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SPECIAL ARTICLE

Complementary and alternative medicine contacts by persons with mental disorders in 25 countries: results from the World Mental Health Surveys

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Aims. A substantial proportion of persons with mental disorders seek treatment from complementary and alternative medicine (CAM) professionals. However, data on how CAM contacts vary across countries, mental disorders and their severity, and health care settings is largely lacking. The aim was therefore to investigate the prevalence of contacts with CAM providers in a large cross-national sample of persons with 12-month mental disorders.

Methods. In the World Mental Health Surveys, the Composite International Diagnostic Interview was administered to determine the presence of past 12 month mental disorders in 138 801 participants aged 18–100 derived from representative general population samples. Participants were recruited between 2001 and 2012. Rates of self-reported CAM contacts for each of the 28 surveys across 25 countries and 12 mental disorder groups were calculated for all persons with past 12-month mental disorders. Mental disorders were grouped into mood disorders, anxiety disorders or behavioural disorders, and further divided by severity levels. Satisfaction with conventional care was also compared with CAM contact satisfaction.

Results. An estimated 3.6% (standard error 0.2%) of persons with a past 12-month mental disorder reported a CAM contact, which was two times higher in high-income countries (4.6%; standard error 0.3%) than in low- and middle-income countries (2.3%; standard error 0.2%). CAM contacts were largely comparable for different disorder types, but particularly high in persons receiving conventional care (8.6–17.8%). CAM contacts increased with increasing mental disorder severity. Among persons receiving specialist mental health care, CAM contacts were reported by 14.0% for severe mood disorders, 16.2% for severe anxiety disorders and 22.5% for severe behavioural disorders. Satisfaction with care was comparable with respect to CAM contacts (78.3%) and conventional care (75.6%) in persons that received both.

Conclusions. CAM contacts are common in persons with severe mental disorders, in high-income countries, and in persons receiving conventional care. Our findings support the notion of CAM as largely complementary but are in contrast to suggestions that this concerns person with only mild, transient complaints. There was no indication that persons were less satisfied by CAM visits than by receiving conventional care. We encourage health care professionals in conventional settings to openly discuss the care patients are receiving, whether conventional or not, and their reasons for doing so.

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Key words: Complementary and alternative medicine, mental disorders, unconventional medicine.

Abbreviations: DSM-IV, Diagnostic Statistical Manual, version 4, WMH, World Mental Health, WHO, World Health Organisation, CIDI, Composite International Diagnostic Interview, CAM, Complementary and Alternative Medicine.

Introduction

Complementary and alternative medicine (CAM) is not part of conventional medicine as practiced by medical doctors and allied health professionals, but is still part of how society deals with health problems, including mental disorders (Kessler *et al*. 2001*a*, *b*). The use of CAM in the USA increased during the nineties to an extent that the out-of-pocket payments relating to CAM use were equal to those for hospitalisations and physician services (Eisenberg *et al*. 1998). In low-income countries, conventional care resources are less often available and sometimes CAM even constitutes the only resource. For instance, up to 80% of the population in Africa depends on CAM for their primary source of care (WHO Factsheet 2003). CAM includes a wide list of self-care interventions, such as taking natural products or doing meditation, tai chi or yoga, participation in self-help groups through the internet, or visits to all sort of therapists and healers, and is often differentiated from religious providers (Kessler *et al*. 2001*a*, *b*).

A popular definition of alternative medical treatments is that they include treatments that are neither taught widely in medical schools nor generally available in hospitals (Rössler *et al*. 2007). However, it should be noted that nowadays many academic medical centres and affiliate institutions actually do teach CAM treatments and offer them in their teaching hospitals and clinics. Moreover, since at least in high-income countries most CAM is being utilised by persons who are also receiving conventional medical care, unconventional therapies are often a complement rather than an alternative to conventional medicine (Paramore, 1997; Druss & Rosenheck, 1999; Rössler *et al*. 2007) Its definition should also be regarded in the context of a country's traditions of practicing medicine. Importantly, the World Health Organisation distinguishes CAM from traditional medicine where the latter is based on the knowledge, skill and practices based on the theories, beliefs and experiences indigenous to different cultures, while CAM refers to health care practices that are not part of that country's own tradition or conventional medicine and are not fully integrated into the dominant health-care system (http://www.who.int/medicines/areas/traditional/definitions/en). As a result, any operationalisation of

CAM should be viewed as time- and culture-dependent. CAM should also be regarded in relation to spiritual-religious caregivers. Access to religious advisors does not require referral and is free of charge, and as a result for some persons the only available resource. In a recent publication on the World Mental Health Surveys data (Kovess-Masfety *et al*. 2017), it was shown that religious advisors play an important role in mental health care and that religious attitudes are the strongest drivers of religious advisors usage. Some of the interventions employed by religious caregivers might classify as CAM, but others not. Therefore, in the present paper, we excluded religious advisors from our definition of CAM.

Mental disorders are among the strongest contributors to the global burden of disease, and conventional therapies are not always effective (Turner *et al*. 2008; Cuijpers *et al*. 2010, 2011). In the USA it has been observed that as much as 21.3% of CAM users have mental disorders, and that many CAM users with mental disorders also receive some form of conventional care (Unützer *et al*. 2000) and that 9.8% of persons reporting a mental disorder made a CAM visit (Druss & Rosenheck, 2000). Several studies, all conducted in high-income countries, have found that CAM use depends on the kind and severity of disorder: anxiety and mood disorders, in particular, have been associated with increased CAM use, but also the presence of alcohol disorder (particularly with self-help groups) (Druss & Rosenheck, 2000; Honda & Jacobson, 2005; Bystritsky *et al*. 2012). It has been suggested that CAM use is concentrated among persons with relatively mild and transient forms of distress (Druss & Rosenheck, 2000).

For clinicians working in conventional care settings, it is important to know whether the patients they are seeing are also receiving CAM and how CAM and conventional services can be coordinated in order to prevent undesirable interactions between treatments (Wahlström *et al*. 2008). However, to date, only very limited data are available, and there is no report on cross-national epidemiological data regarding CAM contacts in countries of varying income levels and regions across the world (Hunt *et al*. 2010). The aim of this study was to provide data on CAM contacts by persons with a past 12-month mental disorder, comparing different income level countries, mental disorder types, severity levels and treatment settings.

Method

Samples

Data came from the World Mental Health Surveys (Kessler & Ustün, 2004). The WHO Composite International Diagnostic Interview (CIDI) version 3.0 was administered in 28 WMH surveys in 25 countries. These included 12 countries classified by the World Bank as low or middle income (Brazil, Bulgaria, Colombia, Iraq, Lebanon, Mexico, Nigeria, Peoples Republic of China [PRC], Peru, Romania, South Africa and Ukraine) and 13 high income (Belgium, France, Germany, Israel, Italy, Japan, the Netherlands, New Zealand, Northern Ireland, Poland, Portugal, Spain and the USA). Most surveys used stratified multistage clustered area probability household sampling with no substitution for non-participants. Data collection took place between 2001 and 2012, and response rates ranged from 45.9 to 97.2%, with an average of 70.1% (Table 1). Classification of country income categories was based on the World Bank criteria at the time of each survey which explains the different income category of the national Colombian survey and the regional Medellin survey in Colombia (The World Bank, 2009).

All WMH surveys were conducted face-to-face by lay interviewers who had received standardised training. Standardised translation, back-translation, harmonization and quality control procedures were applied in all of the participating survey sites (Pennell *et al*. 2008). Informed consent was obtained according to protocols endorsed by local Institutional Review Boards.

Measures

All respondents completed Part 1 of the WHO Composite International Diagnostic Interview (CIDI) (Kessler & Ustün, 2004) which assesses lifetime DSM-IV mood disorders (major depressive disorder and/or dysthymia, bipolar disorder), anxiety disorders (panic disorder, agoraphobia, specific phobia, social phobia, generalised anxiety disorder, post-traumatic stress disorder), substance use disorders (alcohol and drug abuse with or without dependence) and impulse control disorder (intermittent explosive disorder). Diagnostic hierarchy and organic exclusion rules were applied for all diagnoses other than substance abuse (with or without dependence). A blinded clinical reappraisal study using the Structured Clinical Interview for DSM-IV (SCID) (First *et al*. 2002) found good diagnostic concordance between CIDI and SCID diagnoses (Haro *et al*. 2006).

Part I data were weighted to adjust for the differential probability of being selected and the sociodemographic and geographic structure of each sample. Respondents identified with a disorder during the Part I assessment and an additional probability subsample were administered Part II of the survey, which assessed a number of other disorders and correlates.

Table 1. *World Mental Health sample characteristics by World Bank Income categories*[a]

Country	Survey[b]	Sample characteristics[c]	Field dates	Age range	Sample size		Response rate[d] (%)
					Part 1	Part 2	
I. Low –lower-middle-income countries							
Colombia	NSMH	All urban areas of the country (approximately 73% of the total national population)	2003	18–65	4426	2381	87.7
Iraq	IMHS	Nationally representative	2006–7	18+	4332	4332	95.2
Nigeria	NSMHW	21 of the 36 states in the country, representing 57% of the national population. The surveys were conducted in Yoruba, Igbo, Hausa and Efik languages	2002–4	18+	6752	2143	79.3
Peru	EMSMP	Five urban areas of the country (approximately 38% of the total national population)	2004–5	18–65	3930	1801	90.2
PRC[e] Beijing/ Shanghai	B-WMH & S-WMH	Beijing and Shanghai metropolitan areas.	2001–3	18+	5201	1628	74.7
PRC[e] Shen Zhen[f]	Shenzhen	Shenzhen metropolitan area. Included temporary residents as well as household residents	2005–7	18+	7132	2475	80.0
Ukraine	CMDPSD	Nationally representative	2002	18+	4725	1720	78.3
Total					36 498	16 480	
II. Upper-middle-income countries							
Brazil- São Paulo	São Paulo Megacity	São Paulo metropolitan area	2005–8	18+	5037	2942	81.3
Bulgaria	NSHS	Nationally representative	2002–6	18+	5318	2233	72.0
Colombia (Medellin)[g]	MMHHS	Medellin metropolitan area	2011–12	18–65	3261	1673	97.2
Lebanon	LEBANON	Nationally representative	2002–3	18+	2857	1031	70.0
Mexico	M-NCS	All urban areas of the country (approximately 75% of the total national population)	2001–2	18–65	5782	2362	76.6
Romania	RMHS	Nationally representative	2005–6	18+	2357	2357	70.9
South Africa[f]	SASH	Nationally representative	2002–4	18+	4315	4315	87.1
Total					28 927	16 913	
III. High-income countries							
Belgium	ESEMeD	Nationally representative	2001–2	18+	2419	1043	50.6
France	ESEMeD	Nationally representative	2001–2	18+	2894	1436	45.9
Germany	ESEMeD	Nationally representative	2002–3	18+	3555	1323	57.8
Israel	NHS	Nationally representative	2003–4	21+	4859	4859	72.6
Italy	ESEMeD	Nationally representative	2001–2	18+	4712	1779	71.3
Japan	WMHJ	Eleven metropolitan areas	2002–6	20+	4129	1682	55.1
New Zealand[f]	NZMHS	Nationally representative	2004–5	18+	12 790	7312	73.3
Northern Ireland	NISHS	Nationally representative	2005–8	18+	4340	1986	68.4
Poland	EZOP	Nationally representative	2010–11	18–64	10 081	4000	50.4
Portugal	NMHS	Nationally representative	2008–9	18+	3849	2060	57.3
Spain	ESEMeD	Nationally representative	2001–2	18+	5473	2121	78.6
Spain (Murcia)	PEGASUS-Murcia	Murcia region. Regionally representative	2010–12	18+	2621	1459	67.4
The Netherlands	ESEMeD	Nationally representative	2002–3	18+	2372	1094	56.4

Continued

Table 1. *Continued*

Country	Survey[b]	Sample characteristics[c]	Field dates	Age range	Sample size		Response rate[d] (%)
					Part 1	Part 2	
The USA	NCS-R	Nationally representative	2001–3	18+	9282	5692	70.9
Total					73 376	37 846	
IV. Total					138 801	71 239	70.1

[a]The World Bank (2009). Some of the WMH countries have moved into new income categories since the surveys were conducted. The income groupings above reflect the status of each country at the time of data collection. The current income category of each country is available at the preceding URL.

[b]NSMH (The Colombian National Study of Mental Health); IMHS (Iraq Mental Health Survey); NSMHW (The Nigerian Survey of Mental Health and Wellbeing); B-WMH (The Beijing World Mental Health Survey); S-WMH (The Shanghai World Mental Health Survey); EMSMP (La Encuesta Mundial de Salud Mental en el Peru); CMDPSD (Comorbid Mental Disorders during Periods of Social Disruption); NSHS (Bulgaria National Survey of Health and Stress); MMHHS (Medellín Mental Health Household Study); LEBANON (Lebanese Evaluation of the Burden of Ailments and Needs of the Nation); M-NCS (The Mexico National Comorbidity Survey); RMHS (Romania Mental Health Survey); SASH (South Africa Health Survey); ESEMeD (The European Study Of The Epidemiology Of Mental Disorders); NHS (Israel National Health Survey); WMHJ2002-2006 (World Mental Health Japan Survey); NZMHS (New Zealand Mental Health Survey); NISHS (Northern Ireland Study of Health and Stress); EZOP (Epidemiology of Mental Disorders and Access to Care Survey); NMHS (Portugal National Mental Health Survey); PEGASUS-Murcia (Psychiatric Enquiry to General Population in Southeast Spain-Murcia); NCS-R (The US National Comorbidity Survey Replication).

[c]Most WMH surveys are based on stratified multistage clustered area probability household samples in which samples of areas equivalent to counties or municipalities in the US were selected in the first stage followed by one or more subsequent stages of geographic sampling (e.g., towns within counties, blocks within towns, households within blocks) to arrive at a sample of households, in each of which a listing of household members was created and one or two people were selected from this listing to be interviewed. No substitution was allowed when the originally sampled household resident could not be interviewed. These household samples were selected from Census area data in all countries other than France (where telephone directories were used to select households) and the Netherlands (where postal registries were used to select households). Several WMH surveys (Belgium, Germany, Italy, Poland, Spain-Murcia) used municipal, country resident or universal health-care registries to select respondents without listing households. The Japanese sample is the only totally un-clustered sample, with households randomly selected in each of the 11 metropolitan areas and one random respondent selected in each sample household. 18 of the 28 surveys are based on nationally representative household samples.

[d]The response rate is calculated as the ratio of the number of households in which an interview was completed to the number of households originally sampled, excluding from the denominator households known not to be eligible either because of being vacant at the time of initial contact or because the residents were unable to speak the designated languages of the survey. The weighted average response rate is 70.1%.

[e]People's Republic of China.

[f]For the purposes of cross-national comparisons, we limit the sample to those 18+.

[g]Colombia moved from the 'lower and lower-middle income' to the 'upper-middle income' category between 2003 (when the Colombian National Study of Mental Health was conducted) and 2010 (when the Medellin Mental Health Household Study was conducted), hence Colombia's appearance in both income categories. For more information, please see footnote *a*.

Further weightings were applied to the Part II data to adjust for the differential selection procedure and to match base population distributions on socio-demographic and geographic data.

Care utilisation

Respondents who met criteria for a particular disorder were asked at the end of the diagnostic section whether they had ever sought professional treatment for that disorder and, if so, at what age they first sought this treatment. After the disorder sections, one section of the CIDI was devoted specifically to questions on the use of services for mental health problems. First, respondents were asked if they had previously consulted anyone (medical doctors, nurses, psychologists, social workers, spiritual advisers, herbalists and any other healing professionals) for a mental health problem during the past year. Persons reporting any contact with a provider for a mental health problem were then asked to select whom they had consulted from a list of health professionals

(including psychiatrists; other mental health professionals; general practitioners; other medical specialists; other health professionals) and non-health care professionals.

In accordance with previous reports (e.g. Wang *et al*. 2007; Gureje *et al*. 2015), services were divided into the following sectors: mental health specialty (psychiatrist, psychologist, other mental health professional in any setting, social worker or counsellor in a mental health specialty setting, use of a mental health hotline); general medical (primary care doctor, other general medical doctor, nurse, any other health professional not previously mentioned); human services (religious or spiritual advisor, social worker, or counsellor in any setting other than a specialty mental health setting); and complementary and alternative medicine (any other type of healer such as a herbalist, chiropractor or spiritualist, participation in an internet support group, participation in a self-help group). With respect to CAM, the latter part of the definition (internet support group or self-help group), however, was not assessed in the countries involved in the ESEMeD study (i.e. six of the European samples: Belgium, France, Germany, Italy, Netherlands, Spain).

Satisfaction with the used services was measured in 16 of the surveys (part-II sample $N = 49\,373$: USA, Mexico, Brazil, Colombia, Shenzhen, Peru, Medellin, Japan, Israel, New Zealand, Romania, Northern Ireland, Portugal, Poland, Murcia and Iraq). In these surveys, participants were asked if they were very satisfied, satisfied, neither satisfied nor dissatisfied, dissatisfied or very dissatisfied. This was done with respect to conventional care and contacts with an alternative healer (e.g. herbalist, chiropractor, spiritualist). Although there was no linkage between the exact disorder and CAM contacts, we limited both CAM contacts and disorders to past 12 months occurrence.

Statistical analysis

Cross-tabs were calculated to analyse CAM use between low and middle, *v.* high-income group countries, as well as between disorder types and severity levels. Cross-tabs in the subsample of participants that received either CAM, conventional care or both were used to estimate the percentages of CAM-users that were satisfied or very satisfied with the received care and to compare this percentage to that for the other received care. The main analyses were run for CAM including internet and self-help use, in accordance with previous WMH studies. Sensitivity analyses were performed restricting CAM to the use of services by alternative healers only, to get more insight into the use of this specific subcategory of CAM (see supplementary Tables). For these analyses, we only used the samples from Belgium, France, Germany, Italy, Netherlands, Spain as in these samples a more narrow operationalisation was applied.

All analyses were weighted and because the data were clustered, standard errors were estimated using the Taylor series linearization method, using cluster, strata and weight variables with procedures for survey statistics in SAS 9.

Results

In total, 664 (3.6%) persons with a 12-month DSM-IV disorder reported visiting a CAM provider in the past year (Table 2). This proportion was lower in low- and middle-income group countries (2.3%; n = 179) and twice as high in high income group countries (4.6%; n = 485). CAM contacts did not vary widely across disorder types, i.e. from 3.9% (460) for anxiety disorders to 5.0% (n = 370) for mood disorders. About two-thirds of all CAM contacts (2.4/3.6%) was reported by persons also receiving conventional care, which was about half (1.2/2.3%) in low to middle-income countries and close to three quarters (3.3/4.6%) in high-income countries.

In persons with mental disorders receiving conventional care, the percentage of CAM contacts was substantially higher. Of those treated by a GP, 8.6% reported CAM contacts. The percentage of CAM contacts was 11.7% in persons treated by a mental health specialist, and 17.8% in persons treated by a human services professional (Table 3). These percentages were consistently higher in high-income countries and did not consistently differ across disorder types.

The percentage of CAM contacts was consistently higher as a function of increasing severity of the mental health disorder. Whereas in persons with mild to moderate severity levels, the overall proportion of CAM contacts was 2.6%, this rose to 6.4% in persons with a severe disorder. This association was observed in all treatment settings and country income groups. In persons with severe mental disorders from high-income countries, as much as 80% (6.8/8.5%) of persons reporting CAM contacts also received conventional care. This proportion was lower in low- and middle-income countries and in persons with mild to moderate disorder severity (Table 4).

Highly similar patterns as described above were observed for each of the different disorder types, with higher proportions of CAM contacts among those with high severity levels, and higher proportions of CAM contacts in persons already receiving treatment in conventional medical settings. About one out of every seven persons (14.0%) with a severe mood disorder who was seen by a mental health specialist also

Table 2. *CAM contacts among subjects with a 12-month DSM-IV disorder, ordered by disorder type*

	Income groups									
	Low and middle			High income			Total			Unweighted/ Weighted number of subjects with 12-month Dx
	Unweighted			Unweighted			Unweighted			
12-month disorder type	*N*	%	S.E.	*n*	%	S.E.	*n*	%	S.E.	
Mood disorders										:7493/4215
% of CAM use	90	3.0	0.4	280	6.4	0.5	370	5.0	0.4	
% of CAM only	53	1.6	0.3	66	1.3	0.2	119	1.5	0.2	
% of CAM + other care[a]	37	1.4	0.3	214	5.1	0.5	251	3.6	0.3	
Anxiety disorders										:11 105/7005
% of CAM use	106	2.2	0.3	354	5.1	0.3	460	3.9	0.2	
% of CAM only	45	0.9	0.2	109	1.4	0.1	154	1.2	0.1	
% of CAM + other care[a]	61	1.4	0.2	245	3.7	0.3	306	2.7	0.2	
Behavioural disorders (ICD and/or substance[b],[c])										:3841/2782
% of CAM use	65	3.3	0.5	123	5.7	0.7	188	4.5	0.4	
% of CAM only	30	1.4	0.3	29	1.4	0.3	59	1.4	0.2	
% of CAM + other care[a]	35	1.9	0.4	94	4.4	0.6	129	3.2	0.4	
Any 12-month disorder										:17 473/11 163
% of CAM use	179	2.3	0.2	485	4.6	0.3	664	3.6	0.2	
% of CAM only	90	1.1	0.1	148	1.3	0.1	238	1.2	0.1	
% of CAM + other care[a]	89	1.2	0.2	337	3.3	0.2	426	2.4	0.2	
unweighted *N*	7442			10 031			17 473			
weighted *N*	4875			6295			11 163			

[a]Other sectors are: any health care (including specialised mental health care and general health care) and human services.
[b]Due to a skip-error in the CIDI, substance-use was underestimated in the ESEMeD countries resulting in a smaller number of cases in this group.
[c]Attention Deficit Disorder, Conduct Disorder and Oppositional Defiant Disorder were only assessed in subjects aged 18–44 to prevent recall bias.

reported CAM contacts. This ratio is one out of 6 (16.2%) for anxiety and one out of 4–5 (22.5%) for behavioural disorders (Table 5).

Satisfaction with the services of alternative healers was investigated in a subsample of participants that reported any 12-month disorder and having received services from an alternative healer. Of those reporting only this particular service in the past 12-months (n = 78) 82.1% were 'satisfied/very satisfied' with this service (Table 6). Of those 12-month disorder cases reporting both services from an alternative healer and from another provider (n = 130), 78.3% reported being 'satisfied/very satisfied' with the services by the alternative healer and 75.6% reported being 'satisfied/very satisfied' with at least one of the other received services.

Sensitivity analyses restricting CAM contacts to alternative healers only (excluding internet support and self-help groups) revealed significantly lower levels of care utilization (1.5% of those with any 12-month mental disorder, see supplementary Tables) suggesting most of the contacts took place in the context of internet support groups or self-help groups. The findings that CAM use was higher in high-income level countries, higher in persons with more severe mental disorders and higher in persons that received conventional care maintained when applying this more narrow definition of CAM.

Discussion

When estimating the proportion of persons visiting CAM providers among persons with mental disorders (3.6%), we consistently found the following three factors to be important. First, CAM contacts among persons with mental disorders are dependent on the income level of a country, with a two-fold increased proportion of CAM contacts in high-income group countries (4.6%) than in low-income group countries

Table 3. *Percentages of 12-month CAM contacts in subjects that received other types of care during the past 12 months for different disorder classes*

	Low and middle income				High income				Total sample				
	Care use per stratum unweighted	CAM use per stratum unweighted			Care use per stratum unweighted	CAM use per stratum unweighted			Care use per stratum unweighted	CAM use per stratum unweighted			Unweighted/Weighted number of subjects with 12-month Dx
12-month disorder type	*n*	*n*	%	S.E.	*n*	*n*	%	S.E.	*N*	*n*	%	S.E.	
Mood disorders													:7493/4215
Those seen by a mental health specialist	356	21	5.7	1.6	1208	152	13.5	1.3	1564	173	11.7	1.1	
Those seen by other doctor	354	13	6.4	2.5	1538	141	9.5	1.0	1892	154	9.0	0.9	
Those with any health care	642	30	5.8	1.5	2140	202	10.0	0.9	2782	232	9.1	0.8	
Those seen by a human services professional	115	12	11.8	3.4	259	61	21.5	2.7	374	73	18.4	2.1	
Anxiety disorders													:11 105/7005
Those seen by a mental health specialist	389	33	8.0	1.4	1263	174	14.5	1.3	1652	207	13.0	1.0	
Those seen by a other doctor	454	29	7.7	1.9	1836	166	9.7	0.9	2290	195	9.3	0.8	
Those with any health care	772	54	7.7	1.3	2469	232	10.2	0.8	3241	286	9.6	0.7	
Those seen by a human services professional	109	14	7.7	2.5	325	79	26.0	2.9	434	93	20.4	2.2	
Behavioural disorder (ICD and/or substance use[a],[b])													:3841/2782
Those seen by a mental health specialist	157	20	10.9	2.7	393	76	21.3	2.8	550	96	18.1	2.1	
Those seen by other doctor	135	19	15.9	4.1	409	52	13.4	2.4	544	71	14.2	2.1	
Those with any health care	262	31	12.5	2.5	622	87	15.3	1.9	884	118	14.4	1.5	
Those seen by a human services professional	37	7	15.9	6.8	101	25	21.5	5.1	138	32	19.5	4.1	
Any 12-month disorder													:17 473/11 163
Those seen by a mental health specialist	638	46	7.0	1.2	1891	236	13.3	1.0	2529	282	11.7	0.8	
Those seen by other doctor	695	43	8.2	1.5	2605	217	8.8	0.8	3300	260	8.6	0.7	
Those with any health care	1216	77	7.3	1.0	3599	313	9.3	0.7	4815	390	8.8	0.6	
Those seen by a human services professional	196	23	9.4	2.2	460	105	22.2	2.2	656	128	17.8	1.7	
Unweighted *N*	7442				10 031				17 473				
Weighted *N*	4868				6295				11 163				

[a]Due to a skip-error in the CIDI, substance-use was underestimated in the ESEMeD countries resulting in a smaller number of cases in this group.
[b]ADD, CD and ODD were only assessed in subjects aged 18–44 to prevent recall bias.

Table 4. *Percentages of CAM contacts among those with a 12-month disorder, ordered by severity per income group*

	Low and middle income				High income				Total				
	Care use per stratum unweighted	CAM use per stratum unweighted			Care use per stratum unweighted	CAM use per stratum unweighted			Care use per stratum unweighted	CAM use per stratum unweighted			Unweighted/ Weighted
Severity group	*n*	*n*	%	S.E.	*n*	*N*	%	S.E.	*N*	*N*	%	S.E.	*N* per severity group
Severe													:4745/2802
% of CAM use	1952	70	3.7	0.5	2793	233	8.5	0.7	4745	303	6.4	0.4	
% of CAM only	1952	31	1.4	0.3	2793	50	1.7	0.3	4745	81	1.6	0.2	
% of CAM + other care	1952	39	2.2	0.4	2793	183	6.8	0.6	4745	222	4.8	0.4	
% of CAM among those seen by mental health specialist	299	28	9.4	2.4	916	137	16.3	1.6	1215	165	14.6	1.4	
% of CAM in those seen by other doctor	248	15	7.5	2.4	1090	118	11.2	1.2	1338	133	10.5	1.1	
% of CAM in those with any health care	483	35	8.0	1.8	1519	172	12.1	1.1	2002	207	11.1	0.9	
% of CAM in those seen by a human services professional	84	10	14.9	4.2	202	61	29.0	3.7	286	71	24.4	2.9	
Mild and moderate													:12 715/8348
% of CAM use	5489	109	1.8	0.2	7226	252	3.2	0.3	12 715	361	2.6	0.2	
% of CAM only	5489	59	0.9	0.2	7226	98	1.1	0.1	12 715	157	1.0	0.1	
% of CAM + other care use	5489	50	0.9	0.2	7226	154	2.1	0.2	12 715	204	1.6	0.2	
% of CAM among those seen by mental health specialist	339	18	4.7	1.3	973	99	10.4	1.2	1312	117	8.9	0.9	
% of CAM in those seen by other doctor	447	28	8.5	1.9	1513	99	7.1	1.0	1960	127	7.5	0.9	
% of CAM in those with any health care	733	42	6.9	1.3	2078	141	7.3	0.8	2811	183	7.2	0.7	
% of CAM in those seen by a human services professional	112	13	6.0	2.3	257	44	17.2	2.5	369	57	13.2	1.9	
Unweighted *N*		7442				10 031				17 473			
Weighted *N*		4868				6295				11 163			

Table 5. *Percentages of CAM contacts among those with a 12-month disorder, ordered by severity for each disorder group*

	Mood				Anxiety				Behavioural[a,b]				Any 12-month disorder				
	Care use per stratum unweighted	CAM use per stratum unweighted			Care use per stratum unweighted	CAM use per stratum unweighted			Care use Per stratum unweighted	CAM use Per stratum unweighted			Any Care use per stratum unweighted	CAM use per stratum unweighted			Unweighted/ Weighted N per severity group
Severity	*n*	*n*	%	S.E.	*N*	*n*	%	S.E.	*N*	*n*	%	S.E.	*n*	*n*	%	S.E.	
High																	:4745/2802
% of CAM use	2959	211	7.4	0.6	3042	217	7.2	0.6	1450	124	8.6	0.9	4745	303	6.4	0.4	
% of CAM only	2959	53	1.7	0.3	3042	48	1.4	0.2	1450	36	2.6	0.6	4745	81	1.6	0.2	
% of CAM + other care	2959	158	5.7	0.6	3042	169	5.9	0.5	1450	88	6.0	0.8	4745	222	4.8	0.4	
CAM among those seen by mental health specialist	900	116	14.0	1.5	849	130	16.2	1.6	339	72	22.5	2.8	1215	165	14.6	1.4	
CAM in those seen by other doctor	962	98	10.8	1.4	987	109	11.7	1.3	298	44	15.0	2.8	1338	133	10.5	1.1	
CAM in those with any health care	1436	148	11.0	1.1	1430	163	12.2	1.1	490	82	17.7	2.2	2002	207	11.1	0.9	
CAM in those seen by a human services professional	210	50	22.9	3.2	197	51	25.3	3.7	76	23	33.3	6.7	286	71	24.4	2.9	
Mild and Moderate																	:12 715/ 8348
% of CAM use	4533	159	3.5	0.4	8063	243	2.8	0.2	2379	64	2.6	0.4	12 715	361	2.6	0.2	
% of CAM only	4533	66	1.3	0.2	8063	106	1.1	0.1	2379	23	0.8	0.2	12 715	157	1.0	0.1	
% of CAM + other care	4533	93	2.2	0.3	8063	137	1.7	0.2	2379	41	1.8	0.3	12 715	204	1.6	0.2	
CAM among those seen by mental health specialist	664	57	8.4	1.3	803	77	9.4	1.3	209	24	12.0	2.7	1312	117	8.9	0.9	
CAM in those seen by other doctor	930	56	7.2	1.3	1303	86	7.5	1.1	244	27	13.4	2.9	1960	127	7.5	0.9	
CAM in those with any health care	1346	84	7.1	1.1	1811	123	7.5	0.9	392	36	10.9	2.0	2811	183	7.2	0.7	
CAM in those seen by a human services professional	164	23	12.5	2.7	237	42	16.5	2.7	61	9	8.4	3.4	369	57	13.2	1.9	
Unweighted *N*		7493				11 105				3841				17 473			
Weighted *N*		4215				7005				2782				11 163			

[a]Due to a skip-error in the CIDI, substance-use was underestimated in the ESEMeD countries resulting in a smaller number of cases in this group.
[b]ADD, CD and ODD were only assessed in subjects aged 18–44 to prevent recall bias.

Table 6. *Satisfaction with 12-month services among persons with a 12-month DSM-IV disorder that used CAM or other services*

		Satisfied with CAM care[a,b]			Satisfied with other care[c,b]		
Service groups	*n* (total)	*n* (unweighted)	%	se	*n* (unweighted)	%	Se
CAM (only alternative healers)[d]	78	63	82.1	4.9	**	**	**
CAM (only alternative healers) and other care[d]	130	106	78.3	4.9	98	75.6	5.0
Total *N* (unweighted)	208						

[a]Those reporting that they were 'satisfied' or 'very satisfied' with the services provided by the CAM provider.
[b]Satisfaction with services was assessed only in NCSR, Mexico, Brazil, Colombia, Shenzhen, Peru, Medellin, Japan, Israel, New Zealand, Romania, Northern Ireland, Portugal, Poland, Murcia and Iraq (part-2 sample n = 49 373).
[c]Those reporting that they were satisfied or very satisfied with the services of at least one other service provider (specialty mental health, general medical, human services).
[d]Only includes those, who saw a CAM provider (i.e. an alternative healer) and were assessed about their satisfaction about this provider (those reporting online support groups and self-help groups not included).

(2.3%). Second, most CAM contacts by persons with mental disorders are reported by persons also receiving conventional care. In patients with mental disorders reporting conventional care, about 8–18% reported CAM use as well. Third, CAM contacts are more common in persons with higher levels of severity of mental disorder severity than in those with lower levels of severity. These results confirm that CAM contacts should be considered as a complement to conventional treatment, relatively common in Western societies, in persons already in some form of treatment. It challenges the idea that CAM contacts are more often used for mild complaints. Our finding that in low income countries persons with mental disorders are less often having CAM contacts than in high income countries may be due to the fact that we restricted the analyses to contacts (while excluded self-care), but it may also reflect a stronger tendency to consider CAM as part of conventional care in low-income countries.

Our data suggest that mental health specialists can expect that about one out of seven persons with severe mood disorders (14.0%), one out of six with severe anxiety (16.2%) and one out of four–five with severe behavioural disorders (22.5%) are also visiting CAM providers, which is line with recent estimates, for instance for depression and anxiety (Hansen & Kristoffersen, 2016). There are several reasons why these figures are relevant. First, side effects of CAM therapies may occur when taken on their own, but there may also be desirable and undesirable interactions between treatments in conventional and CAM care (Walter & Rey, 1999). Several studies found that about two-thirds of persons receiving CAM in the past year did not disclose this information to their medical doctor (Eisenberg *et al*. 2001; Canter & Ernst, 2004; Thomson *et al*. 2012). This may be in part result because conventional medicine and CAM reflect different 'schools of thought'. In conventional medicine, the scientific evidence base – a theory compatible with insights from the natural sciences and empirical data to support this theory – is considered to be the primary prerequisite for any treatment to be given. This may be different for CAM services (Gelenberg, 2010; Anlauf *et al*. 2015), for which the scientific evidence base is much less strong (Freeman *et al*. 2010; Melzer *et al*. 2013; Ravindran & da Silva, 2013). However, apart from the *actual* scientific knowledge base, negative attitudes of therapists toward CAM may be even more important (Ditte *et al*. 2011). There is a low probability of direct communication between conventional and unconventional therapists (37), and patients themselves are also not likely willing to disclose information regarding the use of unconventional services. This appears to be due to fear of disapproval but also to concerns about their doctor's ability to integrate CAM therapy with conventional treatment (Eisenberg *et al*. 2001). In recent years there has been significant and steady progress in implementing, regulating and managing CAM in most regions of the world (http://www.who.int/traditional-complementary-integrative-medicine/publications/trm_strategy14_23/en/). The results of the present study suggest that efforts to integrate conventional and unconventional care should be encouraged, as many persons treated in conventional care settings, and particularly those with severe complaints, are using CAM as a complement to conventional care.

We found that overall 82.1% of respondents reporting a CAM visit only, were satisfied. Of persons reporting both CAM and conventional care, comparable proportions were satisfied with either CAM

(78.3%) or conventional care (75.6%). These data suggest that patients rate the usefulness of unconventional therapies at least similarly to conventional therapies, which is in line with the literature (Kessler *et al*. 2001*a*, *b*; Demling *et al*. 2002; D'Silva *et al*. 2012). At the same time, there are no indications that persons with mental health problems that are using CAM are extremely dissatisfied with conventional care, but seem to use both conventional and unconventional care option because of the severity of their complaints. Taken together, our findings thus underline the importance of addressing the care needs of persons using both conventional and unconventional care.

There are several limitations that should be considered when interpreting our findings. First of all, all data regarding care utilisation are self-reported and are not necessarily related to the disorder detected with the CIDI interview. We minimised the bias introduced by these study characteristics by selecting persons with a 12-month DSM-IV diagnosis while using the same 12-month framework for services use. Secondly, CAM was operationalised as care by herbalists, chiropractors, spiritualists, participation in an Internet support group, or participation in a self-help group except in the six European countries where these last two categories were not proposed. Our sensitivity analyses showed that considerably lower utilisation levels (1.5%) are found when restricting CAM contacts to alternative healers only, but that all patterns (more utilisation in higher income countries, severe disorders and in those receiving conventional care) were highly similar to the broader definition. We used a definition that includes internet support groups and self-help groups, although this definition was not used in a subset of six countries. The overall figure of 3.6% would have been slightly higher if all samples had included this definition, and particularly in the high-income countries, further stressing the differences between the country income levels. While this definition is in line with several previous reports, others included care that is explicitly based on non-Western theoretical models, such as Chinese medicine, acupuncture and homeopathy. We did not distinguish further between subtypes, as this would have resulted in cell numbers that were too small. Also, we did not include religious or spiritual advisors in our definition of CAM, which is in accordance with previous work on WMH data (e.g. Wang *et al*. 2007). Thirdly, this survey did not include self-care, such as use of natural products and yoga, which have particularly high prevalence rates in high-income countries. Taken together, these definition issues might explain the difference with very high prevalence numbers found by some (e.g 42% (2)), while being remarkably consistent with others using practitioner-based CAM as definition. For instance in the study by Druss and Rosenheck (Druss & Rosenheck, 2000), it was found that a total of 9.8% of respondents with mental disorders visited a CAM provider in the last 12 month, and 4.5% visited a CAM provider specifically to treat the mental condition. Fourth, the pooling of the countries in two global categories is putting together countries where these practices may be very different. Still, this joining of countries was necessary in order to retain sufficient numbers of subjects to warrant reliable results. Finally, as the different surveys have been conducted over a fairly long period of time, changing trends in use of CAM may have had some effects on the estimates we found. However, while all of the abovementioned limitations may have had some impact on the estimated rates, it is unlikely that they have affected the main conclusions of this paper regarding the comparisons in CAM contacts.

To conclude, our findings suggest that in persons with mental disorders, particularly among those with greater severity and in persons already receiving conventional care, contacts with CAM providers are relatively common. We, therefore, encourage health care professionals in conventional settings to discuss with their patients their care needs and the care they are already receiving either from conventional or unconventional therapists, in particular with patients reporting severe complaints.

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Supplementary material

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Conflict of interest

In the past 3 years, Dr Kessler received support for his epidemiological studies from Sanofi Aventis; was a consultant for Johnson & Johnson Wellness and Prevention, Sage Pharmaceuticals, Shire, Takeda; and served on an advisory board for the Johnson & Johnson Services Inc. Lake Nona Life Project. Kessler is a co-owner of DataStat, Inc., a market research firm that carries out healthcare research.

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A complete list of all within-country and cross-national WMH publications can be found at http://www.hcp.med.harvard.edu/wmh/.

Data availability

The data of the WHO World Mental Health Surveys are stored centrally by the Department of Health Care Policy, Harvard Medical School, Boston, USA (http://www.hcp.med.harvard.edu/wmh/ and analysed by remote access by a trained analyst (KW). Given the complexity of the multisample dataset, access to the raw dataset to untrained researchers is not advised. For specific data requests, please contact the first or last author.

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