences in service use for mental disorders across countries in the European Union? Results from the EU-World Mental Health survey. *Journal of Epidemiology and Community Health, 68*(7), 649. https://doi.org/10.1136/jech-2013-202962

Mack, S., Jacobi, F., Gerschler, A., Strehle, J., Hofler, M., Busch, M. A., & Wittchen, H. U. (2014). Self-reported utilization of mental health services in the adult German population–evidence for unmet needs? Results of the DEGS1-Mental Health Module (DEGS1-MH). *International Journal of Methods in Psychiatric Research, 23*(3), 289–303. https://doi.org/10.1002/mpr.1438

Mackenzie, C. S., Reynolds, K., Cairney, J., Streiner, D. L., & Sareen, J. (2012). Disorder-specific mental health service use for mood and anxiety disorders: Associations with age, sex, and psychiatric comorbidity. *Depression and Anxiety, 29*(3), 234–242.

Meredith, L. S., Sherbourne, C. D., Jackson, C. A., Camp, P., & Wells, K. B. (1997). Treatment typically provided for comorbid anxiety disorders. *Archives of Family Medicine, 6*(3), 231–237.

Merikangas, K. R., He, J.-P., Burstein, M., Swanson, S. A., Avenevoli, S., Cui, L., & Swendsen, J. (2010). Lifetime prevalence of mental disorders in U.S. adolescents: Results from the National Comorbidity Survey Replication–Adolescent Supplement (NCS-A). *Journal of the American Academy of Child and Adolescent Psychiatry, 49*(10), 980–989. https://doi.org/10.1016/j.jaac.2010.05.017

Merikangas, K. R., He, J.-p., Burstein, M., Swendsen, J., Avenevoli, S., Case, B., & Olfson, M. (2011). Service utilization for lifetime mental disorders in U.S. adolescents: Results of the National Comorbidity Survey-Adolescent Supplement (NCS-A). *Journal of the American Academy of Child and Adolescent Psychiatry, 50*(1), 32–45. https://doi.org/10.1016/j.jaac.2010.10.006

Mojtabai, R., Olfson, M., & Mechanic, D. (2002). Perceived need and help-seeking in adults with mood, anxiety, or substance use disorders. *Archives of General Psychiatry, 59*(1), 77–84.

Morton, S., Bandara, D., Robinson, E., & Atatoa-Carr, P. (2012). In the 21st Century, what is an acceptable response rate? *Australian and New Zealand Journal of Public Health, 36*, 106–108. https://doi.org/10.1111/j.1753-6405.2012.00854.x

Polanczyk, G. V., Salum, G. A., Sugaya, L. S., Caye, A., & Rohde, L. A. (2015). Annual research review: A meta-analysis of the worldwide prevalence of mental disorders in children and adolescents. *Journal of Child Psychology and Psychiatry, 56*(3), 345–365.

Raballo, A., & Poletti, M. (2020). Advances in early identification of children and adolescents at risk for psychiatric illness. *Current Opinion in Psychiatry, 33*(6).

Roberge, P., Fournier, L., Duhoux, A., Nguyen, C. T., & Smolders, M. (2011). Mental health service use and treatment adequacy for anxiety disorders in Canada. *Social Psychiatry and Psychiatric Epidemiology, 46*(4), 321–330.

Runge, A. J., Beesdo, K., Lieb, R., & Wittchen, H.-U. (2008). Wie häufig nehmen Jugendliche und junge Erwachsene mit Angststörungen eine psychotherapeutische Behandlung in Anspruch? *Verhaltenstherapie, 18, 26–34*.

Scott, T., Mackenzie, C. S., Chipperfield, J. G., & Sareen, J. (2010). Mental health service use among Canadian older adults with anxiety disorders and clinically significant anxiety symptoms. *Aging & Mental Health, 14*(7), 790–800.

StataCorp. (2017). *Stata statistical software: Release 15*. College Station, TX: StataCorp LLC.

Wagner, G., Zeiler, M., Waldherr, K., Philipp, J., Truttmann, S., Dür, W., & Karwautz, A. F. K. (2017). Mental health problems in Austrian adolescents: A nationwide, two-stage epidemiological study applying DSM-5 criteria. *European Child & Adolescent Psychiatry, 26*(12), 1483–1499. https://doi.org/10.1007/s00787-017-0999-6

Walczak, M., Ollendick, T., Ryan, S., & Esbjørn, B. H. (2018). Does comorbidity predict poorer treatment outcome in pediatric anxiety disorders? An updated 10-year review. *Clinical Psychology Review, 60*, 45–61. https://doi.org/10.1016/j.cpr.2017.12.005

Walker, E. R., & Druss, B. G. (2017). Cumulative burden of comorbid mental disorders, substance use disorders, chronic medical conditions, and poverty on health among adults in the U.S.A. *Psychology, Health & Medicine, 22*(6), 727–735. https://doi.org/10.1080/13548506.2016.1227855

Wittchen, H.-U., & Pfister, H. (1997). *DIA-x interview*. Frankfurt, DE: Swets & Zeitlinger.

Wittchen, H.-U., Heinig, I., & Beesdo-Baum, K. (2014). Anxiety disorders in DSM-5: An overview on changes in structure and content. *Nervenarzt, 85*(5), 548–552. https://doi.org/10.1007/s00115-013-3986-2

Wittchen, H.-U., Lachner, G., Wunderlich, U., & Pfister, H. (1998). Test-retest reliability of the computerized DSM-IV version of the Munich-Composite International Diagnostic Interview (M-CIDI). *Social Psychiatry and Psychiatric Epidemiology, 33*(11), 568–578. https://doi.org/10.1007/s001270050095

Zlomke, K., & Davis, T. E., III (2008). One-session treatment of specific phobias: A detailed description and review of treatment efficacy. *Behavior Therapy, 39*(3), 207–223. https://doi.org/10.1016/j.beth.2007.07.003