Epidemiology of anxiety disorders

Tanja Michael
Ulrike Zetsche
Jürgen Margraf

Abstract

This contribution provides an overview of the most important recent epidemiological studies examining anxiety disorders in the general population. Results demonstrate that anxiety disorders are widespread, with lifetime prevalence rates ranging between 13.6% and 28.8% in Western countries. Comorbidity among individuals with an anxiety disorder is high: three out of four people with a lifetime anxiety disorder experience at least one other mental disorder in their lifetime. There is a particularly strong association between anxiety disorders and affective disorders and a considerably lower but still substantial relation between anxiety disorders and substance use disorders. Shared risk factors and causal relationships between disorders are discussed as possible sources of comorbidity. Individuals between the ages of 10 and 25 seem to be at the highest risk for developing an anxiety disorder. Other risk factors comprise female gender, behavioural inhibition and negative life events. Most anxiety disorders are associated with unemployment, low education, low income, and not being married. This contribution further presents a summary of the first results from a worldwide epidemiological assessment of mental disorders. The WHO has recently initiated nationwide mental health surveys with shared methodological standards in 28 countries around the world. Findings will increase our knowledge of the mental health status in less developed areas and allow for intercultural comparison of prevalence rates. To date, 14 surveys have been completed. Twelve-month prevalence rates for six anxiety disorders are presented and potential causes for variations in prevalence rates are discussed.

Keywords age of onset; anxiety disorders; intercultural differences; lifetime comorbidity; sociodemographic correlates

Tanja Michael ***DPhil DipPsych*** *holds a lectureship at the Department of Clinical Psychology and Psychotherapy, University of Basle, Switzerland. She obtained her DPhil from the University of Oxford, UK, and trained in psychotherapy at the University of Basle. Her research interests include anxiety disorders, depression and cognitive–behavioural interventions. Conflicts of interest: none declared.*

Ulrike Zetsche ***MSc*** *is a PhD Student in Psychology at the University of Tübingen, Germany. She has worked with Professor A Ehlers at the Institute of Psychiatry and with Professor J Joormann at Stanford University, USA. Her research interests include cognitive processes in mood and anxiety disorders. Conflicts of interest: none declared.*

Jürgen Margraf ***DPhil*** *is Professor and Head of the Department of Clinical Psychology and Psychotherapy, University of Basle, Switzerland, and Director of the National Centre of Competence in Research 'SESAM' (Swiss Etiological Study of Adjustment and Mental Health). His research interests include anxiety disorders, obesity, cognitive–behavioural treatment and clinical psychophysiology. He has chaired the German National Advisory Board on Psychotherapy since 1999. Conflicts of interest: none declared.*

What's new?

- The WHO has recently initiated nationwide mental health surveys with common methodological standards in 28 countries around the world
- Results facilitate intercultural comparison of prevalence rates and increase our knowledge of the epidemiology of mental disorders in less developed areas
- To date, 14 mental health surveys have been completed and their results are discussed in this contribution

The last two decades have witnessed enormous progress in epidemiological research in mental disorders, with the introduction of reliable classification systems (DSM-IV and ICD-10) and reliable diagnostic assessment instruments. A principal aim of epidemiology is to establish the prevalence of given disorders; modern epidemiological research further aims to amass information to enhance our understanding of the onset, course and possible causes of disorders.

Prevalence of anxiety disorders in the general population

A series of primary studies has established that anxiety disorders are widespread in the general population. Together with affective and substance use disorders, they are the most common mental disorders. Table 1 provides a detailed overview of the most important recent epidemiological studies examining anxiety disorders in the general population in Western countries.[1–14] Both lifetime and 12-month prevalence rates are detailed. (Lifetime prevalence refers to the proportion of the sample that has ever fulfilled diagnostic criteria, i.e. experienced a given disorder at some time in their life; 12-month prevalence refers to the proportion of the sample that has qualified for a diagnosis in the 12 months preceding the study.)

Lifetime prevalence rates range from 13.6% to 28.8%. The variance of these findings probably reflects differences in case definition, diagnostic instruments, response rates and sample composition (e.g. age differences), as well as the fact that different subtypes of anxiety disorders were included in calculating the overall prevalence rate. The 12-month prevalence rates, ranging from 5.6% to 19.3%, are somewhat lower, indicating that the aetiopathology is, in most but not all cases, chronic. As Table 1 shows, specific phobias are the most frequent subtypes of anxiety disorders, followed closely by social phobia. The least common anxiety disorder is obsessive–compulsive disorder (OCD).

Prevalence of anxiety disorders in representative samples of the general population in Western countries

Study	Diagnostic criteria	Age range/n	Prevalence	Anxiety disorders	Subtypes						
					Panic disorder[a]	Agoraphobia	Specific phobias	Social phobia	GAD	OCD	PTSD
NCS (USA)[1]	DSM-III-R	15–54/8098	Lifetime	28.7	3.5	5.3	11.3	13.3	5.1	–	7.6
			12-month	19.3	2.3	2.8	8.8	7.9	3.1	–	3.9
Nemesis (Netherlands)[2]	DSM-III-R	18–64/7076	Lifetime	19.3	3.8	3.4	10.1	7.8	2.3	0.9	–
			12-month	12.4	2.2	1.6	7.1	4.8	1.2	0.5	–
MHS-OHS (Canada)[3]	DSM-III-R	18–54/6261	Lifetime	–	–	–	–	–	–	–	–
			12-month	12.4	1.1	1.6	6.4	6.7	1.1	–	–
MAPSS (USA)[4]	DSM-III-R	18–59/3012	Lifetime	16.8	1.7	7.8	7.4	7.4	–	–	–
			12-month	–	–	–	–	–	–	–	–
Oslo (Norway)[5]	DSM-III-R	18–65/2066	Lifetime	–	4.5	6.1	14.4	13.7	4.5	1.6	–
			12-month	–	2.6	3.1	11.1	7.9	1.9	0.7	–
EDSP (Germany)[6]	DSM-IV	14–24/3021	Lifetime	14.4	1.6	2.6	2.3	3.5	0.8	0.7	1.3
			12-month	9.3	1.2	1.6	1.8	2.6	0.5	0.6	0.7
Bremer Jugendstudie (Germany)[7]	DSM-IV	12–17/1935	Lifetime	18.6	0.5	4.1	3.5	1.6	0.4	1.3	1.6
			12-month	11.3	0.5	2.7	2.7	1.4	0.2	1.0	1.0
Dresdener Studie (Germany)[8]	DSM-IV	18–25[b]/1535	Lifetime	27.2	2.1 (0.8)	2.3	12.3	12.0	2.4	1.3	3.0
			12-month	–	–	–	–	–	–	–	–
TACOS (Germany)[9]	DSM-IV	18–64/4075	Lifetime	15.1	0.9 (1.3)	1.1	10.6	1.9	0.8	0.5	1.4
			12-month	–	–	–	–	–	–	–	–
NSMHW (Australia)[10]	DSM-IV	18+/10,641	Lifetime	–	–	–	–	–	–	–	–
			12-month	5.6	1.1	0.5	–	1.3	2.6	0.7	1.3
South Florida Study (USA)[11]	DSM-IV	19–21/1803	Lifetime	15.2	2.1	–	–	2.5	1.4	–	11.7
			12-month	–	1.6	–	–	–	–	–	8.4
ESEMeD Project (EU)[12]	DSM-IV	18+/21,425	Lifetime	13.6	2.1	0.9	7.7	2.44	2.8	–	1.9
			12-month	6.4	0.8	0.4	3.5	1.2	1.0	–	0.9
GHS-MHS (Germany)[13]	DSM-IV	18–65/4181	Lifetime	–	–	–	–	–	–	–	–
			12-month	14.5	2.3	–	–	–	1.5	0.7	–
NCS Replication (USA)[14]	DSM-IV	18+	Lifetime	28.8[c]	4.7	1.4	12.5	12.1	5.7	1.6	6.8
			12-month	18.1	2.7	0.8	8.7	6.8	3.1	1.0	3.5
Range			Lifetime	13.6–28.8	0.5–4.7	0.9–7.8	2.3–14.4	1.6–13.7	0.4–5.7	0.5–1.6	1.3–11.7
			12-month	5.6–19.3	0.5–3.1	0.4–3.1	1.8–11.1	1.2–7.9	0.2–3.1	0.5–1.0	0.7–8.4

GAD, generalized anxiety disorder; OCD, obsessive–compulsive disorder; PTSD, post-traumatic stress disorder.
[a]Numbers in parentheses: panic disorder with agoraphobia.
[b]Sample consisted of women only.
[c]Including separation anxiety disorder.

Table 1

Age of onset

In general, anxiety disorders develop relatively early in life.[15] In 80–90% of cases, the disorder manifests before the age of 35, and the time between 10 and 25 years seems to be a high-risk period for the development of anxiety disorders. However, there are significant differences between the anxiety disorders with regard to age of onset.

- Specific and social phobias often start in childhood or early adolescence and, in general, have manifested before the age of 20.
- Generalized anxiety disorder (GAD), panic disorder and agoraphobia typically develop during late adolescence and early

adulthood; the average first manifestation is between 25 and 30 years. GAD is the only anxiety disorder to show increased prevalence in the elderly.

- OCD characteristically develops between 15 and 39 years.
- The onset of post–traumatic stress disorder (PTSD) is more varied, as it depends on the age when the trauma occurred.

There appears to be an increase in lifetime prevalence rates of anxiety disorders across successive generations (secular trend), but the data are yet to be confirmed.

Comorbidity

Epidemiological research has revealed that comorbidity is very important in understanding the distribution of anxiety disorders; in fact, comorbidity is the norm rather than the exception. In the USA the National Comorbidity Study found that three-quarters of people with a lifetime anxiety disorder also had at least one other lifetime mental disorder.[1] Table 2 details the percentages of people with a lifetime anxiety disorder who reported at least one further disorder. The proportions range from 92.2% (panic disorder) to 81% (social phobia and PTSD). The rate of comorbidity for any anxiety disorder (74%) is lower than the average rate of comorbidity for the single anxiety disorders (86%), as people with comorbid anxiety disorders are counted multiple times. For example, a person with panic disorder and social phobia would appear in the panic disorder category as well as in the social phobia category, but would only be counted once in the 'Any anxiety disorder' category. The German National Health Interview and Examination Survey (GHS-MHS) revealed similar lifetime comorbidity figures for DSM-IV anxiety disorders.[13]

Comorbidity among the anxiety disorders

Many people suffering from an anxiety disorder fulfil the criteria for more than one anxiety disorder. Looking at Table 1, the sum of the prevalence rates for the subtypes of the anxiety disorders consistently exceeds the prevalence given for anxiety disorders as a whole, which means there is a good deal of comorbidity among the anxiety disorders (Table 2). Table 3 details data on lifetime comorbidities of specific pairs of anxiety disorders reported in the National Comorbidity Study.[1] Results are shown in the form of odds ratios, which are a measure of the strength of the association between the detailed disorders. For example, an odds ratio of 4.8 for panic disorder and social phobia means that the likelihood of having social phobia is 4.8 times higher for people with panic disorder compared to people without panic disorder. Positive associations can range from 1 to infinity, with higher values indicating stronger associations.

All odds ratios are statistically significant and are greater than 1. This means that there is a positive association between the lifetime occurrences of all pairs of disorders considered here. However, there is substantial variation in the size of the odds ratios. Particularly strong associations are reported between GAD and panic disorder (12.3), as well as between panic disorder and agoraphobia (11.9). An odds ratio of 12.3 for the association between GAD and panic disorder means that the odds of having GAD are 12.3 times higher for people with panic disorder than for people without panic disorder. The magnitude of the associations between PTSD and the other anxiety disorders (2.8–4.2), and between social phobia and the other anxiety disorders, is relatively low (3.8–4.8).

Rates of comorbidity among people with lifetime NCS/DSM-III-R anxiety disorders

Disorder	Rate of comorbidity (%)
Any anxiety disorder	74.1
Panic disorder	92.2
Agoraphobia	87.3
Social phobia	81.0
Simple phobia	83.4
Generalized anxiety disorder	91.3
Post-traumatic stress disorder	81.0

Table 2

Comorbidity with other mental disorders

Anxiety disorders and affective disorders are strongly related to each other. The National Comorbidity Survey reported an average odds ratio of 6.6 for the pairwise associations between an affective disorder and an anxiety disorder.[1] This is slightly higher than the average odds ratio (6.2) for the pairwise associations between two anxiety disorders. There were particularly strong associations between panic disorder and affective disorders, and between GAD and affective disorders.

It is well documented that anxiety disorders are associated with substance use disorders. However, the strength of this association is substantially lower than that between affective disorders and anxiety disorders. For example, the average odds ratio in the National Comorbidity Survey for pairwise associations between a substance use disorder and an anxiety disorder was 2.4. An examination of the comorbidity of alcohol abuse/dependence and anxiety disorders in four different sites revealed odds ratios of between 2.1 and 2.5.[16]

It is not currently possible to outline comorbidity patterns of anxiety disorders with other mental disorders, as the evidence is too sparse. However, the comorbidity of anxiety disorders and somatoform disorders is relatively high.

Temporal course of onset of comorbid disorders

Affective disorder: as a general rule, the onset of anxiety disorders precedes or occurs at the same time as the onset of affective disorders. More than two-thirds of people with both disorders interviewed in the National Comorbidity Survey indicated that the anxiety disorder developed first.[17] Only 15.4% of the cases with an anxiety disorder reported it as the secondary disorder. Panic disorder and GAD develop most frequently (83% and 76% respectively) at the same time as an affective disorder or secondary to an affective disorder.

The onset of anxiety disorders generally precedes that of alcohol and drug use disorders.

Alcohol use disorders: the evidence for a unidirectional temporal relationship is particularly strong for the phobic disorders: phobic disorders rarely develop after the onset of alcoholism. This finding is consistent with the hypothesis that alcohol (mis)use represents an attempt to self-medicate phobic anxiety. Phobic states may be risk factors for the subsequent onset of problem drinking

Lifetime comorbidities (odds ratios) between pairs of NCS/DSM-III-R anxiety disorders

	Panic disorder	Agoraphobia	Social phobia	Simple phobia	Generalized anxiety disorder
Panic disorder	–	–	–	–	12.3*
Agoraphobia	11.9*	–	7.1*	8.7*	5.8*
Social phobia	4.8*	–	–	–	3.8*
Simple phobia	7.9*	–	7.8*	–	4.9*
Generalized anxiety disorder	–	–	–	–	–
Post-traumatic stress disorder	3.9*	4.2*	2.8*	3.8*	3.9*

*Odds ratio significant at the 0.05 level, two-tailed test.

Table 3

behaviour and should therefore be the primary target for the prevention of alcoholism. No consistent temporal pattern has been observed with panic disorder and alcoholism, however. While it is possible that some cases of alcohol dependence develop as a means of self-medicating for panic, it is equally plausible that some cases of alcoholism increase the risk of panic disorder, or that common aetiological factors are shared between alcoholism and panic disorder.[16]

Substance use disorders: in almost all cases, social phobia, specific phobia and PTSD develop before a substance use disorder. The other anxiety disorders usually occur before a substance use disorder, but the evidence for a unidirectional temporal relationship is less strong.

Aims and future directions of comorbidity research

As well as observing comorbidity patterns, epidemiological research aims to examine whether two disorders share the same risk factors (i.e. the same risk factors lead to disorder A, disorder B, or both), or whether a causal relationship exists between the disorders (i.e. disorder A causes disorder B). Shared risk factors for two or more disorders could stem from domains such as:

- common genes
- shared exposure to prenatal environmental factors (e.g. maternal alcohol use)
- biological environmental factors (e.g. nutrition)
- non-biological environmental factors (e.g. family environment).

Examples that would be indicative of a causal relationship are depression as a psychological response to impairment through phobic anxiety, or alcoholism as a consequence of self-medicating phobic states.

Considerably more research is needed in order to discriminate between shared risk factors or causal relationships as sources of comorbidity. The study design of such research would need to include variables that are, on theoretical grounds, assumed to be possible shared risk factors (e.g. detailed interview about family environment). It is important to note that temporal priority is not necessarily the same as causal priority; the disorder with the earlier onset may not significantly predict the subsequent onset of the second disorder. Therefore, it is useful not only to examine temporal priority but to establish predictive priority – whether one disorder is significantly associated with the subsequent onset of another disorder.

Intercultural differences in the prevalence of anxiety disorders

Most of our knowledge of the epidemiology of mental disorders is based on research in Western countries. Although there have been a few epidemiological studies conducted in less developed areas of the world, comparison of results has been hampered due to large variations in study design and methodology (e.g. employed sampling method, diagnostic tools, sample size). In order to address this problem the World Health Organization (WHO) recently launched a worldwide mental health project with nationwide mental health surveys in 28 countries. In order to facilitate intercultural comparison of results, all surveys share common methodological standards such as multistage household probability sampling, face-to-face interviews by trained interviewers and employment of a fully structured diagnostic instrument for DSM-IV disorders. To date, surveys have been completed in 14 countries in the Americas (Mexico, Colombia, USA), Europe (Belgium, France, Germany, Italy, Netherlands, Spain and Ukraine), the Middle East (Lebanon), Africa (Nigeria) and Asia (China, Japan). Six of these countries (China, Colombia, Lebanon, Mexico, Nigeria and Ukraine) were classified as less developed by the World Bank. Assessed anxiety disorders were panic disorder, agoraphobia without panic disorder, specific phobias, social phobia, GAD and PTSD. (OCD was assessed in the LNMHS (Lebanon) and NSMHW (Nigeria); however, results are not presented here.)

An overview of results is presented in Table 4.[12,14,18–23] Overall, prevalence rates found in the WHO surveys are considerably lower than in comparable previous studies. Twelve-month prevalence rates for all anxiety disorders range from 2.7% in China to 18.1% in the USA. Prevalence rates of different anxiety disorders in Lebanon, Mexico and Ukraine appear to be comparable to Western European countries, whereas surveys in China, Japan and Nigeria revealed considerably lower rates. In line with earlier findings, prevalence rates are two to three times higher in the USA compared with European countries. It is notable that the relative frequency of anxiety disorders is similar across cultures: specific phobias and social phobia constitute the most common anxiety disorders, while panic disorder and agoraphobia are less widespread. However, the prevalence of generalized anxiety disorder varies remarkably between the less developed countries. For example, extremely low rates of GAD were found in Nigeria and Mexico, whereas GAD was relatively widespread in Asian

Prevalence rates of anxiety disorders in 6 non-Western countries compared with those in Europe and the USA

Study	Age range/ sample size	Response rate (%)	Prevalence	Anxiety disorders	Subtypes					
					Panic disorder	Agora-phobia	Specific phobias	Social phobia	GAD	PTSD
WHO surveys in non-Western countries										
CMDPSD (Ukraine)[18]	18+/4725	78.3	12-month	3.78	1.27	0.24	–	1.53	1.19	–
LNMHS (Lebanon)[19]	18+/2857	70.0	12-month	11.2[a]	0.2	0.3	8.2	1.1	–	2.0
NSMHW (Nigeria)[20]	18+/4984	79.9	12-month	4.1[a]	0.1	0.2	3.5	0.3	0.0	0.0
M_NCS (Mexico)[21]	18–65/5826	76.6	12-month	6.6	0.6	0.7	4.0	1.7	0.4	0.6
WMHJ 2002–2003 (Japan)[22]	20+/1664	56.4	12-month	4.8	0.5	0.3	2.7	0.8	1.2	0.4
B-/S-WMH (China)[23]	18–70/5201	74.7	12-month	2.7	0.2	0.0	1.9	0.2	0.8	0.2
Range			12-month	2.7–11.2	0.1–1.27	0.0–0.7	1.9–8.2	0.2–1.7	0.0–1.2	0.0–2.0
WHO surveys in Western countries										
ESEMeD Project (EU)[12]	18+/21,425	45.9% – 78.6%	Lifetime	13.6	2.1	0.9	7.7	2.44	2.8	1.9
		average: 61.2%	12-months	6.4	0.8	0.4	3.5	1.2	1.0	0.9
NCS Replication (USA)[14]	18+	70.9%	Lifetime	28.8[b]	4.7	1.4	12.5	12.1	5.7	6.8
			12-months	18.1	2.7	0.8	8.7	6.8	3.1	3.5

[a]Including obsessive–compulsive disorder.
[b]Including separation anxiety disorder.

Table 4

countries (Japan, China). This finding may raise questions about the validity of the DSM-IV criteria for GAD.

Whether the differences in prevalence rates between cultures are due to methodological differences or whether they reflect actual variations in morbidity can be disputed. Although common methodological procedures were employed in all surveys, response rates and sample sizes varied between studies. Furthermore, a lack of a tradition of anonymous public opinion research and stronger stigma related to mental disorders in Asia and Africa may have lead to an underestimation of actual morbidity. In some samples, a high percentage of young people, who have not yet lived through the critical age-of-onset years, may also have contributed to low prevalence rates. Finally, it has to be considered that the applied diagnostic criteria are based on Western concepts of mental disorders. It is questionable whether the existing diagnostic categories are appropriate for describing symptom clusters in other cultures.[23]

Future epidemiological research has to address the questions of intercultural validity of diagnostic criteria. It should also be considered whether modified interview methods (e.g. starting with questions related to physical symptoms) might result in more accurate estimations of prevalence rates in some cultures. Assuming that some of the variations in prevalence rates reflect actual differences in morbidity, it will be intriguing to investigate and determine which cultural factors act as risk or protective factors, respectively.

Genetic epidemiology of anxiety disorders

A series of primary studies has indicated that anxiety disorders show familial aggregation and are, at least to some extent, heritable. A recent meta-analysis examined the magnitude of familial aggregation, as well as the relative contribution of genetics and environment to the aetiology.[24] Its results show that panic disorder, phobias, GAD and OCD show substantial familial aggregation; for example, there is a significant association between panic disorder in the probands and panic disorder in the first-degree relatives. The odds ratios are similar across disorders, ranging from about 4 to 6. So far, no adoption studies on anxiety disorders have been carried out, so twin studies are the only available means of differentiating potential genetic versus common familial environmental causes for the familial aggregation.

The models used to proportion the variance in liability into either genetic or familial environmental sources are based on the equal-environment assumption – that is, the assumption that greater intra-pair resemblance of monozygotic than dizygotic twins is due to their greater genetic resemblance rather than any greater similarity of their environment. The results of such twin studies suggest that the major source of familial risk is genetic. Despite this finding, it is important to note that the role of individual environmental factors in the development of anxiety disorder is highly significant. The estimated heritabilities across the disorders are in the modest range of 30–40%.

Sociodemographic correlates of anxiety disorder prevalence

A series of sociodemographic variables are associated with anxiety disorders. The following factors were consistently found to be linked with relatively high prevalences.

Sex: it is estimated that women have a higher prevalence of anxiety disorders. The differences between the sexes are particularly pronounced in specific phobias and agoraphobia; they are least pronounced in OCD.

Marital status: married respondents have lower prevalence than widowed, divorced or unmarried respondents. It might be assumed that people with anxiety disorders have difficulties starting and/or maintaining a romantic relationship. The loss of a relationship seems to be a risk factor for anxiety.

Occupation: unemployment, being a housewife/househusband and having no occupation are associated with high prevalence.

Education: low levels of education are linked with anxiety.

Financial situation: low income is correlated with high prevalence of anxiety disorders.

Risk factors for anxiety disorders

A risk factor is a variable that precedes the outcome measure and that can be used to divide the population into two groups, high-risk and low-risk. So far, epidemiological research of anxiety disorders has focused on examining the influence of genetic factors, behavioural inhibition, negative life events and upbringing on the subsequent onset of anxiety. As reported above, genetic factors are important risk factors for anxiety.

Behavioural inhibition refers to a disposition to react to new situations with initial inhibition, i.e. avoidance of novel objects, crying or withdrawal to caregiver. Preliminary evidence suggests that displaying behavioural inhibition during childhood is associated with an elevated risk of developing an anxiety disorder at some point subsequently. Some studies have found behavioural inhibition to be a non-specific risk factor (i.e. it was associated with all anxiety disorders), whereas others have found it to be a specific risk factor for social phobia.

Negative life events: several epidemiological studies showed that the experience of violence in early life is linked with subsequent anxiety. The data with respect to other stressful life events, such as parental divorce or death of a parent, are inconsistent. Some studies have found such factors to be related to a subsequent onset of an anxiety disorder; other studies could not find an association.

Upbringing: the current empirical evidence about upbringing and anxiety disorders is still relatively sparse. So far, social phobia has been linked to parental rejection and overprotection.

Conclusion

Anxiety disorders are among the most common mental disorders and their prevalence and course are reasonably well documented. However, the factors that put people at risk for an anxiety disorder are still largely unknown. Future epidemiological research should examine the role of potential risk factors and their interaction in the development of anxiety. The choice of variables should be based on current models of anxiety disorders and might include:

- genetic factors
- learning history
- how easily conditioned responses are acquired
- anxiety sensitivity
- social support
- physiological responsivity
- dysfunctional cognitions. ◆

REFERENCES

1 Kessler RC, Anthony JC, Blazer DG, et al. The US National Comorbidity Survey: overview and future directions. *Epidemiol Psychiatr Soc* 1997; **6:** 4–16.

2 Bijl RV, Ravelli A, van Zessen G. Prevalence of psychiatric disorder in the general population: results of The Netherlands Mental Health Survey and Incidence Study (NEMESIS). *Soc Psychiatry Psychiatr Epidemiol* 1998; **33:** 587–95.

3 Offord DR, Boyle MH, Campbell D, et al. One-year prevalence of psychiatric disorder in Ontarians 15 to 64 years of age. *Can J Psychiatry* 1996; **41:** 559–63.

4 Vega WA, Kolody B, Aguilar-Gaxiola S, et al. Lifetime prevalence of DSM-III-R psychiatric disorders among urban and rural Mexican Americans in California. *Arch Gen Psychiatry* 1998; **55:** 771–78.

5 Kringlen E, Torgersen S, Cramer V. A Norwegian psychiatric epidemiological study. *Am J Psychiatry* 2001; **158:** 1091–98.

6 Wittchen H-U, Nelson CB, Lachner G. Prevalence of mental disorders and psychosocial impairments in adolescents and young adults. *Psychol Med* 1998; **28:** 109–26.

7 Essau CA, Karpinski NA, Oetermann F, Conradt J. Häufigkeit und Komorbidität von Angststörungen bei Jugendlichen: Ergebnisse der Bremer Jugendstudie. *Verhaltenstherapie* 1998; **8:** 180–87.

8 Becker ES, Tuerke V, Neumer S, Soeder U, Krause P, Margraf J. Praevalenz von psychischen und psychiatrischen Stoerungen bei jungen Frauen aus der Allgemeinbevoelkerung: Ergebnisse der Dresdener Studie. In: Heess-Erler G, Manz R, Kirch W, eds. Public health research and practice: report of the Public Health Research Association, Saxony 1998–1999. Regensburg: Roderer, 2000.

9 Meyer C, Rumpf HJ, Hapke U, Dilling H, John U. Lebenszeitprävalenz psychischer Störungen in der erwachsenen Allgemeinbevölkerung. Ergebnisse der TACOS-Studie. *Nervenarzt* 2000; **71:** 535–42.

10 Andrews G, Henderson S, Hall W. Prevalence, comorbidity, disability and service utilisation. Overview of the Australian National Mental Health Survey. *Br J Psychiatry* 2001; **178:** 145–53.

11 Turner RJ, Gil AG. Psychiatric and substance use disorders in South Florida: racial/ethnic and gender contrasts in a young adult cohort. *Arch Gen Psychiatry* 2002; **59:** 43–50.

12 Alonso J, Angermeyer MC, Bernert S, et al. Prevalence of mental disorders in Europe: results from the European Study of the Epidemiology of Mental Disorders (ESEMeD) project. *Acta Psychiatr Scand* 2004; **109**(suppl 420)**:** 21–27.

13 Jacobi F, Wittchen H-U, Hölting C. Prevalence, co-morbidity and correlates of mental disorders in the general population: results from the German Health Interview and Examination Survey (GHS). *Psychol Med* 2004; **34:** 597–611.

14 Kessler RC, Berglund P, Demler O. Lifetime prevalence and age-of-onset distributions of DSM-IV disorders in the National Comorbidity Survey Replication. *Arch Gen Psychiatry* 2005; **62:** 593–602.

15 Andrade L, Caraveo-Anduaga J, Berglund P, et al. Cross-national comparisons of the prevalences and correlates of mental disorders. WHO International Consortium in Psychiatric Epidemiology. *Bull World Health Organ* 2000; **78:** 413–26.

16 Swendsen JD, Merikangas KR, Canino GJ, et al. The comorbidity of alcoholism with anxiety and depressive disorders in four geographic communities. *Compr Psychiatry* 1998; **39:** 176–84.

17 Kessler RC. Comorbidity of depression and anxiety disorders: a proposal and agenda. In: Montgomery SA, Den Boer JA, eds. Treatment strategies for patients with psychiatric comorbidity. New York: Wiley, 2001.

18 Bromet EJ, Gluzman SF, Paniotto VI, et al. Epidemiology of psychiatric and alcohol disorders in Ukraine. *Soc Psychiatry Psychiatr Epidemiol* 2005; **40:** 681–90.

19 Karam EG, Mneimneh ZN, Karam AN, et al. Prevalence and treatment of mental disorders in Lebanon: a national epidemiological survey. *Lancet* 2006; **367:** 1000–06.

20 Gureje O, Lasebikan VO, Kola L. Lifetime and 12-month prevalence of mental disorders in the Nigerian Survey of Mental Health and Well-Being. *Br J Psychiatry* 2006; **188:** 465–71.

21 Medina-Mora ME, Borges G, Lara C. Prevalence service use and demographic correlates of 12-month DSM-IV psychiatric disorders in Mexico: results from the Mexican National Comorbidity Survey. *Psychol Med* 2005; **35:** 1773–83.

22 Kawakami N, Takeshima T, Ono Y, et al. Twelve-month prevalence severity and treatment of common mental disorders in communities in Japan: preliminary finding from the World Mental Health Japan Survey 2002–2003. *Psychiatry Clin Neurosci* 2005; **59:** 441–52.

23 Shen Y-C, Zhang M-Y, Huang Y-Q. Twelve-month prevalence severity and unmet need for treatment of mental disorders in metropolitan China. *Psychol Med* 2006; **36:** 257–67.

24 Hettema JM, Neale MC, Kendler KS. A review and meta-analysis of the genetic epidemiology of anxiety disorders. *Am J Psychiatry* 2001; **158:** 1568–78.

