Patterns of somatic distress among internally displaced persons in Ukraine: analysis of a cross-sectional survey

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Running head: Somatic distress among IDPs in Ukraine

Abstract

Purpose: There are often high rates of mental disorders in low- and middle-income countries during humanitarian crises but the prevalence of somatic distress (SD) is underreported in existing health services research. We aim to examine patterns of SD among internally displaced persons (IDPs) in Ukraine, who were forcibly displaced due to the ongoing conflict in the country's eastern region.

Methods: The study design was a cross-sectional survey of 2203 adult IDPs throughout Ukraine. The survey collected data on sociodemographic characteristics, traumatic life events (Life Events Checklist), utilisation of mental health care services, and self-reported outcomes of SD (Patient Health Questionnaire 15), anxiety (Generalised Anxiety Disorder 7), depression (Patient Health Questionnaire 9), and post-traumatic stress (PTSD Checklist). Descriptive and multivariate regression analyses were used.

Results: Over half of respondents (n=1142, 55%) were identified as being at risk of SD (PHQ-15 score≥6) and the prevalence of moderate (n=377, 18%) and high severity SD risk (n=275, 13%) was substantial. There were significant associations ($p<0.05$) between SD and age, female gender, economic status, self-reported depression and post-traumatic stress, and multiple trauma exposures. Being at risk of SD was also significantly associated with increased functional disability. Use of mental health care services was low across this population and only high SD risk seemed to be a reliable predictor of care-seeking behaviour.

Conclusions: There is a significant risk of SD among IDPs in Ukraine. Our results illustrate the need for targeted health services research and regional programs to ensure that mental health needs are appropriately met.

Keywords
Conflict, health services, IDPs, mental health, somatic distress, Ukraine

Acronyms
internally displaced person = IDP; post-traumatic stress disorder = PTSD; mental health and psychosocial support = MHPSS; somatic distress = SD; Patient Health Questionnaire 15 = PHQ-15; Generalised Anxiety Disorder 7 = GAD-7; Patient Health Questionnaire 9 = PHQ-9; post-traumatic stress symptoms = PTSS; Post-Traumatic Stress Disorder Checklist for DSM-5 = PCL-5; World Health Organization Disability Assessment Schedule, version 2 = WHODAS 2.0; Life Events Checklist = LEC-5; Kiev International Institute of Sociology = KIIS; odds ratio = OR; confidence interval = CI

Introduction

Armed conflict between the Ukrainian military and pro-Russian factions has led to instability in the eastern part of Ukraine, which shares a border with Russia. As of April 2016, there were an estimated 1.77 million internally displaced persons (IDPs) in Ukraine who have been forcibly removed from their homes [1]. Many of these IDPs have experienced high levels of exposure to violent and traumatic events, are currently living in temporary accommodation, have poor social support, and have low levels of employment [2]. All of these factors have been previously associated with poor mental health outcomes in post-conflict settings, increasing the risk of post-traumatic stress disorder (PTSD) and other common mental disorders such as anxiety and depression [3 – 5].

For crisis-affected populations currently living in Ukraine, there has been extremely limited qualitative research on the links between crisis-related adversity and mental health outcomes, with the majority of published work in this area focusing on the Holodomor, a period of mass starvation between 1932 and 1933 that caused millions of deaths [6]. Qualitative research has shown how the legacy of this famine defines collective trauma that continues to perpetuate emotions, "inner states of horror", and survival-driven coping strategies on an intergenerational basis [7, 8]. With respect to the current conflict in eastern Ukraine, evidence from a small qualitative study of internally displaced women and children has found that the armed conflict was reported as contributing to a "significant deterioration of perceived mental health" for most respondents, many of whom reporting experiencing anxiety, depression, and stress [9].

While PTSD, anxiety and depression are more commonly researched among conflict-affected populations, a less researched outcome is somatic distress (SD), which was previously classified under somatoform disorders but is now known as somatic symptom disorder under the DSM-5 [10, 11]. SD manifests as physical discomfort in the absence of a known underlying medical cause, producing symptoms such as insomnia or unexplained pain in the chest, limbs, or stomach. In addition to being burdensome for individuals, providing necessary treatment for the disorder often puts a strain on local health care services [12 – 14].

It is sometimes difficult to quantify SD as the types and meaning of somatic symptoms vary based on cultural beliefs and different health care contexts. In Ukraine, mental health is now recognized as playing an important role in overall well-being, although "attitudes toward people with mental illness can often be negative" [9, 15]. Furthermore, somatic symptoms have not always been viewed through a biopsychosocial lens that recognizes the relationship between psychological stressors and physical ailments [16]. Following the Chernobyl nuclear disaster in 1986, those suffering from somatic symptoms were "dismissed locally with diagnoses such as 'radiophobia' or vegetative dystonia" [16]. Research on SD globally is further complicated by variation in the measurement of the disorder and a poor understanding of its pathophysiological mechanisms [18]. Despite these complexities, SD has been shown to be a valid construct from a cross-cultural perspective in studies conducted across low- and high-income settings [13, 19].

Risk factors for the development of SD include exposure to traumatic events, existing mental disorders, and socioeconomic deprivation, all of which are commonly elevated in conflict-affected populations. The importance of studying SD in traumatised populations has been highlighted, particularly from a transcultural perspective [20]. Such work highlights how SD can be generated by trauma associations, arousal, and catastrophic events. Despite this, there

have only been a limited number of studies on SD with conflict-affected populations, particularly in low- and middle-income countries where the vast majority of these populations reside. The existing evidence base for lower-income regions includes a cross-sectional study conducted on civilian war survivors in Kosovo, a study on primary care patients in Bosnia and Herzegovina, and a cross-sectional survey of IDPs in the Republic of Georgia [11, 21, 22].

Past research across all settings, albeit limited, suggests that the overall burden of SD is large among conflict-affected populations and that SD hinders daily functioning across varying demographics [11, 23, 24]. A deeper understanding of the scope of this problem would be beneficial to key health system actors during efforts to provide required mental health and psychosocial support (MHPSS) services following humanitarian crises.

The overall aim of this study is to examine patterns of SD among IDPs in Ukraine. The objectives are: (1) to describe the prevalence of SD risk; (2) to examine the association between SD risk and mental disorders, trauma exposure, and sociodemographic characteristics; and (3) to describe trends in mental health care service utilisation for this population.

Methods

Data collection

Data were collected between March 2016 and May 2016 from a nationally representative sample of adult IDPs (excluding regions under the control of pro-Russian groups in eastern Ukraine) using a cross-sectional survey design. Participants were included if they were aged 18 years or above at the time of the survey and confirmed by a screening question to have been displaced from their homes due to war or armed violence. Participants were excluded if they had severe intellectual or mental impairments using predefined criteria related to behaviour, communication, and understanding (for which data collectors received training). Participants were also excluded if they appeared to be under the influence of alcohol or drugs as determined by the above criteria for behaviour, communication, and understanding.

To accurately represent IDP populations throughout the country, time-location sampling was employed across 25 Ukrainian oblasts [25, 26]. This probabilistic sampling technique was developed for hard-to-reach populations and is increasingly used with dispersed, forcibly-displaced populations where traditional methods utilised for camp populations (such as cluster or straight random sampling) may no longer be employed. The method involves constructing time-location units representing likely dates, times, and locations where the target population can be interviewed [12]. For this study, respondent sampling occurred at locations that IDPs commonly frequent, such as humanitarian aid distribution centres, IDP-specific hostels, non-governmental organisations, and state service centres. Overall, recruitment involved visits to over 121 different public locations in addition to private locations such as respondents' residences or workplaces.

Survey questionnaire and outcome measures

The survey questionnaire was administered to study participants during an in-person interview. The main outcome was the presence of somatic symptoms measured using the

Patient Health Questionnaire 15 (PHQ-15), which is an SD scale commonly administered across diverse settings [27]. The scoring followed standard guidelines, with each of the 15 items receiving a score from 0 ("not bothered at all" or "not at all") to 2 ("bothered a lot" or "nearly every day") to generate a total score out of 30 points [28]. Respondents with a PHQ-15 score of 6 or more were considered at risk of SD [11, 29]. Total SD scores were also used to categorise the potential severity of the disorder as minimal risk (0 to 4), low risk (5 to 9), moderate risk (10 to 14), or high risk (≥15).

Other health outcomes were self-reported symptoms of anxiety, depression, post-traumatic stress, and functional disability. Anxiety symptoms over the past 2 weeks were measured using the Generalised Anxiety Disorder 7 (GAD-7) scale. Each item was scored from 0 to 3, with a maximum total of 21 points [30]. The recommended cut-off indicating at least moderate anxiety is a score of 10 or more [30, 31]. Depressive symptoms over the past 2 weeks were assessed using the Patient Health Questionnaire 9 (PHQ-9), which contains 9 items each with scores ranging from 0 to 3. The instrument has a suggested cut-off score of 10 or more, which indicates depression of at least moderate severity [32]. Post-traumatic stress symptoms (PTSS) over the past month were scored using the Post-Traumatic Stress Disorder Checklist for DSM-5 (PCL-5), which is a self-reported instrument that includes 20 items on PTSS [33]. Each item may receive a maximum score of 4 ("extremely" affected) to produce a total score of 80. A score of 34 or higher is the recommended cut-off for this scale [34]. Functional disability was measured using the second version of the World Health Organization Disability Assessment Schedule (WHODAS 2.0). Each of the 12 items was scored and summed before being reweighted to a final score out of 100 as per WHO guidelines [35].

Basic demographic and socioeconomic variables were also included in the survey, along with questions on accessing mental health services. In addition, exposure to traumatic events was measured using the Life Events Checklist for DSM-5 (LEC-5), which records exposure to any of 16 traumatic events (plus any self-identified event not listed by the instrument) over the course of the respondent's lifetime [36]. No specific scoring procedure is recommended, with most studies examining the exposure type and number of traumatic events [11, 36 – 38].

The PHQ-15 instrument demonstrated strong internal reliability with a Cronbach's alpha score of 0.88. Reliability coefficients for the scales for anxiety, depression, and PTSS were 0.92, 0.90, and 0.95, respectively. A separate mini survey on 110 respondents was also conducted to assess test-retest reliability for these scales, which showed strong intraclass correlation coefficients of 0.89, 0.84, and 0.83, respectively. In addition, construct validity was high for these 3 measures (see Roberts *et al*. 2017 for more detailed information) [2].

The survey was piloted in English before being professionally adapted and translated into Ukrainian and Russian. The translation process was managed as to ensure reliability, validity, and cross-cultural equivalence of the survey instrument, as described in the literature [39 – 41]. Trained interviewers from the Kiev International Institute of Sociology (KIIS) administered the questionnaires to respondents during face-to-face interviews at a mutually decided location (generally the respondent's home). Prior to the interview, respondents were informed about the study aims and terms of participation, received information sheets, and provided informed consent. . The Institutional Review Board at KIIS granted ethical approval for this study.

Data analysis

The results of this study were generated using descriptive statistics and multivariate regression analysis. Backward stepwise logistic regression was performed to assess the association between SD risk and mental disorders, trauma exposure, and sociodemographic factors, with a dichotomous outcome of being at risk of SD (PHQ-15 score ≥ 6). The procedure for backward stepwise regression involved constructing an initial model containing a full set of potential covariates identified by the study team and the published literature, and eliminating variables individually until a final model was fitted. The multivariate model adjusted for age, economic status, gender, self-reported depression and PTSS, and trauma exposure.

A linear regression model was used to determine the relationship between SD risk and functional disability, with weighted WHODAS 2.0 scores used as the continuous outcome variable. The model included the covariates of age, economic status, occupation, self-reported mental disorders, and trauma exposure. Multivariate logistic regression was also performed to discern associations between being at risk of SD and mental health care utilisation over the past year.

The threshold for statistical significance was set at $p < 0.05$. Adjustments were made to account for the survey sampling design with all study data weighted by oblast to reflect the nationwide distribution of IDPs. Data on characteristics of non-responders were not collected and so could not be factored into the analysis; however, the response rate was high at 89%. All analyses were performed using Stata 14.

Results

The study sample was comprised of 2203 adult respondents throughout government-held areas in Ukraine, with an overall survey response rate of 89%. Around two-thirds (68%) of respondents were women and the remainder (32%) were men. This skewed gender ratio aligns with past research on IDPs in Ukraine [42, 43]. The sample had a median age of 42 years and a mean age of 45.1 years. Only 22% of respondents were engaged in regular paid work and an additional 10% were in irregular paid work. Almost two-thirds (59%) perceived their household economic situation as bad or very bad while only 5% of households believed their economic status was good or very good. Eighty-six percent of respondents had been displaced for more than 12 months. For the mental health outcomes, 17% met the published cut-offs for self-reported symptoms of anxiety, 22% for depression, and 26% for post-traumatic stress. Among those who were categorized as having self-reported anxiety, depression, or PTSS, the co-morbidity of SD risk was 80%, 80%, and 77%, respectively. Additional sample characteristics are provided in Table 1.

In terms of exposure to traumatic events, 332 (15%) respondents had experienced none of the events listed in the questionnaire, 455 (21%) individuals experienced 1 event, 354 (16%) experienced 2 events, 351 (16%) experienced 3 events, 322 (15%) experienced 4 events, and 380 (17%) experienced 5 or more events at some point in their lives. The most common traumatic events experienced were life-threatening illness or injury (n=354), fire or explosion (n=638), severe human suffering (n=931), any other very stressful event or experience (n=1002), and combat or exposure to a war zone (n=1570).

For the outcome of SD, the mean SD score was 7.42 [95% CI 7.18, 7.67]. Over half (55%) of respondents were at risk of SD (PHQ-15 score ≥ 6). Among those with a more significant burden of somatic symptoms, 18% were at risk of moderate severity SD and 13% were at risk of high severity SD. Additional data on SD risk are available in Table 2.

The multivariate logistic regression analysis revealed significant associations between the variables age, female gender, poor economic status, self-reported depression and PTSS, and multiple trauma exposures with being at risk of SD (Table 3). For trauma exposure, experiencing 1 or more events were all significantly associated with SD risk. The strongest association was for respondents who had experienced 5 or more traumatic events (OR 6.75, [95% CI 3.78, 12.07], $p < 0.001$). We also explored the linear association of cumulative trauma exposure with SD by treating trauma exposure as a continuous variable in the same multivariate model and the resultant OR was 1.30 ([95% CI 1.18, 1.42] (P<.0001).

A separate multivariate regression analysis was also conducted for an outcome of being at risk of high severity SD (score ≥ 15). This showed particularly strong associations with self-reported symptoms of depression (OR 7.21, [95% CI 3.85, 13.49], $p < 0.001$) and post-traumatic stress (OR 3.10, [95% CI 1.66, 5.81], $p < 0.001$). Additional data on this regression analysis are available in Online Annex 1.

The association between SD risk and functional disability as a continuous outcome was significant ($\beta = 5.48$, [95% CI 3.88, 7.08], $p < 0.001$), after adjusting for age, economic status, occupation, anxiety, self-reported depression and PTSS, and trauma exposure.

We examined patterns of SD risk among those self-reporting mental health concerns (anxiety, nervousness, depression, insomnia, or other emotional/behavioural problems) in the past year. Within this group of 1425 respondents, there were 915 individuals who were also at risk of SD, of whom 203 (22%) sought care. The treatment modalities received by these care seekers were pharmacotherapy (n=158, 78%), psychosocial support (n=115, 57%), and counselling or psychotherapy (n=84, 41%). Some of these care seekers received more than one treatment modality. For the 430 respondents who were not at risk of SD, care-seeking behaviour was considerably lower with only 43 (10%) attempting to obtain necessary care. Additional information is available in Figure 1.

For those individuals who did not have a mental disorder (self-reported symptoms of anxiety, depression, or post-traumatic stress using the screening instruments described above) but were at risk of SD, mental health care utilisation was also low. Only 40 (13%) individuals in this group sought care while the remaining 255 (87%) respondents did not.

We further examined the association between SD risk and the binary outcome of mental health care utilisation. In a multivariate model (adjusted for age, gender, economic status, self-reported symptoms of anxiety, depression, post-traumatic stress, and trauma exposure), being at risk for SD was not significantly associated with the use of mental health services. However, being at risk of high severity SD was significantly associated with mental health care utilisation (OR = 2.32, [95% CI 1.33, 4.06], $p = 0.003$).

Discussion

In recent years, there has been an increase in research on mental health during humanitarian crises, such as international conflict or natural disasters, in low- and middle-income countries [44, 45]. However, the vast majority of this research focuses on common mental disorders such as anxiety, depression, and PTSD [5, 45 – 47]. In humanitarian settings, there remains a scarcity of research on other mental health conditions such as SD [48]. As many of these other disorders also have highly damaging effects on mental health and overall well-being, further research is required to identify these conditions of rising concern and dedicate appropriate resources towards them [48, 49].

The results of our study highlight the large risk of SD among IDPs in Ukraine, with over half of respondents at risk for the condition. This is even higher than the 42% prevalence of SD risk recorded among IDPs in the Republic of Georgia [11]. Among the respondents for the study of Georgian IDPs, 15% were at risk of moderate severity SD and 3% were at risk of high severity SD [11]. In Ukraine, 18% of the study population were at risk of moderate severity SD, while 13% were at risk of high severity SD. This substantial proportion of respondents at risk of high severity SD has implications for both physical and mental health care utilisation in Ukraine. While the Ukrainian health system offers medical treatment free of charge for its citizens, awareness of primary and secondary care options for addressing the psychosomatic sequelae of trauma is limited. This suggests a gap in essential post-conflict health services and the need for further capacity building, particularly around the integration of evidence-based mental health care practices into Ukrainian primary care.

In our study, being at risk of SD was significantly associated with factors of self-reported depression and PTSS, increasing age, and multiple trauma exposures. These findings reflect conclusions from research conducted across diverse settings, including surveys of Georgian IDPs, Dutch primary care patients, Iraq war veterans, and American female trauma survivors [11, 28, 50 – 55]. Furthermore, in our sample, a separate linear regression analysis revealed a significant association between SD risk and increasing functional disability. Similar findings have been previously reported in Ethiopia and the Netherlands outside a humanitarian context [56, 57].

Despite our findings regarding the associations between SD risk and mental disorders, being at risk of SD was not significantly associated with mental health care utilisation when the regression model was adjusted for age, gender, economic status, and self-reported symptoms of anxiety, depression, and post-traumatic stress. However, there was an association between being at risk of high severity SD and use of mental health services, likely owing to the severity of the somatic symptoms. It is important to consider the more frequent care-seeking behaviour of people at risk of high severity SD when planning for health services post-conflict to ensure that essential MHPSS services are available for those with more acute needs [58 – 60].

The results of this study also highlight demographics that may require greater attention, including those who are female, of lower economic status, older, have experienced multiple traumatic events, and have other mental disorders such as depression or PTSD. For future health system planning and capacity building, these findings can be applied to ensure that limited resources are appropriately mobilised in addressing the risk of SD during the post-conflict period [61, 62]. It is crucial to consider less-researched mental conditions such as SD in health system planning so that MHPSS interventions are targeted to the precise needs of these populations. This is particularly the case in a setting such as Ukraine (and other regions

affected by conflict and forced displacement) where health service availability is typically inadequate [2, 63, 64].

Our study findings suggest that there needs to be strong awareness by health care providers of SD risk among IDPs. It also requires recognition of various underlying psychological needs given the high levels of mental disorders among the study population. This necessitates a strengthening of mental health care diagnosis and services for IDPs in Ukraine, particularly at the primary health care level [2]. In this regard, there is evidence that culturally sensitive and adapted psychological approaches such as cognitive behavioural therapy (CBT) can help in the management of various types of somatic symptoms and related sequelae of mental disorders [65 – 67]. Evidence has also shown that high quality social support is associated with decreased levels of SD and psychological distress during prolonged exile [68, 69].

Limitations

An important limitation of this study was the absence of a pre-interview medical evaluation for survey respondents. The PHQ-15 screening instrument for somatic symptoms, while itself robust and well-validated, is nonetheless not equipped to distinguish between symptoms that are physical or psychological in nature [28, 70]. This eliminated the opportunity for a medical explanation of physical symptoms and advances the possibility that our findings over-represented the true levels of SD in the study population. Moreover, we were unable to make definitive comparisons to the non-displaced Ukrainian population due to the lack of a control group in our survey design. A risk of selection bias was also present due to a lack of relevant data on non-responders, but a high survey response rate of 89% strongly mitigated this risk. Furthermore, the cross-sectional survey design precludes examining temporal trends in SD and causal relationships between SD and associated factors. The lack of data on SD incidence precluded our ability to make evidence-based recommendations for prevention strategies that could be generalised to populations in similar humanitarian settings. In addition, the questions we asked on health care utilisation were limited to mental health services due to the focus on mental health care in the broader study. As a result, we did not capture data on utilisation of physical health services which, given the clinical manifestations of SD, may have been much higher than use of mental health services. We may also not have captured all somatic symptoms specific to the cultural context in Ukraine and how they may act as idioms of distress, and further work should take place following approaches used elsewhere [29, 71, 72]. This includes the need for more in-depth studies to strengthen cultural interpretation of somatic symptoms and its presentation in Ukraine and other conflict-affected settings, including the validity of SD measures (as done for other outcomes among conflict-affected populations [73, 74].

Conclusion

This study highlights the high levels of SD risk among IDPs in Ukraine following the 2016 conflict. SD risk was strongly associated with the presence of select mental disorders and multiple traumatic events sustained over a lifetime. Individuals at risk of very severe SD were more likely to seek out mental health care, which raises important questions for those involved in health care planning and delivery in Ukraine. Additional research would assist in enhancing our understanding of SD and appropriate responses to addressing the disorder in conflict-affected populations.

Ethical standards

All aspects of this study comply with institutional and national guidelines on research and human experimentation, in addition to the most recent revision of the Declaration of Helsinki.

Conflicts of interest

The authors have no conflicts of interest to declare.

Table 1: Sample characteristics of respondents

		N	(%)‡
Gender	Men	704	(31.9)
	Women	1499	(68.1)
Age	18 – 29	432	(19.6)
	30 – 44	758	(34.4)
	45 – 59	522	(23.7)
	≥ 60	490	(22.3)
Education	Primary complete or secondary incomplete	114	(5.2)
	Secondary complete or tertiary incomplete	1295	(58.9)
	Tertiary	790	(35.9)
Marital Status	Married	1149	(52.7)
	Divorced, widowed, or separated	590	(27.1)
	Single	440	(20.2)
Occupation	Paid work	766	(35.0)
	Regular	489	(22.4)
	Irregular	216	(9.8)
	Self-employed	61	(2.8)
	Seeking work (unemployed)	391	(17.9)
	Housewife or maternity leave	239	(10.9)
	Other (volunteer, student, retired)	791	(36.2)
Economic Status	Good or very good	110	(5.2)
	Average	755	(35.7)
	Bad or very bad	1251	(59.1)
Time Displaced	≤ 12 months	293	(13.5)
	13 to 18 months	927	(42.7)
	> 18 months	953	(43.9)
Official IDP Status	Yes	1989	(91.7)
	No	179	(8.3)
Mental Health	Anxiety*	337	(17.5)
	Depression**	414	(22.1)
	PTSS***	450	(26.2)

Notes:

‡ Percentages are shown relative to the total number of responses recorded per questionnaire item. For the mental disorders, these denominators are N = 1929 (anxiety), N = 1874 (depression), and N = 1719 (PTSS).
*Based on GAD-7 score ≥ 10
** Based on PHQ-9 score ≥ 10
*** Based on PCL-5 score ≥ 34

Table 2: Risk and levels of SD

		N	(%)
Risk of SD*	Yes	1142	(55.1)
	No	930	(44.9)
SD Severity**	Minimal risk	778	(37.5)
	Low risk	642	(31.0)
	Moderate risk	377	(18.2)
	High risk	275	(13.3)

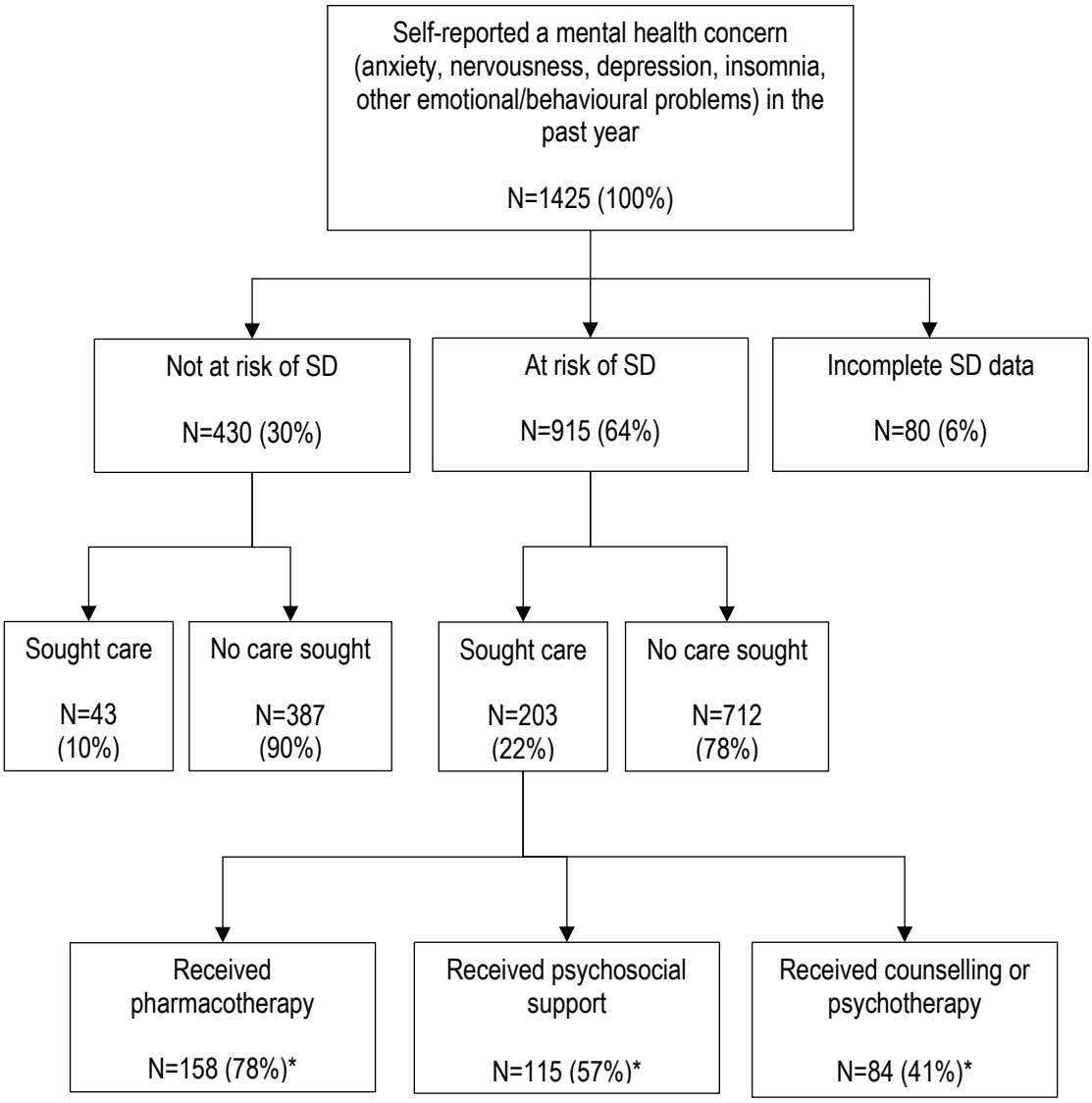
Notes:
*A PHQ-15 score of 6 or more classified respondents as being at risk of SD.
**Levels of SD severity were determined using the following scale for PHQ-15 scores: minimal risk (0 to 4), low risk (5 to 9), moderate risk (10 to 14), and high risk (≥15).

Table 3: Bivariate and multivariate analyses of factors associated with being at risk of SD

	N	(%)‡	Bivariate Analysis				Multivariate Analysis			
			OR	[95% CI]		*p-value*	OR	[95% CI]		*p-value*
Gender										
Men	704	(31.9)	ref				ref			
Women	1499	(68.1)	1.96	[1.56;	2.47]	<0.001	2.01	[1.45;	2.80]	<0.001
Age										
(continuous)	2203	(100.0)	1.06	[1.05;	1.07]	<0.001	1.06	[1.04;	1.07]	<0.001
Economic Status*										
Good or very good	110	(5.2)	ref				ref			
Average	755	(35.7)	3.95	[2.18;	7.14]	<0.001	3.13	[1.31;	7.47]	0.010
Bad or very bad	1251	(59.1)	8.52	[4.74;	15.3]	<0.001	3.72	[1.55;	8.94]	0.003
Mental Disorders										
Depression	414	(22.1)	8.33	[5.82;	11.94]	<0.001	2.88	[1.72;	4.80]	<0.001
PTSS	450	(26.2)	7.80	[5.68;	10.70]	<0.001	3.19	[2.04;	4.98]	<0.001
Trauma Exposure**										
No events	332	(15.1)	ref				ref			
1 event	455	(20.7)	1.86	[1.31;	2.64]	<0.001	1.67	[0.98;	2.84]	0.058
2 events	354	(16.1)	2.88	[1.98;	4.17]	<0.001	3.93	[2.36;	6.55]	<0.001
3 events	351	(16.0)	2.40	[1.64;	3.52]	<0.001	2.36	[1.40;	3.97]	<0.001
4 events	322	(14.7)	3.08	[2.04;	4.66]	<0.001	2.70	[1.50;	4.87]	<0.001
5+ events	380	(17.3)	8.34	[5.36;	12.97]	<0.001	6.75	[3.78;	12.07]	<0.001

Notes:
‡ Percentages are shown relative to the total number of responses recorded per questionnaire item.
OR = odds ratios (adjusted in the multivariate analyses)
95% CI = 95% confidence interval
SD risk = PHQ-15 score ≥ 6
* To confirm the overall association of the Economic Status parameter on SD (i.e. rather than only the individual categorical variables within Economic Status), a Wald test was conducted which confirmed its significance in the overall model (P=0.0005).
** To confirm the overall association of the Trauma Exposure parameter on SD (i.e. rather than only the individual categorical variables within Economic Status), a Wald test was conducted which confirmed its significance in the overall model (P<0.0001).

Figure 1: Care-seeking behaviour categorised by being at risk of SD



Note:
*Some care seekers received more than one treatment modality.

Online Annex 1: Multivariate analysis of factors associated with being at risk of high severity SD

	Multivariate Analysis		
	OR	**[95% CI]**	**p-value**
Age			
(continuous)	1.04	[1.02; 1.05]	<0.001
Mental Disorders			
Depression	7.21	[3.85; 13.49]	<0.001
PTSS	3.10	[1.66; 5.81]	<0.001
Trauma Exposure			
No events	ref		
1 event	1.63	[0.58; 4.59]	0.352
2 events	3.82	[1.44; 10.10]	0.007
3 events	2.78	[1.01; 7.66]	0.048
4 events	2.69	[1.03; 7.06]	0.044
≥ 5 events	5.24	[2.15; 12.76]	<0.001

Notes:
OR = odds ratios (adjusted)
95% CI = 95% confidence interval

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