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ORIGINAL PAPER

Perceived helpfulness of treatment for social anxiety disorder: findings from the WHO World Mental Health Surveys

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Abstract

Purpose To investigate the prevalence and predictors of perceived helpfulness of treatment in persons with a history of DSM-IV social anxiety disorder (SAD), using a worldwide population-based sample.

Methods The World Health Organization World Mental Health Surveys is a coordinated series of community epidemiological surveys of non-institutionalized adults; 27 surveys in 24 countries (16 in high-income; 11 in low/middle-income countries; $N = 117,856$) included people with a lifetime history of treated SAD.

Results In respondents with lifetime SAD, approximately one in five ever obtained treatment. Among these ($n = 1322$), cumulative probability of receiving treatment they regarded as helpful after seeing up to seven professionals was 92.2%. However, only 30.2% persisted this long, resulting in 65.1% ever receiving treatment perceived as helpful. Perceiving treatment as helpful was more common in female respondents, those currently married, more highly educated, and treated in non-formal health-care settings. Persistence in seeking treatment for SAD was higher among those with shorter delays in seeking treatment, in those receiving medication from a mental health specialist, and those with more than two lifetime anxiety disorders.

Conclusions The vast majority of individuals with SAD do not receive any treatment. Among those who do, the probability that people treated for SAD obtain treatment they consider helpful increases considerably if they persisted in help-seeking after earlier unhelpful treatments.

Keywords Perceived helpfulness · Treatment · Social anxiety disorder

Introduction

Social anxiety disorder (SAD) is one of the most prevalent mental disorders [1]. Epidemiological surveys estimate the 12-month and lifetime prevalence of SAD in the 0.6–8.0% (median 4.5%) and 2.8–13.0% (median 7.9%), respectively [2–4]. SAD has an early age-of-onset, usually between ages 13 and 15, and is often chronic. Moreover, more than 90% of individuals with the disorder report impairments such as dropping out of school, reduced productivity at work,

reduced socioeconomic status, and reduced quality of life [1, 5, 6]. Despite the marked impairment, few people receive treatment [7], partly due to the core of the clinical condition itself: the fear of social situations and interactions make persons with SAD extremely hesitant to consult a health-care professional. Among those who make it to treatment, psychological treatments or pharmacotherapy have been evaluated, either alone (for instance one psychological treatment against another) and in combination (for instance psychotherapy combined with pharmacotherapy) [8–10]. Typically, about only 34–65% respond to treatment. Moreover, remission rates can be high and up to approximately 35% [1, 11].

Most studies on treatment effectiveness use self- and clinician-rated measures and focus on symptom changes.

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These measures are essential and form the core assessments of randomized controlled trials. Interestingly, improvements in such standardized measures evaluated changes in an individual outcome (such as symptom reduction) or accumulated into other indices (e.g., effect size, statistically significant changes) but, most importantly, they do not necessarily reflect the impact of interventions in everyday life nor on the patients views of whether the treatments are helpful and make any palpable difference [12, 13]. Whether patients view treatment as making a difference or being helpful is rarely evaluated [14, 15]. However, within a contemporary value-based framework in treating mental disorders [16], patient views of helpfulness provide a crucial additional source of information and may have critical implications for services that are provided [17].

Helpfulness is not merely a matter of the assessment after a given treatment. A longer term perspective is needed because many individuals traverse multiple treatments and seek different treatments over time. In this study, we focused on patient views of helpfulness over an extended or longer term treatment course and also focus on the question on the association between the evaluation of helpfulness and continuing the pursue of treatment. An evaluation of this pathway requires information about the sequence of contacts of patients with health professionals following the onset of disorder. Against this, the probability of a patient ever receiving helpful treatment will be the product of two components: the probability of a given treatment provider being perceived as helpful and the probability the patient will persist in help-seeking after receiving unhelpful treatment [18]. Such decomposition into two components of the treatment pathway is important because these two components could have different determinants. In addition, they may vary across mental health sectors, reflecting elements such as availability of services and barriers to access. Obtaining this level of information is vital for the knowledge on and understanding of how individuals progress through a clinical treatment pathway; and is an important first step for future improvement efforts in the treatment of SAD.

Perceived helpfulness is not likely to be only a function of the type of treatment people may receive. Other domains may contribute to or indeed explain whether patients consider treatment as effective. Prior research has not considered factors that might well contribute to patient perceptions. To that end, we evaluated multiple variables within four domains. Each of these have been (in part) shown to be associated with perceived helpfulness for mental disorders, but where so far not considered together with regard to the study of perceived helpfulness for SAD. We included type and characteristics of treatment (like type of treatment, treatment provider) because prior study showed that, for instance for depression, perceived helpfulness is higher when persons receive treatment from mental health specialists [18].

In addition, we included current and past mental disorders (e.g., age-of-onset and comorbid disorders) as prior study suggested that treatment experience may vary upon history of prior treatment [19]. Lastly, childhood adversity (e.g., history physical abuse, sexual abuse, neglect, parental mental disorder, parental substance use disorder, parental criminal behavior, or family violence) were also included. We included these because childhood adversity has been repeatedly shown to be a risk factor for a broad range of mental and physical disorders, cognitive, behavioral, and social disability over the lifespan, and moreover, shows a "dose" response relation in relation to these risks [20].

The World Health Organization (WHO) World Mental Health (WMH) surveys were designed, among other objectives, to address perceived helpfulness of treatment. These general population-based surveys use structured psychiatric interviews, to measure the prevalence of SAD and information on respondents' evaluation of treatment for this condition. The present study examined (a) the prevalence and predictors of perceived helpfulness of treatment, (b) two components related to perceived helpfulness of treatment (i.e., the probability of a given treatment provider being perceived as helpful; and the probability the patient will persist in help-seeking after receiving unhelpful treatment) using cross-national, representative community samples of individuals with a lifetime history of SAD treatment, and (c) variations of the above across high and low/middle-income countries worldwide.

Methods

Sample

The WHO-WMH surveys are a coordinated set of community epidemiological surveys administered to probability samples of the non-institutionalized household population in countries throughout the world (https://www.hcp.med.harvard.edu/wmh/). Data for the current report came from 27 WMH surveys carried out in 24 countries—16 surveys in countries classified by the World Bank as high-income (Argentina; Australia; Belgium; France; Germany; Italy; Japan; the Netherlands; New Zealand; Northern Ireland; Poland; Portugal; Saudi Arabia; Spain; Murcia, Spain; and the United States) and 11 surveys in countries classified as low/middle-income (Sao Paulo Brazil; Bulgaria [separate surveys carried out in 2002 and 2016]; Colombia; Medellin, Colombia; Iraq; Lebanon; Mexico; Peru; Shenzhen in the People's Republic of China [PRC]; and Romania). All surveys were based on nationally representative household samples, whereas 4 were representative of selected Metropolitan Areas (Sao Paolo, Brazil; Medellin, Colombia; Japan; Shenzhen, PRC), 1 of selected regions (Murcia, Spain), and 4 of

all urbanized areas (Argentina; Colombia; Mexico; Peru). The field dates ranged from 2001 to 2017. Response rates ranged from 45.9% (France) to 97.2% (Medellin) and averaged 67.8% across surveys (see Appendix Table 5).

The interview schedule was developed in English and translated into other languages using a standardized WHO translation, team translation, and harmonization protocol. Interviews were administered face-to-face in respondents' homes after obtaining informed consent using procedures approved by local Institutional Review Boards. The study is performed in accordance with the ethical standards laid down in the 1964 Declaration of Helsinki and its later amendments. Interviews were in two parts. Part I was administered to all respondents and assessed core DSM-IV mental disorders ($n = 130,485$ respondents across all surveys). Part II assessed additional disorders and correlates and was administered to 100% of respondents who met lifetime criteria for any Part I disorder and a probability subsample of other Part I respondents ($n = 69,524$).

Measures

Social anxiety disorder (SAD)

Diagnoses were based on Version 3.0 of the WHO's Composite International Diagnostic Interview (CIDI-3.0) [21], a fully structured lay-administered diagnostic interview. The DSM-IV criteria were used to define SAD. Respondents were administered the full SAD section if they endorsed a diagnostic stem question for one or more performance or interactional fears described as excessive and causing substantial distress or avoidance. The SAD section screened for lifetime experiences of shyness, fear, and discomfort associated with each of 14 social situations (such as interaction with unfamiliar people, starting conversations, attending parties, going to work or school, making eye contact, or dating) using the following question "*Was there ever a time in your life when you had a strong fear of social or performance situations like giving a speech, meeting new people, going to parties,…?*". Respondents endorsing one or more such questions were asked about all DSM-IV criteria for both lifetime and 12-month SAD. Age of onset (AOO) of each disorder was assessed using special probing techniques shown experimentally to improve recall accuracy [20]. All diagnoses excluded cases with plausible organic causes. Clinical reappraisal interviews were carried out in several countries using the lifetime non-patient version of the Structured Clinical Interview for DSM-IV (SCID) [22] as the gold standard. Concordance is fair (AUC in the range 0.6–0.7) for SAD. The majority of SCID cases are detected by the CIDI-3.0 for anxiety disorders, including SAD (54.4%). Fair agreement was found between diagnoses of SAD based on the CIDI-3.0 and blinded SCID clinician-administered reappraisal interviews ($\kappa = 0.35$), with the CIDI-3.0 showing low sensitivity (0.37) but fairly high specificity (0.94) [23].

Perceived helpfulness of treatment for SAD

Respondents who met lifetime DSM-IV/CIDI criteria for SAD were asked retrospectively about age-of-onset and were then asked "*Did you ever in your life talk to a medical doctor or other professional about your fear (or avoidance) of these situations?*" and, if so, "*How old were you the first time you talked to a professional about your fear?*". "Other professionals" were defined broadly to include "psychologists, counselors, spiritual advisors, herbalists, acupuncturists, and other healing professionals." Respondents who said they talked to a professional were then asked, "*Did you ever get treatment for your fear or avoidance of these situations that you considered helpful or effective?*" If they said yes, they were asked "*How many professionals did you ever talk to about your fear up to and including the first time you ever got helpful treatment?*" If they said no, they were asked "*How many professionals did you ever talk to about your fear…?*".

Predictor variables

There were four groups of predictor variables included in the equations: sociodemographic variables, treatment type, lifetime mental disorders, and early childhood adversities. *Socio-economic characteristics* included age at first SAD treatment (continuous), sex, marital status (married, never married, previously married) at the time of first SAD treatment, and education (in quartiles defined by within-country distributions) at the time of first treatment. *Treatment type* was defined as the cross-classification of variables for: (i) whether the respondent reported receiving medication, talk therapy, or both, as of the age of first treatment; (ii) types of treatment providers seen as of that age, including mental health specialists (psychiatrist, psychiatric nurse, psychologist, psychiatric social worker, mental health counselor), primary care providers, human services providers (social worker or counselor in a social services agency, spiritual advisor), and complementary/alternative medicine providers (other type of healer or self-help group). Treatment timing included a dichotomous measure for whether the respondent's first attempt to seek treatment occurred before 2000 or subsequently (2000 being the average mid-point between the start of observation and survey field dates) and a continuous variable for length of delay in years between age-of-onset of SAD and age of initially seeking treatment. *Lifetime mental disorders* were assessed with the CIDI-3.0 included anxiety disorders (including generalized anxiety disorder, panic disorder, agoraphobia with or without panic disorder, post-traumatic stress disorder, specific phobia, as well as the number

of lifetime anxiety disorder: 1, 2, or 2+ disorders), mood disorders (major depressive disorder and bipolar disorder), and substance use disorder (alcohol and/or drug abuse with or without dependence). Lifetime comorbid conditions included number of anxiety disorders, mood disorders, and substance use disorders with first onsets prior to the age of first treatment, which were thought to confer an increased mental health burden of SAD [24, 25]. *Childhood adversities* included separate counts of a correlated set of adversities we have referred to previous as those indicative of maladaptive family functioning (including physical abuse, sexual abuse, neglect, parental mental disorder, parental substance use disorder, parental criminal behavior, and family violence) and other childhood adversities (including parental death, parental divorce, other loss of a parent, physical illness, and economic adversity) [26] (see Appendix Table 5). The childhood adversity count variables were scored in the range 0–7 for family dysfunction and 0–5 for other adversities and were treated as linear variables in the analysis.

Analysis methods

The analysis sample was limited to people with onset of lifetime DSM-IV SAD treatment during or after 1990 to reduce the potential effects of recall bias. The number of respondents in the sample with prior SAD treatment across countries was $n = 667$. To investigate the two components of helpful treatment separately, we used discrete-event survival analysis to calculate the conditional and cumulative probabilities of: (i) obtaining helpful treatment after seeing between one and seven professionals; (ii) persisting in seeking treatment with between two and seven professionals after obtaining prior unhelpful treatment [2]. We followed respondents up through seven professionals because this was the last number where our required minimum of at least $n = 30$ received treatment. We then carried out parallel survival analyses of the predictors of these two component outcomes using standard discrete-time methods and a logistic link function [27], followed by a person-level model of overall probability of ever receiving helpful treatment regardless of number of professionals seen.

Individual weights were applied to adjust for probability of selection, nonresponse and post-stratification. In addition, Part II respondents were weighted to adjust for differential probabilities of selection into Part II and deviations between the sample and population demographic–geographic distributions [28]. Since the WMH sample designs used weighting and clustering, all statistical analyses were carried out using the Taylor series linearization method [29], a design-based method implemented in the SAS 9.4 program (SAS/STAT, 2016). Logistic regression coefficients and ± 2 of their design-based standard errors were exponentiated to create adjusted odds-ratios (ORs) (i.e., adjusted for all

other variables in the model) and 95% confidence intervals (CIs). Significance of sets of coefficients was evaluated with Wald χ^2 tests based on design-corrected coefficient variance–covariance matrices. Statistical significance was evaluated consistently using two-sided design-based 0.05 level tests.

Results

Perceived helpfulness of treatment

Across countries, lifetime treatment among adults with lifetime DSM-IV SAD (i.e., 4.6%) was estimated at 22.8%. Among these, 65.1% reported ever obtaining treatment they considered helpful (Table 1). Treatment probabilities were considerably higher in high compared to low/middle-income countries (24.8% vs. 15.8%) but the proportions of respondents that experienced the treatment as helpful was relatively similar (65.9% in high vs. 60.4% in low/middle-income countries).

Helpful SAD treatment by type of professional seen

Across countries, 24.9% said they were helped by the first professional seen (Table 2, left panel). The conditional probability of a second professional being helpful after the previous unhelpful treatment was 31.8%, and 34.3% for a third professional, with a decline further after each subsequent professional seen, and then an increase to 47.2% for the seventh professional seen. The cumulative probability of receiving helpful treatment rose from 24.9% after the first professional seen to 48.8% if they persevered in trying a second professional after unhelpful treatment from the first, with 92.2% projected to receive helpful treatment if they persevered in trying up to seven professionals after earlier ones were unhelpful (Table 2, right panel). Patterns and probabilities were generally similar across country income levels, with a tendency of a higher cumulative perceived helpfulness in low/middle-income countries.

Persistence of help-seeking following treatment failure for SAD

The vast majority (all in the 75–85% range) of respondents who were not helped by an initial professional eventually persisted in seeing another professional (Table 3, left panel). However, since not everyone persisted after each unhelpful attempt, the cumulative probability of persisting up through seven professionals was close to one in three (30.2%—see Table 3, right panel). Patterns were generally similar across country income levels, except for the proportion of respondents that persisted in seeing professionals; this was

Table 1 Lifetime prevalence of DSM-IV social anxiety disorder (SAD), lifetime proportion of cases who obtained treatment and perceived treatment as helpful, and proportion of treated cases who perceived treatment as helpful

	In the entire sample			Among respondents with lifetime SAD			Among respondents with lifetime SAD			Among cases that obtained lifetime SAD treatment[a]		
	% of lifetime SAD			% of obtaining treatment[a]			% of perceived treatment as helpful[b]			% of perceived treatment as helpful[b]		
	n	%	(SE)	n	%	(SE)	n	%	(SE)	n	%	(SE)
Low- and middle-income countries												
Colombia	4426	5.0	(0.5)	219	13.9	(3.3)	219	6.8	(2.4)	31	49.0	(12.9)
Iraq	4332	0.8	(0.2)	35	22.7	(11.1)	35	21.1	(10.9)	6	92.8	(7.9)
Peru	3930	2.6	(0.3)	95	18.9	(4.2)	95	7.5	(2.7)	18	39.7	(11.1)
Shenzhen, PRC	7132	0.9	(0.2)	66	18.4	(7.1)	66	12.1	(6.0)	8	65.8	(20.4)
Sao Paulo, Brazil	5037	5.6	(0.4)	256	21.2	(2.9)	256	13.7	(3.3)	51	64.6	(10.9)
Bulgaria	6826	0.9	(0.2)	56	12.0	(3.5)	56	4.1	(3.1)	7	34.4	(18.6)
Lebanon	2857	1.9	(0.4)	52	5.7	(3.5)	52	2.8	(2.7)	3	48.7	(31.5)
Medellin, Colombia	3261	4.6	(0.5)	137	10.5	(3.0)	137	6.1	(2.4)	18	58.1	(15.0)
Mexico	5782	2.9	(0.2)	203	13.5	(3.2)	203	9.8	(2.8)	27	72.9	(9.9)
Romania	2357	1.3	(0.3)	29	19.5	(7.7)	29	17.1	(7.7)	5	87.6	(12.1)
High-income countries												
Argentina	3927	2.6	(0.3)	111	31.8	(5.0)	111	18.2	(3.4)	40	57.2	(11.7)
Australia	8463	8.5	(0.4)	740	40.7	(2.5)	740	27.3	(2.2)	302	67.0	(3.5)
Belgium	1043	2.1	(0.5)	37	15.7	(5.6)	37	13.2	(5.0)	11	83.6	(8.4)
France	1436	4.7	(0.7)	96	21.9	(6.2)	96	3.6	(1.6)	28	16.5	(7.3)
Germany	1323	2.9	(0.5)	68	23.2	(5.2)	68	12.3	(3.9)	26	52.8	(10.4)
Italy	1779	2.1	(0.3)	73	18.0	(6.3)	73	9.1	(4.0)	12	50.4	(19.9)
Japan	4129	1.4	(0.2)	53	16.4	(6.8)	53	11.5	(4.9)	7	70.5	(22.7)
Murcia, Spain	2621	1.7	(0.2)	43	31.7	(10.3)	43	29.8	(10.3)	15	94.1	(4.9)
Netherlands	1094	2.4	(0.5)	59	32.5	(6.5)	59	24.1	(6.7)	19	74.0	(7.8)
New Zealand	12,790	9.5	(0.3)	1283	22.8	(1.5)	1283	15.5	(1.1)	278	67.9	(3.4)
Northern Ireland	4340	6.0	(0.4)	283	32.5	(3.2)	283	21.7	(2.6)	88	66.7	(6.0)
Poland	10,081	1.4	(0.1)	144	19.4	(2.8)	144	14.0	(2.4)	28	72.3	(7.2)
Portugal	3849	4.7	(0.5)	188	22.6	(3.2)	188	13.4	(2.5)	42	59.1	(8.2)
Spain	2121	1.3	(0.3)	53	31.5	(5.9)	53	23.0	(5.5)	17	73.0	(8.6)
US	9282	12.1	(0.4)	1143	18.0	(1.1)	1143	12.3	(1.1)	212	68.2	(3.0)
Saudi Arabia	3638	5.5	(0.6)	164	11.6	(3.5)	164	4.0	(1.5)	23	34.1	(13.0)
All low- and middle-income countries	45,940	2.5	(0.1)	1148	15.8	(1.3)	1148	9.5	(1.2)	174	60.4	(5.1)
All high-income countries	71,916	5.9	(0.1)	4538	24.8	(0.8)	4538	16.3	(0.6)	1148	65.9	(1.7)
All countries	117,856	4.6	(0.1)	5686	22.8	(0.7)	5686	14.9	(0.6)	1322	65.1	(1.6)
χ^2 test	DF	χ^2	P value	DF	χ^2	P value	DF	χ^2	P value	DF	χ^2	P value
Low- and middle-income countries	9	244.5	<0.0001*	9	12.7	0.175	9	11.6	0.235	9	12.5	0.188
High-income countries	15	1400.9	<0.0001*	15	108.6	<0.0001*	15	90.8	<0.0001*	15	38.8	0.001*
All countries	25	1956.2	<0.0001*	25	144.2	<0.0001*	25	119.9	<0.0001*	25	53.5	0.001*
Low and middle vs. high	1	398.0	<0.0001*	1	26.9	<0.0001*	1	17.4	<0.0001*	1	1.1	0.298

SE standard error, *PRC* People's Republic of China

[a]Cases are based on three conditions: (i) respondents obtained SAD treatment; (ii) year of first SAD treatment was 1990 or later; and (iii) age at onset was the year of first SAD treatment or earlier

[b]Cases are based on four conditions: (i) respondents obtained SAD treatment; (ii) year of first SAD treatment was 1990 or later; (iii) age at onset was the year of first SAD treatment or earlier; and (iv) respondents obtained helpful treatment

Table 2 Conditional and cumulative probabilities of social anxiety disorder (SAD) treatment being perceived as helpful after each professional seen, among respondents with lifetime DSM-IV SAD who obtained treatment

Number of professionals seen after which treatment was perceived as helpful	I. Conditional probabilities									II. Cumulative probabilities					
	All			High-income countries			Low/middle-income countries			All (n=1322)		High-income countries (n=1148)		Low/middle-income countries (n=174)	
	n	%	(SE)	n	%	(SE)	n	%	(SE)	%	(SE)	%	(SE)	%	(SE)
1	1322	24.9	(1.2)	1148	23.3	(1.3)	174	33.9	(3.1)	24.9	(1.2)	23.3	(1.3)	33.9	(3.1)
2	746	31.8	(1.9)	680	32.4	(2.1)	66	27.0	(4.4)	48.8	(1.8)	48.1	(2.0)	51.8	(5.1)
3	428	34.3	(2.5)	389	34.4	(2.7)	39	33.4	(7.4)	66.3	(1.9)	66.0	(2.0)	67.9	(5.7)
4	230	24.6	(3.0)	211	23.7	(3.3)	19	31.7	(4.9)	74.6	(1.9)	74.0	(2.0)	78.0	(5.5)
5	145	27.3	(4.6)	134	28.7	(5.0)	11	15.0	(3.8)	81.6	(1.7)	81.5	(1.8)	81.3	(5.6)
6	90	20.2	(4.0)	86	18.0	(4.2)	4	43.5	(17.3)	85.3	(1.6)	84.8	(1.7)	89.5	(5.9)
7	60	47.2	(8.2)	57	45.9	(8.5)	3	65.4	(28.1)	92.2	(1.3)	91.8	(1.4)	96.4	(2.9)

Abbreviations: SE, standard error

Table 3 Conditional and cumulative probability of persistence with treatment after previous unhelpful attempts, among respondents with lifetime DSM-IV social anxiety disorder (SAD) who obtained treatment

Number of professionals seen if not helped by the previous one	I. Conditional probabilities									II. Cumulative probabilities					
	All			High-income countries			Low/middle-income countries			All (n=991)		High-income countries (n=876)		Low/middle-income countries (n=115)	
	n	%	(SE)	n	%	(SE)	n	%	(SE)	%	(SE)	%	(SE)	%	(SE)
2	991	74.6	(1.6)	876	77.3	(1.7)	115	56.6	(4.9)	74.6	(1.6)	77.3	(1.7)	56.6	(4.9)
3	520	80.9	(1.7)	473	80.1	(1.9)	47	87.4	(1.9)	60.3	(2.2)	61.9	(2.3)	49.5	(6.6)
4	284	82.3	(2.1)	257	82.5	(2.3)	27	80.8	(4.5)	49.6	(2.4)	51.0	(2.6)	40.0	(6.8)
5	173	85.2	(2.1)	160	85.2	(2.3)	13	85.5	(3.1)	42.3	(2.7)	43.5	(2.9)	34.2	(7.3)
6	109	84.2	(3.3)	101	88.0	(2.9)	8	57.5	(14.6)	35.6	(2.7)	38.3	(2.8)	19.7	(8.6)
7	69	84.6	(4.4)	66	83.7	(4.6)	3	100.0	(0.0)	30.2	(2.9)	32.0	(3.1)	19.7	(8.6)

SE standard error

remarkably lower in low/middle-income countries compared to high-income countries.

Predictors of perceived helpfulness

Table 4 shows the results of three multivariate models (all countries together) predicting whether treatment from a provider was helpful, pooled across all professionals seen by each patient (Model 1), whether respondents persisted in help-seeking after previous unhelpful treatment pooled across subsequent professionals seen after an earlier unhelpful professional (Model 2), and whether helpful treatment was obtained at the person-level regardless of number of treatment providers seen (Model 3). We focus on how the results from the pooled models help explain the associations

in the person-level model. In general, predictors of perceived helpfulness were similar across income countries, except that in low-/middle-income countries we found a lower number of predictors of each of the outcomes. After adjustment for all other variables in the model, perceived helpfulness (at the person level) was higher in those respondents who were currently married at the time of treatment. Disaggregation into the two components of perceived helpfulness shows that marital status was more related to helpful treatment than to increased persistence after unhelpful treatment.

Receiving treatment from a general medical provider decreased (aOR 0.67; 95% CI 0.48–0.93) the odds of perceiving treatment as helpful, mainly due to a decreased helpful treatment (aOR 0.64; 95% CI 0.50–0.82) and not through lower persistence (aOR 0.94; 95% CI 0.66–1.35).

Table 4 Predictors of helpful treatment and persistence (pooled across professionals seen), and predictors of perceived helpfulness of treatment (person level), among people with lifetime DSM-IV social anxiety disorder (SAD) who obtained treatment

	Model 1: Predicting helpful treatment pooled across professionals seen (n=3180)				Model 2: Predicting persistence pooled across treatment failure (n=2324)				Model 3: Predicting perceived helpfulness of treatment across SAD patients (n=1322)			
	Prevalence		Multivariate		Prevalence		Multivariate		Prevalence		Multivariate	
	Mean/%	(SE)	AOR	(95% CI)	Mean/%	(SE)	AOR	(95% CI)	Mean/%	(SE)	AOR	(95% CI)
Age												
Age at first SAD treatment	30.1	(0.5)	1.01	(1.00–1.02)	29.8	(0.5)	1.01	(0.99–1.02)	30.6	(0.4)	1.01	(0.99–1.03)
χ^2_1 (p value)			1.1 (0.29)				1.1 (0.28)				0.9 (0.35)	
Gender												
Female	59.1	(2.5)	1.25*	(1.03–1.52)	58.0	(2.9)	0.98	(0.74–1.30)	60.4	(1.5)	1.20	(0.88–1.65)
Male	40.9	(2.5)	1.0		42.0	(2.9)	1.0		39.6	(1.5)	1.0	
χ^2_1 (p value)			5.3 (0.021)*				0.0 (0.87)				1.3 (0.26)	
Marital status												
Never married	51.8	(1.9)	0.95	(0.76–1.19)	52.0	(2.2)	0.72	(0.51–1.02)	53.8	(1.2)	0.68*	(0.47–0.98)
Previously married	18.5	(1.4)	0.64*	(0.48–0.84)	19.3	(1.7)	0.82	(0.52–1.28)	17.0	(1.1)	0.53*	(0.33–0.83)
Currently married	29.7	(2.3)	1.0	-	28.7	(2.8)	1.0	-	29.1	(1.2)	1.0	-
χ^2_2 (p value)			11.7 (0.003)*				3.4 (0.18)				8.8 (0.012)*	
Education												
Low	8.4	(0.9)	0.96	(0.69–1.33)	8.1	(1.0)	0.77	(0.49–1.21)	9.5	(1.0)	0.86	(0.55–1.35)
Low-average	19.1	(1.7)	0.86	(0.65–1.12)	19.1	(1.9)	1.08	(0.71–1.65)	18.3	(1.1)	0.95	(0.61–1.47)
High-average	37.0	(2.1)	0.80*	(0.65–0.99)	37.2	(2.4)	1.25	(0.88–1.76)	35.2	(1.3)	0.95	(0.66–1.39)
Student	17.6	(1.6)	0.59*	(0.45–0.78)	19.1	(1.9)	1.31	(0.84–2.05)	16.3	(1.1)	0.76	(0.47–1.23)
High	18.0	(1.3)	1.0	-	16.5	(1.4)	1.0	-	20.7	(1.2)	1.0	-
χ^2_4 (p value)			14.9 (0.005)*				5.7 (0.22)				1.7 (0.79)	
Treatment delay (years)[a]	14.6	(0.5)	1.01	(1.00–1.02)	14.2	(0.6)	0.98*	(0.97–0.99)	15.5	(0.4)	0.99	(0.98–1.01)
χ^2_1 (p value)			3.2 (0.07)				10.2 (0.001)*				1.0 (0.33)	
Started SAD treatment > = 2000 (vs. 1990–1999)	42.3	(2.2)	1.59*	(1.34–1.89)	39.4	(2.5)	0.63*	(0.49–0.83)	50.0	(1.6)	1.01	(0.77–1.32)
χ^2_1 (p value)			27.8 (<.001)*				11.3 (<.001)*				0.0 (0.96)	
Treatment type[b]												
Mental health specialist + psychotherapy	64.2	(1.9)	0.76*	(0.58–0.99)	64.6	(2.1)	1.27	(0.85–1.90)	61.9	(1.5)	0.92	(0.60–1.42)
Mental health specialist + medication	69.2	(1.8)	0.66*	(0.52–0.85)	71.4	(1.8)	1.83*	(1.31–2.56)	57.9	(1.6)	1.23	(0.85–1.79)
General medical	73.9	(1.7)	0.64*	(0.50–0.82)	75.7	(1.9)	0.94	(0.66–1.35)	68.5	(1.3)	0.67*	(0.48–0.93)
Complementary/alternative medicine	32.3	(2.2)	0.86	(0.70–1.06)	33.5	(2.6)	1.35	(0.97–1.88)	26.0	(1.2)	1.11	(0.78–1.57)
Human services	20.9	(2.4)	1.0	-	22.7	(2.8)	1.0	-	15.2	(1.1)	1.0	-
χ^2_4 (p value)			17.5 (0.002)*				20.6 (<.001)*				9.5 (0.05)	
Exactly 2 or more of the above	78.4	(1.5)	1.37	(0.94–2.00)	79.6	(1.7)	1.80*	(1.15–2.82)	69.3	(1.5)	1.81*	(1.06–3.10)
χ^2_1 (p value)			2.7 (0.10)				6.7 (0.010)*				4.7 (0.031)*	
χ^2_5 (p value)			21.8 (<.001)*				73.0 (<.001)*				21.9 (<.001)*	

Table 4 (continued)

	Model 1: Predicting helpful treatment pooled across professionals seen (n = 3180)				Model 2: Predicting persistence pooled across treatment failure (n = 2324)				Model 3: Predicting perceived helpfulness of treatment across SAD patients (n = 1322)			
	Prevalence		Multivariate		Prevalence		Multivariate		Prevalence		Multivariate	
	Mean/%	(SE)	AOR	(95% CI)	Mean/%	(SE)	AOR	(95% CI)	Mean/%	(SE)	AOR	(95% CI)
Number of lifetime anxiety disorders[c]												
3 or more[c]	40.1	(2.2)	0.87	(0.70–1.08)	41.8	(2.6)	2.32*	(1.72–3.12)	32.0	(1.2)	1.83*	(1.30–2.57)
Exactly 2[c]	32.1	(1.9)	1.13	(0.94–1.37)	31.0	(2.1)	1.41*	(1.04–1.90)	34.1	(1.4)	1.50*	(1.09–2.06)
Exactly 1[c]	27.9	(1.7)	1.0	–	27.2	(1.8)	1.0	–	34.0	(1.4)	1.0	–
χ^2_2 (p value)			7.3 (0.027)*				31.5 (<.001)*				14.5 (<.001)*	
Mood disorder												
Major depressive disorder	42.5	(2.1)	1.01	(0.84–1.21)	42.1	(2.5)	1.22	(0.91–1.63)	40.5	(1.4)	1.23	(0.91–1.67)
Bipolar disorder	14.9	(2.4)	0.84	(0.63–1.14)	16.3	(3.0)	0.87	(0.61–1.24)	11.7	(0.80)	0.84	(0.56–1.29)
Substance use disorder												
χ^2_2 (p value)			1.3 (0.51)				3.4 (0.18)				3.2 (0.20)	
Alcohol and/or drug abuse	26.8	(2.6)	1.04	(0.81–1.32)	27.6	(3.2)	1.11	(0.78–1.57)	23.8	(1.3)	1.12	(0.77–1.64)
Alcohol or drug dependence but not abuse	3.9	(0.9)	0.73	(0.45–1.17)	4.4	(0.8)	1.55	(0.94–2.57)	2.7	(0.4)	0.92	(0.48–1.78)
χ^2_2 (p value)			2.1 (0.35)				3.0 (0.23)				0.6 (0.74)	
χ^2_6 (p value)			13.9 (0.031)*				41.7 (<.001)*				17.8 (0.007)*	
Childhood adversities												
Family dysfunction[d]	34.7	(2.3)	0.80*	(0.65–0.98)	35.8	(2.7)	0.80	(0.59–1.10)	33.7	(1.3)	0.64*	(0.46–0.88)
Other[e]	18.2	(2.5)	0.95	(0.69–1.30)	18.6	(3.2)	1.18	(0.82–1.69)	16.8	(1.1)	1.06	(0.69–1.61)
χ^2_2 (p value)			5.4 (0.07)				2.0 (0.38)				8.0 (0.018)*	
Global χ^2_{23}			132.1 (<.001)*				326.2 (<.001)*				85.6 (<.001)*	

Abbreviations: SE, standard error; AOR, adjusted odds ratio; CI, confidence interval

*Significant at .05 level, two-sided test

[a]Treatment delay (years) = age at first SAD treatment – age at onset of SAD

[b]Treatment providers: mental health specialists (psychiatrist, psychiatric nurse, psychologist, psychiatric social worker, mental health counselor), primary care providers, human services providers (social worker or counselor in a social services agency, spiritual advisor), and complementary/alternative medicine (other type of healer or self-help group)

[c]Lifetime anxiety disorders include generalized anxiety disorder, panic disorder, agoraphobia with or without panic disorder, post-traumatic stress disorder, specific phobia and social anxiety disorder

[d]Family dysfunction includes physical abuse, sexual abuse, neglect, parent mental disorder, parent substance use disorder, parent criminal behavior and family violence

[e]Other includes parent death, parent divorce, other loss of a parent, physical illness and economic adversity

In addition, treatment by more than one type increased the odds of perceiving treatment as helpful (aOR 1.81; 95% CI 1.06–3.10), through increased persistence after a previous unhelpful treatment (aOR 1.80; 95% CI 1.15–2.82) but not through helpful treatment of a given professional (aOR 1.37; 95% CI 0.94–2.00). Helpful treatment of a given professional was lower in respondents receiving treatment from formal health-care providers (aORs between 0.64 and 0.76; all $p \leq 0.05$).

Mental health specialist treatment (including medication) was associated with higher persistence after previous unhelpful treatment (aOR 1.83; 95% CI 1.31–2.56) but also with lower odds of treatment of a given professional being perceived as helpful (aOR 0.66; 95% CI 0.52–0.85). These opposite-sign effects canceled each other out so that there was no significant overall effect in the model that predicted perceived helpfulness. Similarly, starting treatment in 2000 or later was associated with significantly elevated odds of treatment from a given professional being helpful (aOR 1.59; 95% CI 1.34–1.89), and also with significantly decreased odds of persistence following unhelpful treatment (aOR = 0.63; 95% CI = 0.49–0.83).

Perceived helpfulness was higher in respondents with lifetime anxiety disorders, with a dose–response gradient. Decomposition showed that this was due to increased persistence (aORs of 1.41 and 2.32, respectively, all $p \leq 0.05$) rather than treatment from a given professional being helpful (aOR 1.13 and aOR 0.87, respectively; all $p \leq 0.05$). Respondents with family dysfunction childhood adversities (such as physical or sexual abuse) had markedly lower odds of perceiving SAD treatment as helpful (aOR 0.64; 95% CI 0.46–0.88). Decomposition showed that this was due to a decreased odds of treatment from a given professional being helpful (aOR 0.80; 95% CI 0.65–0.98) and not to a lower persistence (aOR 0.80; 95% CI 0.59–1.10).

We also investigated potential time trends in the significant associations from Table 4 and found that there was a stronger association between never/previously married and decreased odds of treatment from a given professional being helpful since 2000 compared to before (see Appendix Table 6).

Discussion

Across countries and across continents, only 22.8% of the respondents with lifetime SAD ever obtained treatment. Among these, cumulative probability of helpful treatment was 92.2%, if they persevered in trying up to seven professionals, but only one in three persisted this long. Across countries combined, 65.1% of adults with a lifetime history of DSM-IV SAD who received treatment reported ever obtaining treatment they considered helpful. *Perceiving treatment as helpful* (across professionals seen) was higher in female respondents, those currently married, respondents with higher education, those who started treatment in 2000 or later, and those treated in non-formal health-care settings. By comparison, *persistence in seeking treatment* (after treatment failure) was increased in respondents with shorter delays in seeking treatment, in those who started treatment prior to the year 2000, in those treated by two or more health-care sectors, and those with two or more lifetime anxiety disorders.

Persistence in help-seeking for SAD is associated with greatly increased likelihood that treatment will be perceived as helpful. Although the effective uptake of treatment is low, we found encouraging data that, worldwide, approximately two-thirds of the SAD respondents (60% in low-/middle-income countries and 65% in high-income countries) eventually obtained treatment they described as helpful, a finding that reflects previous studies on effectiveness [30] and perceived helpfulness of treatment for SAD [14] Yet, we estimated that more than over 90% of respondents would have experienced treatment as helpful if they had persisted in trying up to seven health-care professionals after earlier unsuccessful treatment. However, only 33% persisted their help-seeking attempts to that extent. Approximately, 25% do not persist in early stages of treatment when they found that the initial treatment contact was not sufficient. This may be because this particular subgroup experienced less burden of their condition [31], and, so, may show less motivation to continue seeking treatment [32].

A central feature of our study was the information revealed by decomposing the perceived helpfulness measure into two components. In doing so, it became clear that perceived helpfulness can be increased if people persist in seeking treatment after previous unhelpful attempts. Our measure did not allow us to investigate whether respondents who persist in continuing treatment after an unhelpful previous provider vs. those who did not were different in terms of their clinical or therapeutic expectations [14]. However, to the extent these groups are similar, many more respondents with SAD may receive treatment they consider helpful if they persisted after earlier treatment failures. Interestingly, comparable analyses using WHO-WMH data on major depressive disorder [17], post-traumatic stress disorder [33], and specific phobia [34] show similar findings with regard to perceived helpfulness of treatment for disorders with heterogeneous clinical phenomenological features, different clinical course, different age-of-onset, and different risk factor patterns. This suggests that the concept of perceived helpfulness with treatment for mental disorders may have a common underlying pattern across different types of disorders. However, more in-depth assessment and analyses of perceived helpfulness is warranted to evaluate the generality across clinical problems and perceptions over time.

The multivariate models show that perceived helpfulness was higher in married respondents and in those who have had more than one lifetime anxiety disorder, and that this was mainly due to increased likelihood of these respondents perceiving treatments as helpful and not to greater persistence in help-seeking after earlier unhelpful treatments. That married respondents reported higher perceived helpfulness reflects earlier studies [35], but the finding that a higher number of lifetime anxiety disorders is associated with higher perceived helpfulness is new. It may be that this is driven by disorder severity. More importantly, being treated by a non-formal professional treatment type (such as human services or complementary/alternative medicine) was associated with a higher probability of treatment being perceived as helpful, but *not* with persistence with help-seeking after unhelpful treatment. By contrast, higher persistence of help-seeking was associated with receiving specialized treatment from a mental health specialist employing medication. It is possible that the effectiveness of medication reduced symptom severity and engendered hope for better outcome and fosters persistence as well.

This study had several methodological limitations. First, it is plausible that our results could be biased because respondents with a history of severe SAD might have been less likely to participate in this study [36]. To the extent that this is the case, we may have underestimated the main outcomes, since our data suggest that a higher severity is associated with higher perceived helpfulness. Second, the measures of perceived helpfulness of treatment were based on a single question (rather than a standardized instrument) asking respondents about whether and when they "talk(ed) to" a professional about their SAD and follow-up questions about whether they ever received "helpful or effective" treatment and about the number of professionals talked to up to the time helpful-effective treatment was obtained. The use of a single question could readily lead to a biased response profile among respondents. We have no validation on whether the intervention consisted of therapeutic consultations, the type(s) or appropriateness of clinical activities undertaken, or how encounters with a team of professionals were counted. Nor do we know the underlying reasons why exactly a respondent evaluated treatment as helpful. The results are in keeping with other surveys cited previously. At the same time, perceived helpfulness as a construct warrants more attention with assessments that extend beyond the usual survey data involving selected questions. Third, our assessment of lifetime mental disorders might be biased. Prior researches have suggested that recall of symptoms could be biased by respondents' age at the moment of the interview [37]. Specifically, respondents who did not obtain treatment may have failed to recall their symptoms or recalled them as less problematic and this might have been related to age at interview, potentially underestimating the prevalence of SAD and overestimating the extent to which SAD treatment is helpful. We assume that

telescoping (i.e., recalling past experiences as having occurred more recently than they did occur) may have possibly biased our estimates of lifetime mental disorders [38]. The WMH surveys attempt to minimize this kind of recall bias by using procedures to aid memory search [21]. In addition, as noted in the sample section, we limited the analysis to respondents whose first SAD treatment occurred no longer ago than 1990 to truncate the problem. But it must be acknowledged that the problem might still exist to some unknown extent. A last limitation pertains to the wide time span of data inclusion. Since time trends cannot be estimated reliably, we compared pooled within-country results between high- and lower income countries controlling for, but not interacting with, time. Along the same line, with the current set of countries it is impossible to establish the relative importance of the numerous contextual, environmental, socioeconomic, health system, and other variables that determine the utilization patterns we found. Hence, our conclusions result from pooled within-country analyses and their external validity is defined by the kinds of countries in the analysis. Also, national country-level analyses could yield relevant results that differ from the current aggregation, though they escape the scope of this publication.

Implications for clinical practice

From a clinical viewpoint, the findings are encouraging insofar as they convey that continuation to seek treatment is advisable if the first treatment one receives is not helpful. It may be important to align expectations of both practitioners and patients that more than one treatment may be needed to achieve change that is considered helpful. In addition, healthcare providers may consider endorsing or even suggesting that patients seek additional support from non-health professionals, as this seems to increase the probability of treatment being perceived as helpful, as does seeing more than on group of providers. Importantly, the likelihood for perceiving treatment helpful is not only related to these factors discussed above, but also reflects the necessity of evidence-based interventions provided by qualified clinicians that provide the treatments, in a context of strong therapeutic alliances and shared decision-making processes [39]. As clinical research is moving to develop individually targeted or personalized treatment, its success may be reflected in helping match patients to the optimal treatment and in that way reduce the need to persist through a number of treatments that have not been viewed as very helpful.

Appendix

See Tables 5 and 6.

Table 5 WMH sample characteristics by World Bank income categories[a]

Country by income category	Survey[b]	Sample characteristics[c]	Field dates	Age range	Sample size Part I[d]	Part II[e]	Analysis[f]	Response rate[g]
I. Low- and middle-income countries								
Brazil—São Paulo	São Paulo Meg-acity	São Paulo metropolitan area	2005–2008	18–93	5037	2942	51	81.3
Bulgaria	NSHS	Nationally representative	2002–2006	18–98	5318	2233	7	72.0
Bulgaria 2	NSHS—2	Nationally representative	2016–2017	18–91	1508	578		61.0
Colombia	NSMH	All urban areas of the country (approximately 73% of the total national population)	2003	18–65	4426	2381	31	87.7
Colombia—Medellin[h]	MMHHS	Medellin metropolitan area	2011–2012	19–65	3261	1673	18	97.2
Iraq	IMHS	Nationally representative	2006–2007	18–96	4332	4332	6	95.2
Lebanon	LEBANON	Nationally representative	2002–2003	18–94	2857	1031	3	70.0
Mexico	M-NCS	All urban areas of the country (approximately 75% of the total national population)	2001–2002	18–65	5782	2362	27	76.6
Peru	EMSMP	Five urban areas of the country (approximately 38% of the total national population)	2004–2005	18–65	3930	1801	18	90.2
PRC[i]—Shenzhen[j]	Shenzhen	Shenzhen metropolitan area. Included temporary residents as well as household residents	2005–2007	18–88	7132	2475	8	80.0
Romania	RMHS	Nationally representative	2005–2006	18–96	2357	2357	5	70.9
Total					45,940	24,165	174	80.3
II. High-income countries								
Argentina	AMHES	Eight largest urban areas of the country (approximately 50% of the total national population)	2015	18–98	3927	2116	40	77.3
Australia[j]	NSMHWB	Nationally representative	2007	18–85	8463	8463	302	60.0
Belgium	ESEMeD	Nationally representative. The sample was selected from a national register of Belgium residents	2001–2002	18–95	2419	1043	11	50.6
France	ESEMeD	Nationally representative. The sample was selected from a national list of households with listed telephone numbers	2001–2002	18–97	2894	1436	28	45.9
Germany	ESEMeD	Nationally representative	2002–2003	19–95	3555	1323	26	57.8
Italy	ESEMeD	Nationally representative. The sample was selected from municipality resident registries	2001–2002	18–100	4712	1779	12	71.3
Japan	WMHJ 2002–2006	Eleven metropolitan areas	2002–2006	20–98	4129	1682	7	55.1
Netherlands	ESEMeD	Nationally representative. The sample was selected from municipal postal registries	2002–2003	18–95	2372	1094	19	56.4
New Zealand[j]	NZMHS	Nationally representative	2004–2005	18–98	12,790	7312	278	73.3
N. Ireland	NISHS	Nationally representative	2005–2008	18–97	4340	1986	88	68.4
Poland	EZOP	Nationally representative	2010–2011	18–65	10,081	4000	28	50.4
Portugal	NMHS	Nationally representative	2008–2009	18–81	3849	2060	42	57.3
Saudi Arabia[j]	SNMHS	Nationally representative	2013–2016	18–65	3638	1793	23	61.0
Spain	ESEMeD	Nationally representative	2001–2002	18–98	5473	2121	17	78.6

Table 5 (continued)

Country by income category	Survey[b]	Sample characteristics[c]	Field dates	Age range	Sample size			Response rate[g]
					Part I[d]	Part II[e]	Analysis[f]	
Spain-Murcia	PEGASUS-Murcia	Murcia region. Regionally representative	2010–2012	18–96	2621	1459	15	67.4
United States	NCS-R	Nationally representative	2001–2003	18–99	9282	5692	212	70.9
Total					84,545	45,359	1148	62.6
III. Total					130,485	69,524	1322	67.8

[a]The World Bank (2012) Data. Accessed May 12, 2012 at: http://data.worldbank.org/country. 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]NSHS (Bulgaria National Survey of Health and Stress); NSMH (The Colombian National Study of Mental Health); MMHHS (Medellín Mental Health Household Study); IMHS (Iraq Mental Health Survey); LEBANON (Lebanese Evaluation of the Burden of Ailments and Needs of the Nation); M-NCS (The Mexico National Comorbidity Survey); EMSMP (La Encuesta Mundial de Salud Mental en el Peru); RMHS (Romania Mental Health Survey); AMHES (Argentina Mental Health Epidemiologic Survey); NSMHWB (National Survey of Mental Health and Wellbeing); ESEMeD (The European Study Of The Epidemiology Of Mental Disorders); 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); SNMHS (Saudi 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 1 random respondent selected in each sample household. 18 of the 27 surveys are based on nationally representative household samples

[d]Part I was administered to all respondents and assessed core DSM-IV mental disorders ($n = 130,485$ respondents across all surveys). Part II assessed additional disorders and correlates and was administered to 100% of respondents who met lifetime criteria for any Part I disorder and a probability subsample of other Part I respondents ($n = 69,524$)

[e]The total sample size in this study ($N = 117,856$) is different from $N = 130,485$. This is due to the fact that, for ESEMeD, to apply the imputation on Bipolar disorder (one of the predictors in models), ESEMeD's sample was restricted to the Part II

[f]Cases that obtained lifetime Social Anxiety Disorder (SAD) treatment

[g]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 67.8%

[h]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

[i]People's Republic of China

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

Table 6 Interaction between main effects and historical time to predictor of helpful treatment and persistence (pooled across professionals seen), and perceived helpfulness of treatment (person level), among people with lifetime DSM-IV social anxiety disorder (SAD) who obtained treatment

Interaction terms between each predictor and historical time	Model 1: predicting helpful treatment pooled across professionals seen (n = 3180)				Model 2: predicting persistence pooled across treatment failure (n = 2324)				Model 3: predicting perceived helpfulness of treatment across SAD patients (n = 1322)			
	Prevalence		Multivariate		Prevalence		Multivariate		Prevalence		Multivariate	
	Mean/%	(SE)	AOR	(95% CI)	Mean/%	(SE)	AOR	(95% CI)	Mean/%	(SE)	AOR	(95% CI)
Marital status												
Never married	22.3	(1.6)	0.69*	(0.48–0.99)	20.9	(1.6)	1.73	(0.93–3.20)	26.1	(1.4)	1.21	(0.66–2.21)
Previously married	9.7	(1.2)	0.43*	(0.28–0.67)	10.2	(1.4)	1.11	(0.57–2.16)	9.6	(1.0)	0.60	(0.29–1.21)
Currently married	10.3	(0.8)	1.0	–	8.3	(0.8)	1.0	–	14.3	(0.8)	1.0	–
χ^2_2 (p value)			14.1 (<0.001)*				3.9 (0.14)				4.0 (0.13)	
Treatment type[a]												
Mental health specialist + psychotherapy	24.5	(1.8)	1.46	(0.98–2.18)	22.3	(1.9)	1.10	(0.58–2.09)	28.4	(1.3)	1.66	(0.81–3.39)
Mental health specialist + medication	26.8	(1.8)	1.44	(0.92–2.25)	25.4	(2.1)	0.80	(0.43–1.50)	27.2	(1.4)	1.14	(0.56–2.30)
General medical	29.7	(1.9)	1.03	(0.65–1.64)	28.3	(2.1)	0.62	(0.35–1.12)	33.5	(1.5)	0.75	(0.40–1.44)
Complementary/alternative medicine	10.8	(1.1)	1.44	(0.94–2.21)	9.9	(1.3)	0.97	(0.52–1.81)	11.5	(0.9)	1.27	(0.63–2.58)
Human services	6.3	(0.9)	1.0	–	6.1	(1.1)	1.0	–	6.9	(0.7)	1.0	–
χ^2_4 (p value)			7.3 (0.12)				3.6 (0.46)				5.3 (0.26)	
Exactly 2 or more of the above	31.2	(2.0)	0.78	(0.44–1.41)	29.2	(2.2)	1.51	(0.58–3.92)	32.9	(1.4)	1.05	(0.40–2.79)
χ^2_1 (p value)			0.7 (0.42)				0.7 (0.40)				0.0 (0.92)	
χ^2_5 (p value)			9.2 (0.10)				3.7 (0.59)				7.4 (0.20)	
Number of lifetime anxiety disorders[b]												
3 or more[b]	15.5	(1.4)	1.03	(0.69–1.55)	15.1	(1.7)	1.06	(0.64–1.77)	15.0	(0.9)	1.09	(0.59–2.04)
Exactly 2[b]	14.3	(1.4)	1.37	(0.86–2.17)	12.5	(1.3)	0.95	(0.54–1.68)	17.9	(1.4)	1.13	(0.59–2.14)
Exactly 1[b]	12.6	(1.1)	1.0	–	11.8	(1.2)	1.0	–	17.1	(1.2)	1.0	–
χ^2_2 (p value)			2.1 (0.35)				0.1 (0.95)				0.2 (0.92)	
Childhood adversities												
Family dysfunction[c]	12.8	(1.3)	0.80	(0.53–1.20)	12.2	(1.5)	1.54	(0.85–2.78)	14.5	(1.0)	1.13	(0.61–2.09)
Other[d]	6.8	(0.9)	1.59	(0.99–2.55)	6.1	(1.0)	0.51	(0.26–1.02)	8.5	(1.0)	0.97	(0.49–1.92)
χ^2_2 (p value)			3.8 (0.15)				3.9 (0.14)				0.2 (0.92)	
Global χ^2_{11}			33.0 (<0.001)*				13.9 (0.24)				13.7 (0.25)	

SE standard error, *AOR* adjusted odds ratio, *CI* confidence interval

*Significant at .05 level, two-sided test

[a]Treatment providers: mental health specialists (psychiatrist, psychiatric nurse, psychologist, psychiatric social worker, mental health counselor), primary care providers, human services providers (social worker or counselor in a social services agency, spiritual advisor), and complementary/alternative medicine (other type of healer or self-help group)

[b]Lifetime anxiety disorders include generalized anxiety disorder, panic disorder, agoraphobia with or without panic disorder, post-traumatic stress disorder, specific phobia and social anxiety disorder

[c]Family Dysfunction includes physical abuse, sexual abuse, neglect, parent mental disorder, parent substance use disorder, parent criminal behavior and family violence

[d]Other includes parent death, parent divorced, other loss of a parent, physical illness and economic adversity

Author contributions RCK had full access to all the data in the study and takes responsibility for the integrity of the data and the accuracy of the data analysis. Concept and design: RB and RCK. Acquisition, analysis, and interpretation of data: all the authors. Drafting of the manuscript: RB, NAS, RCK, and AEK. Critical revision of the manuscript for important intellectual content: all the authors. Statistical analysis: WTC and NAS. Obtained funding: AA-H, JA, YAA, LA, GC, AHC, SF, OG, CH, ANK, FN-M, SO, KMS, YT, BW, and RCK. Administrative, technical, or material support: NAS. Supervision: NAS and RCK.

Data availability Access to the cross-national World Mental Health (WMH) data is governed by the organizations funding and responsible for survey data collection in each country. These organizations made data available to the WMH consortium through restricted data sharing agreements that do not allow us to release the data to third parties. The exception is that the U.S. data are available for secondary analysis via the Inter-University Consortium for Political and Social Research (ICPSR), http://www.icpsr.umich.edu/icpsrweb/ICPSR/series/00527.

Declarations

Conflict of interest In the past 3 years, Dr. Kessler was a consultant for Datastat, Inc., Holmusk, RallyPoint Networks, Inc., and Sage Therapeutics. He has stock options in Mirah, PYM, and Roga Sciences. Dr. Navarro-Mateu reports non-financial support from Otsuka, outside the submitted work.

Ethics approval All the procedures performed in studies involving human participants were approved by local Institutional Review Boards. The study is performed in accordance with the ethical standards laid down in the 1964 Declaration of Helsinki and its later amendments.

Consent to participate The interview schedule was developed in English and translated into other languages using a standardized WHO translation, team translation, and harmonization protocol. Interviews were administered face-to-face in respondents' homes after obtaining informed consent using procedures approved by local Institutional Review Boards.

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