

## ORIGINAL PAPER

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## Epidemiology of psychiatric and alcohol disorders in Ukraine

### Findings from the Ukraine World Mental Health survey

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**Abstract** *Background* This study presents the lifetime, 12-month, and 1-month prevalence estimates of nine psychiatric and alcohol disorders in Ukraine assessed as part of the World Health Organization (WHO) World Mental Health (WMH) research program. The Ukraine WMH survey is the first psychiatric epidemiologic study in a former Soviet Union country to administer a structured psychiatric interview to a nationally representative sample. *Method* In 2002, a national probability sample of 4,725 respondents ages 18 and older were interviewed with the WMH version

of the Composite International Diagnostic Interview (WMH-CIDI). Prevalence estimates, age-of-onset curves, comorbidity, demographic and geographic risk factors, and treatment seeking were examined. *Results* Close to one third of the population experienced at least one *Diagnostic and Statistical Manual of Mental Disorders, Fourth Edition* (DSM-IV) disorder in their lifetime, 17.6% experienced an episode in the past year, and 10.6% had a current disorder. There was no gender difference in the overall prevalence rates. In men, the most common diagnoses were alcohol disorders (26.5% lifetime) and mood disorders (9.7% lifetime); in women, they were mood disorders (20.8% lifetime) and anxiety disorders (7.9% lifetime). The odds ratios for most pairs of disorders were highly significant. Age of onset was primarily in the teens and early 20s. Age, education, and living in the Eastern region of Ukraine were significant risk factors across disorders, with respondents older than 50 years having the highest prevalence of mood disorder and the lowest prevalence of alcoholism and intermittent explosive disorder. Only a minority of respondents talked to a professional about their symptoms. *Conclusion* Prevalence estimates of alcoholism among men and recent depression among women were higher in Ukraine than in comparable European surveys. The results argue for the need to develop and implement educational programs focused on the recognition and treatment of mental and alcohol disorders for the general population, psychiatrists, and general medical providers, who are the main source of mental health care.

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### Introduction

Although the USA and, to a lesser extent, Europe have a long tradition of conducting community surveys of

mental disorders, epidemiology has only recently taken root as a methodology in the former Soviet Union (FSU). Consequently, available statistics on mental disorders and alcoholism in the FSU come primarily from treatment samples that have both known and unknown biases. In many ways, Ukraine can be considered a “high-risk epidemiology laboratory”. After the breakup of the Soviet Union in 1991, life expectancy and standard of living declined and mortality increased, especially from cardiovascular disease, accidents, and other causes related to alcohol. Indeed, heavy alcohol consumption is a major public health problem that has deep roots in the social fabric of the culture. Although statistics are less reliable than in the West, suicide is believed to have increased, and the average suicide rate, 24–32 per 100,000 (depending on the source), ranks in the top ten worldwide [22]. Violence against women in FSU countries is four to five times higher than in the USA [13]. In addition, Ukrainian families carry the psychological burden of enormous intergenerational stress, such as the great famine-genocide of the 1930s and other premature and often violent deaths, disappearances, and incarcerations during the Stalin era, the Nazi occupation, and the period after World War II. Environmental pollution from industrial plants and from the Chernobyl nuclear power plant accident in 1986, a large number of industrial, mining, and transport accidents, the high level of poverty [40] and economic insecurity, an inadequate infrastructure (water, roads, etc.), and widespread corruption all contribute to what was recently described as the growing “anomie” in the FSU [9]. Thus, documenting the prevalence of mental illness and alcoholism in Ukraine and potentially identifying high-risk groups within this high-risk, resource-poor setting should provide information that is important for targeted public health planning.

To date, apart from studies of immigrants residing in Israel, the USA, or elsewhere, there are only a handful of community mental health studies from Eastern Europe and the FSU that used unbiased sampling and assessment methods. The first was conducted in 1993 in Tver, Russia, which served as the comparison site for a study of the mental health consequences of the Chernobyl disaster. Psychiatrists completed the Munich checklist for *Diagnostic and Statistical Manual of Mental Disorders, Revised Third Edition* (DSM-III-R) disorders [12]. The 1-month prevalence rates were 12.8% for mood disorders, 18.5% for anxiety disorders, and 2.9% for alcohol disorders. The second, conducted in 1995, took place in a rural county of Russia, using the Composite International Diagnostic Interview (CIDI) [19]. The lifetime and 12-month rates of DSM-III-R mood disorders were 28.8 and 17.4% in men and 53.4 and 40.5% in women [24], and the lifetime rates of *International Statistical Classification of Diseases, 10th Revision* (ICD-10) alcohol dependence were 69.3% in men and 3.7% in women [25]. The third study took place in Hungary and focused on patients recruited

from general practice rosters. Based on the Diagnostic Interview Schedule [28], the lifetime and 12-month prevalence rates of DSM-III-R major depression were 15.1 and 7.1%, respectively [31]. Lifetime rates of anxiety disorders ranged from 4.3% for generalized anxiety disorder to 15.3% for agoraphobia [27]. The fourth study took place in Kyiv and examined major depression in women evacuated from the area near Chernobyl and community controls; the lifetime rate of *Diagnostic and Statistical Manual of Mental Disorders, Fourth Edition* (DSM-IV) depression in the controls was 33.0% [6].

The results reviewed in the last paragraph suggest that rates of mental disorders in the FSU are considerably higher than in many other parts of the world (e.g., [1, 4, 5, 20, 32, 33, 35, 38, 39]). However, as none of the samples was nationally representative, it is difficult to draw firm conclusions from these results. Thus, the current report describes the findings of the first national psychiatric epidemiologic study in the FSU. The methodology followed the guidelines of the WMH consortium [33].

## ■ Aims

This paper examines the lifetime, 12-month, and 1-month prevalence of nine DSM-IV psychiatric and alcohol disorders in Ukraine, as well as age-of-onset distributions, patterns of comorbidity, sociodemographic and geographic correlates, and diagnosis-specific rates of treatment seeking.

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## Subjects and methods

### ■ Sample and procedure

In 2002, we conducted an epidemiologic study of mental illness, substance-use disorders, and health in Ukraine as part of the WMH initiative [33]. Ukraine is the second largest country in Europe (after Russia) and has a population of about 48 million. Ukraine became an independent country in 1991 with the dissolution of the Soviet Union. The capital city is Kyiv. It is bordered by Russia to the East and Northeast, Belarus to the North, Poland to the Northwest, Moldova, Romania, and Slovakia to the West and Southwest, and the Black Sea to the South. Ethnic Ukrainians compose about 75% of the population, and ethnic Russians about 22%. The literacy rate is 98%. Ukraine is rich in natural resources, including iron ore, coal, natural gas, oil, timber, and fertile land. Indeed, it has been nicknamed “the breadbasket of Europe”.

The Ukraine WMH is a nationally representative survey of residents ages 18 years and older from the 24 oblasts (states) and the autonomous republic of Crimea. The sampling design had four stages: first, 170 primary sampling units (PSUs) were selected from the cities, towns, and villages with probability proportional to size. That is, the PSUs were drawn such that each oblast (state) and the urban and rural populations in each oblast were represented proportionally. Second, within the PSUs, postal districts were randomly selected. Third, within each postal district, streets were randomly selected, then buildings within streets, and lastly, apartments within buildings. Fourth, people 18 years and older were randomly selected within apartments. A total of 4,725 adults participated in the survey. The response rate was 78.3%.

Face-to-face interviews were administered by the professional interview field staff of the Kiev International Institute of Sociology (KIIS) in collaboration with the Ukrainian Psychiatric Association (UPA). Sixty-two interviewers were trained in groups of 10–12 by V. Z. (a certified CIDI trainer) between January and March 2002. The interviewers were chosen from the professional field staff of KIIS. The weeklong training program focused on how to introduce the study, obtain informed consent, and administer the CIDI. Fieldwork took place from February to December 2002 and included close monitoring of the interviewers and rechecking of 10% of respondents.

The recruitment, consent, and field procedures were approved by the Human Subjects Committees of the State University of New York at Stony Brook, KIIS, and UPA. The standard WHO translation and back-translation protocol was followed in translating all materials into Russian and Ukrainian, including the consent form, instruments, the study fact brochure given to respondents as part of the informed consent process, and the interviewer training manuals.

Before conducting the study, six discussion groups with recent immigrants from Ukraine were convened at Stony Brook to evaluate the cultural and conceptual appropriateness of the major domains of the study and the procedure for obtaining informed consent. In addition, a pilot study was conducted in the Kyiv metropolitan area with 50 participants to examine the cross-cultural utility of the instruments and the consenting process. The results of these activities supported the feasibility of the project and enabled us to refine key measures (alcohol consumption, treatment, employment, socioeconomic status, and types of traumatic events).

## Measures

The study focused on DSM-IV mood, anxiety, and substance-use disorders as well as demographic and psychosocial risk factors and treatment seeking. The major tool was the WMH/WHO CIDI [18], a fully structured instrument designed to assess DSM-IV disorders. The Ukraine WMH survey used the paper–pencil version, with the modifications noted above (Ukrainian and Russian versions available from KIIS).

To reduce respondent burden, the WMH-CIDI is divided into two parts: part I, which is administered to the entire sample, and part II, which is administered to a systematic subsample. This paper focuses on nine DSM-IV disorders included in part I: major depressive episode, dysthymia, panic disorder, agoraphobia without panic disorder, social phobia, generalized anxiety disorder, alcohol abuse with and without dependence, and intermittent explosive disorder (IED).

The sociodemographic and geographic risk factors examined are gender, age (18–24, 25–34, 35–49, ≥50 years), region (West, Central excluding the Kyiv metropolitan area, Kyiv, East), urbanicity (rural, mid-sized urban areas with towns up to 200,000 population, large urban), language of interview (Russian, Ukrainian), marital status (currently married or cohabiting, no longer married, never married), education (primary, secondary, specialized secondary beyond high school, higher; Shkolnikov et al. [29]), employment status (employed, unemployed, homemaker, student, retired), and financial status, a variable used in KIIS surveys (“adequate”, if there was enough money for durables; “inadequate”, if not enough money for clothing; “very inadequate”, if not enough money for food). The demographic section in part I did not differentiate within the “no longer married” category (e.g., divorced, separated, widowed) [20]. To compensate for this limitation, we separated the “no longer married” into those ages 55 years and older (and hence mostly widowed) and those younger than 55 years (mostly divorced or separated).

Treatment-seeking information for respondents with mood or anxiety disorders was derived from an item at the end of the diagnostic modules asking respondents whether they saw a medical doctor, psychologist, counselor, spiritual advisor, herbalist, acupuncturist, or other healing professional for their disorder (ever and in the past 12 months). For alcohol disorders, the items asked whether they were ever in jail or hospitalized for alcoholism.

## Statistical analysis

Comparison of the unweighted sample distributions (Table 1, column 3) with population data (Table 1, column 1) shows that the sample overrepresented women, people older than 50 years, and those living in urban settings, presumably attributable to differential nonresponse. These biases were largely corrected by weighting the sample so that it corresponds to the Sex×Age (six groups)×Region (five regions) × Urban/Rural multinomial distribution of the 2001 census. Thus, the weighted distributions of the study population (column 2) match those of the general population. All analyses were conducted using the SUDAAN [30] software system, which uses the Taylor series linearization method to adjust standard errors for the stratified sampling design and the sample weights.

Lifetime, 12-month, and 1-month prevalence rates, age-of-onset distributions, and sociodemographic and geographic correlates of prevalence are presented. The Kaplan–Meier method was used to generate age-of-onset curves [16]. Logistic regression analysis was used to study sociodemographic correlates [14]. Unadjusted and adjusted odds ratios (ORs) and 95% confidence intervals (CIs) are reported. In the multivariate analysis, after adjusting for age and sex, the risk factors were eliminated in a stepwise fashion in order of least significance (modified backwards elimination). Tests for trend (Wald *F* statistic with 1 degree of freedom) were performed for age group, urbanicity, education, and financial status. Statistical significance was set at  $p < 0.05$ , using two-tailed tests.

**Table 1** Demographic distribution of the 2002 Ukraine WMH respondents compared with the general population of Ukraine

	General population ( <i>N</i> =48,457,100) <sup>a</sup> (%)	Weighted sample ( <i>n</i> =4,725) (%)	Unweighted sample ( <i>n</i> =4,725) (%)
<b>Gender<sup>a</sup></b>			
Male	45.0	45.0	37.9
Female	55.0	55.0	62.1
<b>Age<sup>a</sup> (years)</b>			
18–29	22.2	22.2	18.4
30–39	17.4	17.5	15.0
40–49	19.2	19.3	17.7
50–59	13.9	13.8	15.4
60–69	14.6	14.6	17.7
70+	12.7	12.6	15.8
<b>Region<sup>a</sup></b>			
Western	18.9	18.9	19.2
West central	24.0	23.9	23.6
East central	16.2	16.3	16.3
Southern	19.1	19.1	18.8
Eastern	21.8	21.8	22.1
<b>Urbanicity<sup>a</sup></b>			
Rural	32.2	32.1	29.8
Urban	67.8	67.9	70.2
<b>Marital status<sup>b</sup></b>			
Married	60.1	59.8	59.7
Never married	14.2	15.4	12.8
Married before	25.6	24.8	27.5
<b>Education<sup>b</sup></b>			
Primary	6.6	9.8	11.3
Secondary	43.2	46.1	44.9
Specialized secondary	32.0	27.1	26.6
Higher	18.2	17.0	17.2
<b>Employment status<sup>b</sup></b>			
Employed	46.3	48.2	43.7
Unemployed	10.6	11.3	9.9
Retired/Disabled	32.8	31.3	37.6
Student	4.4	3.6	3.0
Homemaker	5.9	5.7	5.9

<sup>a</sup> Population data from 2001 Ukrainian census

<sup>b</sup> Population data from KIIS

## Results

### Prevalence

The overall lifetime prevalence estimate for the nine disorders was 31.6% (Table 2). The rate was significantly higher in men (35.9%) than in women (28.1%) (OR=1.43, 95% CI 1.24–1.66,  $p<0.001$ ). The three most common disorders in men were alcohol abuse (19.7%), major depression (8.6%), and alcohol abuse with dependence (6.7%); in women, they were major depression (19.5%), dysthymia (3.8%), and IED (3.7%). The least common disorder was agoraphobia (<0.2% in men and 0.4% in women). The male to female ratios for mood and anxiety disorders were 1:2, while that for alcoholism was 9:1. Contrary to expectations [7], the ratio for IED was relatively small (4:3).

Table 2 also provides the 12-month and 1-month prevalence estimates. The lifetime to 12-month and 12-month to 1-month ratios were about 2:1. Overall, about one third of respondents with a lifetime disorder had an episode in the month before being interviewed. The gender-specific rankings of disorders were similar to those for lifetime diagnoses. Thus, the most common 12-month and 1-month diagnoses were alcohol abuse in men (12-month, 7.2%; 1-month, 2.8%) and major depression in women (12-month, 11.3%; 1-month, 6.6%). The second highest 12-month rates were major depression in men (4.9%) and IED in women (2.7%). For disorders occurring in the past month, the second highest were alcohol abuse with dependence in men (2.6%) and IED in women (1.7%).

### Age of onset

Kaplan–Meier age-of-onset curves showed that anxiety disorders had the earliest median age of onset (median, 15 years), followed by intermittent explosive disorder (median, 17 years), alcoholism (median, 24 years), and lastly, mood disorders (median, 28 years) (Fig. 1). When the age-of-onset curves were fitted separately for the men and women (not shown), the curves for mood disorders and alcoholism changed very little, and the median ages of onset were identical (28 for mood disorders, 24 for alcohol use disorder). However, for anxiety disorders and IED, men had an earlier age of onset than women (for anxiety, median age was 14 years in men and 17 years in women; for IED, median age was 15 years in men and 19 years in women).

### Comorbidity

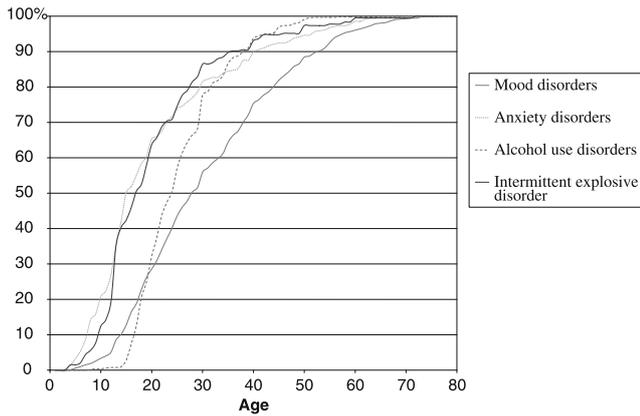
Among men, 28.0% of men had one specific diagnosis, 5.9% had two, and 2.0% had three or more; in women, the figures were 19.9, 6.3, and 1.8%. Among men with at least one lifetime diagnosis, 78.0% had one disorder, 16.4% had two, and 5.6% had three; among women, the corresponding percentages are 71.1, 22.4, and 6.5%.

Table 3 shows the ORs (95% CIs) for the relationships among the diagnosis groups. With the exception of the ORs for mood disorder and alcoholism in both men and women, the ORs were statistically significant ( $p<0.001$ ). As expected, mood and anxiety disorders were highly comorbid. The most striking result was the

**Table 2** Lifetime, 12-month, and 1-month prevalence of DSM-IV disorders in Ukraine (weighted data)

	Men			Women			Total		
	Lifetime	12-month	1-month	Lifetime	12-month	1-month	Lifetime	12-month	1-month
<b>Mood disorders</b>									
Major depressive disorder	8.61 (0.65)	4.87 (0.48)	2.61 (0.34)	19.48 (0.94)	11.34 (0.83)	6.60 (0.65)	14.59 (0.70)	8.43 (0.59)	4.81 (0.42)
Dysthymia	2.04 (0.49)	1.26 (0.28)	0.95 (0.23)	3.81 (0.35)	2.46 (0.32)	1.67 (0.22)	3.01 (0.33)	1.92 (0.19)	1.35 (0.14)
Any mood disorder	9.72 (0.76)	5.34 (0.47)	2.98 (0.34)	20.78 (1.04)	11.89 (0.87)	6.99 (0.67)	15.81 (0.76)	8.94 (0.59)	5.18 (0.44)
<b>Anxiety disorders</b>									
Panic disorder	0.76 (0.20)	0.45 (0.15)	0.18 (0.10)	2.91 (0.51)	1.94 (0.49)	1.18 (0.33)	1.94 (0.28)	1.27 (0.28)	0.73 (0.18)
Agoraphobia	0.17 (0.10)	0.17 (0.10)	0.13 (0.09)	0.44 (0.11)	0.30 (0.09)	0.19 (0.07)	0.32 (0.08)	0.24 (0.07)	0.16 (0.06)
Social phobia	1.91 (0.38)	1.17 (0.30)	0.88 (0.26)	3.12 (0.32)	1.81 (0.17)	1.03 (0.17)	2.57 (0.23)	1.53 (0.18)	0.96 (0.17)
General anxiety disorder	1.32 (0.30)	0.68 (0.16)	0.51 (0.13)	2.47 (0.31)	1.60 (0.25)	0.87 (0.13)	1.95 (0.22)	1.19 (0.15)	0.71 (0.08)
Any anxiety disorder	3.96 (0.60)	2.27 (0.38)	1.57 (0.31)	7.86 (0.47)	5.01 (0.49)	2.87 (0.25)	6.10 (0.39)	3.78 (0.32)	2.29 (0.21)
<b>Alcohol disorders</b>									
Alcohol abuse without dependence	19.73 (1.23)	7.21 (0.73)	2.81 (0.48)	2.05 (0.30)	0.86 (0.17)	0.41 (0.13)	10.00 (0.67)	3.71 (0.38)	1.49 (0.24)
Alcohol abuse with dependence	6.73 (0.72)	4.24 (0.53)	2.64 (0.49)	0.83 (0.15)	0.40 (0.12)	0.29 (0.10)	3.49 (0.35)	2.13 (0.24)	1.35 (0.23)
Any alcohol disorder	26.46 (1.49)	11.45 (0.96)	5.45 (0.74)	2.89 (0.38)	1.26 (0.23)	0.70 (0.17)	13.49 (0.83)	5.84 (0.48)	2.83 (0.32)
<b>Impulsive control disorder</b>									
Intermittent explosive disorder	4.86 (0.63)	2.85 (0.50)	1.59 (0.30)	3.68 (0.34)	2.70 (0.30)	1.69 (0.23)	4.21 (0.32)	2.76 (0.25)	1.65 (0.17)
Any disorder	35.89 (1.59)	18.25 (1.08)	9.85 (0.71)	28.06 (1.08)	17.06 (0.97)	10.25 (0.69)	31.58 (1.09)	17.60 (0.74)	10.07 (0.54)

Values are given as % (SE)



**Fig. 1** Cumulative lifetime prevalence of DSM-IV disorders in Ukraine

high degree of comorbidity of IED with mood, anxiety, and alcohol disorders in both the men (ORs=3.4, 4.8, and 3.7, respectively) and the women (ORs=4.4, 5.5, and 5.5, respectively).

The associations of specific diagnoses, especially within disorder groups, were very strong and significant (data not shown). Thus, in the total sample, the OR for major depression and dysthymia was 9.7 (95% CI 5.9–16.0), and the OR for panic disorder and generalized anxiety disorder was 8.3 (95% CI 5.0–13.8). Across disorder groups, there were also several large associations, including IED and panic disorder (6.0, 95% CI 3.7–9.8), major depression and generalized anxiety disorder (7.1, 95% CI 5.0–10.0), major depression and panic disorder (6.8, 95% CI 4.2–11.0), and IED and alcohol abuse with dependence (6.4, 95% CI 3.8–10.8).

### ■ Sociodemographic and geographic correlates of disorders

In this section, we describe the risk factors for lifetime mood disorder, anxiety disorder, alcohol disorder, and IED. The findings for 12-month disorders were similar although the odds ratios tended to be larger in magnitude (table available from authors).

As expected from the figures presented in Table 2, women were significantly more likely than men to have a lifetime mood disorder (Table 4). However, contrary to expectations, the rate of mood disorder increased

progressively with age, and the test for a trend was highly significant. This was true for both men and women (data not shown), with the rate of mood disorder rising to 13.2 and 25.9% in men and women 50 years of age and older. The other significant risk factors for mood disorder were being from the East and Kyiv regions, being no longer married, having very low education, being a homemaker, being retired, and reporting inadequate financial status. In addition, being a student was a significant protective factor. In the multivariate model, older age, female, region (Kyiv and Eastern regions compared to West), married before, and inadequate financial status remained significant.

Lifetime anxiety disorder was significantly more prevalent in females than in males but did not vary with age (in either men or women). Anxiety disorder was significantly related to being a homemaker, living in regions other than the West, being no longer married, and speaking Russian. In the multivariate analysis, gender, region, language, and urbanicity were significant.

Men were nine times more likely than women to have a history of alcoholism, and unlike mood disorder, the rates were lowest in the youngest and in the oldest age groups. In men, the rates were 20.1% in those younger than 25 years and 20.7% in those 50 years and older, rising to 31.7% for men ages 25–34 and 33.7% for ages 35–49. In women, however, the highest rate was found in those younger than 25 (6.9%) and 25–34 (5.3%), and much lower rates occurred for those 35–49 (2.7%) and older than 50 years (1.2%). Other risk factors for lifetime alcoholism were being interviewed in Russian, being no longer married/younger than 55 years, having a secondary education, and being unemployed. Inadequate financial status, being out of the workforce, having only a primary education, and being no longer married/age more than 55 years were significant protective factors. In the multivariate analysis, gender, language, marital status, and education remained significant.

Although gender was not a significant risk factor for IED, the younger age groups had a greater likelihood of having this diagnosis. Specifically, the highest rates of IED were found in women and men younger than 25 years (9.3 and 7.6%, respectively), whereas the lowest were found in those 50 years and older (1.8% in men, 1.0% in women). Additional significant correlates were

**Table 3** Comorbidity among lifetime disorders in men (top) and women (bottom)

	Mood disorders	Anxiety disorders	Alcohol disorders	Intermittent explosive disorder
Men				
Mood disorders	–	4.77 (2.76, 8.23)	1.58 (0.96, 2.60)	3.39 (1.93, 5.97)
Anxiety disorders	3.56 (2.69, 4.70)	–	2.15 (1.38, 3.35)	4.77 (2.36, 9.65)
Alcohol disorders	1.55 (0.83, 2.91)	3.46 (2.13, 5.62)	–	3.70 (1.94, 7.08)
Intermittent explosive disorder (IED)	4.37 (3.07, 6.21)	5.48 (3.54, 8.48)	5.49 (3.13, 9.61)	–
Women				

Values are ORs (95% CIs)

**Table 4** Demographic correlates of lifetime DSM-IV disorders: bivariate analysis

	Mood disorder		Anxiety disorder		Alcohol disorders		Intermittent explosive disorder	
	%	OR (95% CI)	%	OR (95% CI)	%	OR (95% CI)	%	OR (95% CI)
Sex								
Male	9.72	1.00	3.96	1.00	26.46	1.00	4.86	1.00
Female	20.78	2.44 (2.03–2.92)***	7.86	2.07 (1.49–2.88)***	2.89	0.08 (0.06–0.11)***	3.68	0.75 (0.52–1.07)
Age (years)								
18–24	7.68	0.31 (0.22–0.45)***	6.33	1.02 (0.71–1.48)	13.96	1.68 (1.23–2.29)**	8.38	3.67 (2.08–6.49)***
25–34	13.22	0.58 (0.44–0.75)***	6.19	1.00 (0.74–1.35)	18.10	2.29 (1.64–3.21)***	4.22	1.77 (0.99–3.16)
35–49	13.86	0.61 (0.49–0.76)***	5.83	0.94 (0.67–1.31)	17.33	2.17 (1.71–2.77)***	4.77	2.01 (1.24–3.27)**
50 or more	20.91	1.00	6.19	1.00	8.79	1.00	2.43	1.00
Trend test ( <i>F</i> )		57.87***		0.02		22.42***		21.04***
Region								
West	12.33	1.00	3.05	1.00	11.81	1.00	3.59	1.00
Central (excluding Kyiv)	13.59	1.12 (0.74–1.70)	6.08	2.06 (1.28–3.33)**	13.09	1.13 (0.68–1.85)	3.61	1.01 (0.60–1.68)
Kyiv metropolitan area	22.55	2.07 (1.57–2.74)***	8.36	2.90 (1.86–4.54)***	15.94	1.42 (0.96–2.09)	7.18	2.08 (1.23–3.50)**
East	17.40	1.50 (1.11–2.01)**	7.17	2.46 (1.69–3.59)***	14.04	1.22 (0.83–1.79)	4.23	1.18 (0.81–1.72)
Urbanicity								
Rural	16.59	1.05 (0.60–1.85)	6.20	0.85 (0.37–1.94)	13.18	1.00 (0.65–1.52)	3.77	0.82 (0.51–1.31)
Mid-sized urban	14.97	0.93 (0.53–1.63)	4.94	0.66 (0.37–1.21)	14.02	1.07 (0.83–1.37)	4.27	0.93 (0.59–1.47)
Large urban	15.93	1.00	7.25	1.00	13.23	1.00	4.58	1.00
Trend test ( <i>F</i> )		0.03		0.17		0.01		0.78
Language								
Russian	16.41	1.10 (0.91–1.34)	7.65	1.83 (1.37–2.45)***	15.20	1.38 (1.06–1.79)*	4.73	1.33 (0.99–1.77)
Ukrainian	15.10	1.00	4.32	1.00	11.53	1.00	3.61	1.00
Marital status								
Currently married	12.60	1.00	5.09	1.00	13.44	1.00	3.56	1.00
No longer married, age <55 years	25.21	2.34 (1.85–2.96)***	9.09	1.86 (1.32–2.63)***	23.15	1.94 (1.31–2.86)**	6.83	1.98 (1.27–3.09)**
No longer married, age 55+ years	29.43	2.89 (2.28–3.67)***	7.70	1.55 (1.06–2.28)*	2.60	0.17 (0.10–0.29)***	1.52	0.42 (0.21–0.84)*
Never married	9.30	0.71 (0.50–1.01)	6.49	1.29 (0.87–1.92)	16.66	1.29 (0.99–1.68)	7.29	2.13 (1.43–3.16)**
Education completed								
Primary	23.06	1.73 (1.16–2.59)**	7.02	1.27 (0.66–2.45)	4.80	0.45 (0.30–0.69)***	1.83	0.56 (0.25–1.28)
Secondary	15.31	1.05 (0.80–1.36)	6.21	1.11 (0.80–1.54)	17.59	1.92 (1.44–2.57)***	5.10	1.62 (1.00–2.60)*
Specialized secondary	14.71	1.00 (0.76–1.31)	5.91	1.05 (0.67–1.67)	11.84	1.21 (0.91–1.61)	4.18	1.31 (0.83–2.08)
Higher	14.75	1.00	5.62	1.00	9.99	1.00	3.22	1.00
Trend test ( <i>F</i> )		5.37*		0.87		4.27*		0.19
Employment status								
Employed	12.91	1.00	5.72	1.00	17.11	1.00	4.67	1.00
Unemployed	12.24	0.94 (0.68–1.30)	5.24	0.91 (0.56–1.49)	21.64	1.34 (1.00–1.78)*	6.39	1.39 (0.90–2.17)
Homemaker	22.10	1.91 (1.39–2.63)***	11.30	2.10 (1.42–3.10)***	7.34	0.38 (0.22–0.66)***	5.28	1.14 (0.68–1.90)
Student	4.82	0.34 (0.15–0.76)**	3.53	0.60 (0.19–1.88)	8.29	0.44 (0.22–0.85)*	3.84	0.81 (0.35–1.91)
Retired	21.71	1.87 (1.52–2.30)***	6.38	1.12 (0.85–1.48)	6.72	0.35 (0.27–0.45)***	2.57	0.54 (0.34–0.87)*
Financial status								
Adequate	8.55	1.00	5.73	1.00	19.28	1.00	5.35	1.00
Inadequate	14.84	1.86 (1.34–2.59)***	5.62	0.98 (0.62–1.54)	13.34	0.64 (0.50–0.84)**	3.86	0.71 (0.49–1.02)
Very inadequate	22.04	3.02 (2.21–4.14)***	7.22	1.28 (0.82–1.98)	10.58	0.50 (0.37–0.67)***	4.10	0.76 (0.45–1.28)
Trend test ( <i>F</i> )		73.66***		2.00		21.82***		0.77

\*  $p < 0.05$ ; \*\*  $p < 0.01$ ; \*\*\*  $p < 0.001$ 

living in the Kyiv metropolitan area, being no longer married/younger than 55 years, being never married, and having a secondary education. Being retired and no longer married/age more than 55 years were significant protective factors. In the multivariate analysis, age and marital status were the only significant variables.

### ■ Treatment seeking

Even though the array of possible providers was extremely broad, the rates of treatment seeking were very low. The most common person to whom respondents talked about their symptoms was their general

medical provider. For lifetime mood disorders, 16.6% (14.5% of men and 17.4% of women) talked to a professional; for anxiety disorders, the figure was 21.1% (23.7% of men and 20.0% of women). The rates were higher in those with more severe forms of these disorders. Thus, for the subgroup of respondents with mood disorder who acknowledged suicidal thoughts, the percentage who talked to a professional was 25.1% (18.8% of men and 28.0% of women). For the subgroup with anxiety disorder including panic, the rate was 35.5% (49.1% of men and 32.6% of women).

Among respondents with alcohol abuse with dependence, 7.7% of men and 14.9% of women had been hospitalized overnight for their use of alcohol. Among the subgroup of men who had been incarcerated due to

alcohol (i.e., the most severely alcoholic men), the rate was 9.6% (none of the women were incarcerated).

## Discussion

The Ukraine WMH survey is the first systematic national survey of mental illness and alcoholism in Ukraine and, indeed, in any country in the former Soviet Union to include a national probability sample and a structured diagnostic interview. The study was conducted under less than ideal circumstances. The interviews took place in cramped settings that provided little privacy, and the interview was extremely demanding of both the respondent and the interviewer in terms of its length, complexity, and intensity. That the project was successfully executed is a testament to the commitment of investigators on both sides of the Atlantic to creating an unbiased profile of the prevalence of psychiatric and alcohol disorders.

One of three respondents had a lifetime diagnosis. One of five had a disorder in the past year. One in ten had a disorder in the past month. In women, the primary psychiatric condition of note was major depression. In men, the primary diagnosis was alcohol abuse/dependence. Overall, the prevalence of psychiatric and alcohol disorders, based on 12-month rates, was the second highest (the USA being highest) for the 14 countries completing the WMH survey to date, and three fourths of the cases in Ukraine were considered “serious” (unable to function for at least 30 days) [33].

The most pertinent comparison for the Ukraine WMH findings is the recent European Study of the Epidemiology of Mental Disorders (ESEMED) study, in which the WMH-CIDI was administered to more than 20,000 adults ages 18 and older in Belgium, France, Germany, Italy, the Netherlands, and Spain. Seven disorders were analyzed in both reports: major depression, dysthymia, generalized anxiety disorder (GAD), social phobia, agoraphobia, panic, and alcohol abuse/dependence. In women, the lifetime and 12-month rates were within 0–2 percentage points for each of these disorders with the exception of 12-month major depression in women (Ukrainian women 11.3%, ESEMED women 5.0%). In men, the lifetime and 12-month rates in Ukraine compared with ESEMED were also within 0–2 percentage points of one another with one major exception, alcohol abuse/dependence. The lifetime rate in Ukrainian men was nearly three times that of ESEMED men (26.5% vs 9.3%), and the 12-month rate was nine times higher (11.5% vs 1.7%). In fact, the rate of alcoholism in the Ukraine WMH is the highest of all countries surveyed to date [33]. Given the limitations in the instrument (only people who drank more than three drinks per week were asked about abuse, and only people endorsing an abuse criterion were asked about dependence) and the tendency of Russians to minimize their drinking [23], we believe that as high as

they are, the rates of alcoholism reported here were underestimated [36].

Consistent with other studies, men had significantly higher rates of alcoholism than women. Although the odds ratio for gender was larger than we would have expected based on Western findings [32], it is in line with the large gender differences in rates of binge drinking in the former Soviet Union [36]. Furthermore, the rate of alcoholism in men in midlife, when they are working and raising families, is a cause for concern. The fact that older men had the lowest rates of lifetime alcoholism is partly attributable to the early mortality in men, but is offset by their high rate of depression. From a public health point of view, these findings, as well as the regional variations in rates, suggest where intervention programs in this resource-poor country might be directed. Similarly, although many studies have reported higher rates of depression and substance disorders in urban than rural areas (e.g., [4, 32]), we did not find differences according to urbanicity. Whereas this was unexpected, it is not without precedent in other European countries (e.g., Norway and Finland [3]).

Contrary to expectations based on Western epidemiologic studies, the rate of depression in Ukrainian men and especially women increased with age. These findings are consistent with those of two Eastern European studies conducted in 1995—a household mail-back questionnaire study of depressive symptomatology in the Czech Republic [15] and the CIDI-based study in Udmurtia [24, 25]. Many older women were widowed, retired, and did not have enough money to cover their basic needs. They had also lived through unspeakable traumas, including the Nazi occupation and the atrocities under Stalin, and now many are unequipped to deal with the political and economic changes characterizing modern times. It has also been suggested that the high rate of depression in older women is associated with recent negative changes in social support and subjective health [15]. Clearly, there are multiple plausible, interacting causes of the high rates of depression in older women and men, and intervention efforts are badly needed.

As in Europe and North America, mood and anxiety disorders were highly comorbid, as were alcoholism and intermittent explosive disorder. In addition, as in Europe and North America, the age of onset of these disorders, especially alcoholism and anxiety disorders, occurred early in life. However, unlike Europe and North America, treatment is not available. The earlier international WMH report found that 80% of Ukraine WMH respondents classified as having a “serious” disorder received no treatment [33]. In our analysis, 75% of respondents with major depression who admitted to suicidal thoughts never talked to a professional. The explanations for this are complex and reside in the negative connotations about mental illness in Ukrainian culture, the structure of medical services, the lack of mental health training of physi-

cians and other professionals, the stigma associated with mental illness, and the lack of resources to modernize the health care system. Since 1991, tax revenues have declined in Ukraine, and a disproportionate percentage of those declining revenues are being continually channeled into inpatient care. For example, in 2003, only 579 outpatient facilities were funded to treat substance-use disorders at the community level, whereas in the same year, 6,999 inpatient beds were maintained for the treatment of the severely addicted [21]. Our data clearly show that although most people with disorder do not talk to a professional about their symptoms, those who do so turn to their general medical physicians. Unfortunately, these doctors have almost no training in mental health (during their 2 years of internship, family doctors receive 3–5 days of training in mental health) and thus are unable to accurately detect or provide adequate treatment for these problems. Moreover, a UPA survey of psychiatrists showed that accurate diagnosis under modern diagnostic systems and adequate mental health treatment were sorely lacking [11]. A modern education initiative, like the US Depression Awareness, Recognition, and Treatment program [26], which focuses simultaneously on the community at large, general practitioners, and psychiatrists, is clearly warranted. In redefining psychiatric care, such a program would have the added challenge of disconnecting modern concepts of mental health from the political abuses of the Soviet era [10, 34].

The Ukraine WMH survey had limitations that need to be considered when examining the rates and risk factors. Indeed, collectively the limitations would lead to an underestimation of the rate of psychiatric morbidity in Ukraine. Specifically, we used the paper-pencil version of the WMH-CIDI, which is far more cumbersome and therefore open to error than the computer version from which it is derived. Second, the sample did not include people in the military or institutional settings, where alcoholism is highly prevalent. Third, we did not include the specific phobia diagnosis module, and thus the overall rate of anxiety disorders was relatively lower than those of other countries [33]. We note, however, that in the screening module that directs which diagnostic modules are administered, 58.8% of the sample endorsed items indicative of simple phobia; thus, the overall rate of anxiety disorders would no doubt have been higher in Ukraine had this module been included. Fourth, we did not assess psychotic disorders because of the poor reliability of assessing psychosis in structured interviews administered by non-mental-health professionals [2, 17]. Fifth, and perhaps most importantly, there is

no information available on the reliability and validity of the DSM-IV in Ukraine. However, our efforts to ensure that the WHO/WMH-CIDI was culturally appropriate provided reassurance that the disorders tapped symptoms that were pertinent in Ukraine. The Ukrainian (S.G. and S.K.) and former Belorussian (Z.G.) psychiatrists on our team have also had experience in prior projects that used DSM categories. In addition, we conducted a small ( $N=176$ ) clinical reappraisal study, training 15 psychiatrists from three large urban areas on a structured clinical interview. Although we will present the detailed findings in a separate report, we note here that the rates of agreement between the lay and clinical interview were moderate–excellent (0.72 for depression and 0.70 for alcohol abuse/dependence). Lastly, and related to the previous issue, we were concerned about overlooking culturally sanctioned idioms for expressing emotional problems, particularly in the domain of somatic complaints. To that end, the Ukraine WMH CIDI included ICD-10 neurasthenia. We will be reporting the findings for neurasthenia, and its overlap with mood, anxiety, and physical disorders, in a separate paper.

In conclusion, despite the challenges in conducting the Ukraine WMH survey, including the use of an American-style informed consent procedure, the study showed that psychiatric disorder was common in the community. The rates of alcoholism and past-year major depression were higher than those recently found in six European countries, where mental health specialists are more available. In Ukraine, the main sources of professional help are primary care physicians, who have little or no education about Western concepts of mental disorders and their treatment. The Ukraine WMH survey provides valuable seeds of information for developing a targeted and pragmatic mental health policy [8]. Weich and Araya [37] proposed that greater emphasis be placed on prospective, hypothesis-driven approaches to morbidity research that integrate social and neurobiological measures. Thus, the next steps for psychiatric epidemiology in Ukraine involve follow-ups of healthy respondents to determine the factors associated with disease onset, and of respondents with preexisting disease to determine the factors associated with illness course and recovery. Given the limited resources of Ukraine, eco-epidemiologic research, aimed at isolating macro-environmental risk factors, is equally warranted for public mental health planning. Our current study is a small yet vital first step in developing a program of psychiatric epidemiologic research in Ukraine that has as its ultimate goal reducing the sizeable level of morbidity in the population.

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