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Health Services Use for Earthquake-Related Psychological Problems: Results from the 1999 Earthquakes in Turkey

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Abstract

Objective: *Although psychological disorders after traumas are associated with increased rates of services use, the majority of traumatized people do not receive psychological help. This study reports on the health services use of the survivors of the 1999 earthquake in Turkey.*

Method: *A random sample of 2007 survivors was assessed in two sites, using self-report measures of traumatic stress, depression and use of health services.*

Results: *Less than half (42%) of those with a post-earthquake psychological problem (13.7% of the total sample) reported contacting services after the earthquake. Health services use for psychological problems was predicted by past psychiatric illness, depressive complaints after the earthquake and material loss, but not by demographic variables or traumatic stress symptoms.*

Conclusion: *The results show that earthquake survivors who need treatment might not be receiving it. They also show the importance of outreach programs in post-disaster circumstances.*

Key Words: *PTSD, traumatic stress, depression, earthquake, health services*

INTRODUCTION

Studies on the use of services for psychological problems in the community show that there is significant unmet need for the majority of people who have significant levels of distress (Kessler et al. 1999). Kessler et al. (1999) showed that 13.3% of those with any last 12-month DSM3-R diagnosis in the general population contacted health services for a psychological problem. A similar rate was reported on a national random sample in Turkey (Kılıç 1998). In Kessler et al. study (1999), contact with services within a 12-month period ranged between 7-53% for various mental disorders. Among all mental disorders, PTSD and depression have been shown to have the highest burden on the society and on the individual (Kessler et al. 2000, THE ESEMeD/MHEDEA2000 INVESTIGATORS 2004). This makes it essential to study services use after psychological traumas that are known to cause high rates of PTSD and depression. The rates of services use for trauma-related psychological problems are not consistent across studies. Kessler et al. study (1999) showed high rates of services use (28%) for PTSD in the general population. PTSD was associated with higher rates of psychiatric services use in torture survivors (Priebe & Ismaili 1997), survivors of Oklahoma bombing (North et al. 1999) and Manhattan residents after September 11 bombings (Boscarino et al. 2004), Vietnam veterans (Hankin et al. 1999, Calhoun et al 2002), crime victims (Norris et al. 1990) and outpatient mental health clients (Switzer et al. 1999). In the largest study on Vietnam veterans, Kulka et al. (1990) reported very low rates of services use in veterans with PTSD, suggesting that those with the disorder were reluctant to use mental health services. In another study on sexual assault cases, psychiatric services use was similar to controls (Kimerling & Calhoun 1994); a diagnostic assessment was not used in that study. Although PTSD was

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associated with higher use of services in most of the cited studies, the association with depression was stronger than that with PTSD (Norris et al. 1990, Amaya-Jackson et al. 1999, Zimmerman & Mattia 2000, Marshall et al. 1998). Studies that looked into predictors of services use after traumas have shown that more severe trauma (e.g. violent crime as opposed to property crime, more severe as opposed to less severe PTSD and depression symptoms) predicted higher rates of services use. A study on Vietnam veterans (Hankin et al. 1999) found that younger age and higher education were predictive of psychiatric services use among those with a clinical diagnosis. Demographic variables did not predict services use among crime victims (Norris et al. 1990).

Health services use in earthquake survivors has not received much attention in the literature. In one study on survivors of Newcastle earthquake in Australia (Webster et al. 1995), rates of contact with a doctor after the earthquake were similar in host and immigrant populations. Earthquakes are associated with increased rates of PTSD and depression. The rates of PTSD after earthquakes range between 6% and 87% (Freedy et al 1995, Carr et al. 1997, Armenian et al. 2000, Goenjian et al. 1994, Goenjian et al. 2000, Başoğlu et al 2002, Kılıç & Ulusoy 2003, Kuo et al. 2003, Yang et al. 2003, Başoğlu et al. 2004, Lai et al. 2004). The rates of depression after earthquakes range between 9-79% (Freedy et al. 199, Başoğlu et al. 2002, Kılıç & Ulusoy 2003, Kuo et al. 2003, Başoğlu et al. 2000, Mai et al. 1989, Papadatos et al. 1990, Sharan et al. 1996). The two disorders are commonly comorbid (North et al. 1999, Armenian et al. 2000, Bleich et al. 1997, Kessler et al. 1995, Perkonigg et al. 2000). Studying services use after disasters is important in determining the type of service structure that suits best to the needs of a community devastated by disaster.

The present report is based on a project set up in September 1999 to provide specialized psychological treatment for survivors of the earthquakes in Turkey. The main findings of the epidemiological study are reported elsewhere (Başoğlu et al. 2004). We examined the rates and predictors of psychiatric services use in survivors of two successive earthquakes of 1999. We hypothesized that higher levels of earthquake exposure (i.e. experiencing the earthquake closer to the epicentre, rubble experience, loss of lives), higher psychological distress, female gender and past psychiatric illness would relate to higher use of services for psychological problems.

METHOD

The Marmara earthquake in Turkey (7.4 on the Richter scale) led to the death of 17,127 people in August 1999 (Başbakanlık Kriz Merkezi 1999a). On November 12, 1999, a second earthquake (7.2 on the Richter scale), struck the region resulting in further devastation and an additional death toll of 832 (Başbakanlık Kriz Merkezi 1999b). The present study was conducted during a three-year project, providing specialized psychological treatment for survivors. Two locations were chosen for the study on the basis of their proximity to the epicentre and the extent of devastation caused by the earthquake. The first site was Değirmendere (Site I), a town of 25,000 at the epicentre region that had suffered extensive devastation with 650 casualties and the other Avcılar (Site II), a suburb of Istanbul (population 200,000) on the northern coast of the Marmara Sea. Although situated at about 100 kilometres from the epicentre, Avcılar was the most hard hit region of Istanbul and suffered 246 casualties, mainly because of its proximity to the fault that runs across the Marmara Sea.

Random sampling at Site I was based on a list of all households (N= 10,500) of the pre-earthquake population registry. A sample of 1,000 households was selected from the list according to a computer-generated random sequence of numbers. At site II, the study was limited to one the nine districts of Avcılar (Gümüşpala), which suffered the most extensive devastation. This district had a pre-earthquake population of 25,622 and comprised 8,743 households. Each household in the district was sequentially assigned a number and the number sequence obtained was then randomised using a computer program. The first 1,000 households in the randomised list were targeted for the study. Of the 566 households successfully contacted at Site I, five (1%) were excluded from the study because of ineligibility due to illness or old age, while 31 (5%) refused assessment. The respective figures for Site II were 11 (2%) and 129 (23%). Overall, 1,234 survivors from 530 households at Site I and 773 survivors from 420 households at Site II were recruited for the study (total N=2007). The low rate of contact was due to the devastation caused by the earthquake. All available members of a household over age 14 were assessed. No weighting or stratification was applied. No upper age limit was set. The only exclusion criterion was severe physical or mental impairment that significantly interfered with assessment. Data collection took place between July 2000 and March 2001 at Site I and between August and October 2000 at Site II. University students, trained in the administration of the study questionnaires, conducted the house visits. The students were paid a small fee for each respondent assessed. They were instructed to give the questionnaires to the respondents and ask them to fill them out. Questionnaire items were read aloud and responses recorded for 40% of survivors who had sight or lit-

eracy problems. Verbal consent was obtained for participation in the study. At the end of the assessment, the survivors who needed help were offered free treatment for their psychological problems. The study was approved by the ethics committee of Kings College, London.

Measures

The Screening Instrument for Traumatic Stress in Earthquake Survivors (SITSES) consisted of three parts: (1) Survivor Information Form (SIF) - a 28-item form concerning demographics, personal and family history, trauma characteristics, and intensity of fear during the earthquake (0 = None, 4 = Extremely severe), (2) Traumatic Stress Symptom Checklist (TSSC) - 17 DSM-IV PTSD and six depression symptoms in the last week, all measured on an intensity scale (0 = Not at all bothered, 3 = Very much bothered), and (3) Severity of Disability Scale - two items measuring the global severity of distress (How distressed / bothered are you by the problems listed above?; 0 = Not at all, 3 = Extremely) and the degree of disability in work, family, and social functioning (How impaired/limited is your work, family life, and relationships with others because of the problems above?; 0 = Not at all, 3 = Extremely). The TSSC was validated in a previous study (Başoğlu et al 2001), using the Clinician-Administered PTSD Scale (CAPS) (Blake et al. 1996) and the Major Depressive Episode (MDE) module of the Structured Interview for DSM-IV (SCID) (First et al. 1996) for comparison. For the diagnosis of PTSD, the optimal cut-off point was 25 in the total scores of the 17 PTSD items (sensitivity .81, specificity .81, and overall correct classification rate 81%). For the diagnosis of MDE, the optimal cut-off point was 38 in the total scores of the 23 TSSC items (sensitivity .83, specificity .73, and overall correct classification rate 77%). The rates of probable PTSD and depression are reported elsewhere (Başoğlu et al. 2004). In the present report, we used the two factor scores derived from a factor analysis of the TSSC. In previous research (Kılıç & Ulusoy 2003, Livanou et al. 2002, Şalcıoğlu et al. 2003) on earthquake survivors, factor analyses of the TSSC consistently yielded two factors: the "core" PTSD symptoms grouped under the first factor; whereas depression symptoms and PTSD symptoms with depressive content (detachment, loss of interest, numbness) grouped under the second factor. We therefore named the first factor as "PTSD factor", and the second as "depression factor".

Health Services Use Questionnaire: This questionnaire was a modified and adapted version of a self-report instrument used in the Mental Health Profile of Turkey study (Kılıç 1988). It assesses presence of post-earthquake psychological problems (0=absent, 1= present) and type of presenting complaint. Type of complaint was obtained by an open-ended question, which resulted in 24 types of complaints. They were grouped into seven categories for the sake of simplicity: (1= general stress / nerves, 2= sleep problem, 3= earthquake-related fear or distress, 4= memory problem, 5= depression-related (low mood/unhedonia), 6= interpersonal problems, 7=other). Contacting any carer for psychological problems was assessed: (1= GP (primary care unit/hospital), 2=specialist other than a psychiatrist, 3=mental health professional (psychiatrist or psychologist), 4= Non-governmental Organizations (NGOs), 5=other (e.g. nurse, pharmacist, faith healer)), as well as the types of treatment received from each carer (1= no treatment, 2= psychosocial interventions (psychoeducation, debriefing, psychotherapy, teaching coping skills), 3= drug treatment) and degree of benefit from treatment (1=very much improved, 4= no change, 7=very much worse). Current use of psychotropic medications was also assessed by an open-ended question and then recoded into four groups: (1=benzodiazepines, 2= non-benzodiazepine sedatives, 3= antidepressants, 4= other or doesn't know the name). When two or more psychotropics were reported, we used a hierarchy in grouping: antidepressant and any other drug (benzodiazepine, non-BZ sedative) were coded as antidepressant, BZ and non-BZ sedative was coded as BZ. Since there were voluntary organizations running outreach services in the area, the use of services did not necessarily reflect active help-seeking. The questionnaire asked if the respondent contacted any carer for psychological problems after the earthquake or was contacted by a carer. Although types of contact were assessed, number of contacts to each carer was not. Contacts with GP and hospital doctor were lumped together when it was not specifically stated that the doctor seen in the hospital was a specialist. The NGOs that provided care in the region differed substantially from each other in terms of aims, type of treatment offered, and composition of carers. The survivors often could not specify what type of carer they were seen by, especially when they were seen by a foreign carer. We therefore decided to include NGOs as a separate category, which would also make it possible to show the role NGOs played in providing health care to survivors.

Data Analyses: The two site samples were pooled for the analyses of the predictors of psychiatric services use. The outcome variables were the presence of contact with any carer for psychological problems after the earthquake, type of carer contacted first and the current use of psychotropic drugs. Predictors of those dependent variables were analysed separately using logistic regression analyses. The measures of psychopathology used in the regression were the factor scores of the TSSC (traumatic stress and depression factors), derived by principal axis factoring of the TSSC.

RESULTS

Demographics and clinical variables

A total of 2007 survivors were assessed in two sites (1234 in Site I and 773 in Site II); mean time since the earthquake was 410 days (SD: 61). Demographic characteristics and services use variables across sites are given in Table I. In the overall sample, 59% were female. The age range was 15-90 with a mean of 38.2 (SD: 15.7). There were significant differences between the two sites in terms of demographic and clinical variables. Survivors in Site I were older, had higher education and were more likely to have experienced previous psychiatric illness or other trauma compared to survivors in Site II. Since Site I was at the epicentre, survivors at that site had experienced much higher rates of losses compared to those at Site II.

Self-reported rates of psychological problem and use of services

A total of 675 survivors (34%) reported having a psychological problem after the earthquake. The reported rate of psychological complaints was significantly higher in Site I than in Site II (Table II). More women than men reported having a psychological complaint after the earthquake. Less than half (42%, N=275) of those with a post-earthquake psychological complaint (13.7% of the total sample) reported contacting one or more carers for psychological problems after the earthquake. Females used services more often than men (45% vs. 35%, χ^2: 5.3, df: 1, p< .05). Age, study site, traumatic stress or depression factor scores were not correlated with contact with services. Of those who had received help, 252 had contact with one type of carer only, 17 with two types of carer and 6 people had contacted three types of carers. Number of types of carers contacted significantly correlated with TSSC factor scores (.25 for traumatic stress, .20 for depression), suggesting that those with higher distress were either not helped by their first point of contact or were not satisfied with the type of help they received. Among those who contacted services, the first carer to be contacted was a mental health professional (psychiatrist or psychologist) for 35% of the survivors, 22% contacted a specialist other than psychiatrist, 20% contacted primary care or hospital doctor and 20% contacted NGOs. Type of carer contacted correlated with site and age, but not with gender. Younger people were more likely to contact a mental health professional first. Percentage of survivors contacting an NGO as their first carer was almost six times higher in Site I than in Site II (27.2% vs. 4.8%). Conversely, contact with the primary care physician was lower in Site I than Site II. This finding clearly shows that NGOs had concentrated their health-care efforts at the epicentre area, and survivors at Site II had lower access to NGOs as well as to specialist doctors or psychiatrists.

Among the most common reasons for seeking care were general stress/nerves (38%), earthquake-related fear/distress (25%), sleep problem (16%), low mood/unhedonia (11%) and memory problems (4%). The endorsement rates of reasons for contact differed across sites and gender groups. Low mood/unhedonia (13% vs. 4%) and memory problems (5% vs. 1%) were significantly more common in Site I compared to Site II (χ^2: 30.7, df: 6, p< .001). Earthquake-related fears were almost twice as common in women compared to men (29% vs. 15%, χ^2: 19.9, df: 6, p< .01).

Types of treatment offered and improvement due to treatment

The most common type of treatment offered by carers was drug treatments (%56) (benzodiazepines, antidepressants or non-benzodiazepine sedatives). More than one third (37%) of survivors received psychosocial intervention, which included psychotherapy, advice, debriefing or psychoeducation. No treatment was offered for 6% of survivors. Psychosocial interventions were offered more often in Site I than in Site II, and women received drug treatments more often then men. The mean improvement after treatment (change due to treatment offered) for the whole sample was 3.0 (SD: .9) (3=slightly improved) and did not differ across sites, gender, type of complaint or type of carer contacted. Degree of improvement differed across type of treatment received: those who received "no treatment" from their carer reported to benefit less from treatment.

Current use of psychotropic drugs

Current rates of psychotropic drug use among the survivors are given in Table II. Of the overall sample, 6.6% was currently on a psychotropic drug, not necessarily prescribed by their doctor. The rate of current drug use was higher in Site I than in Site II, and in women than in men. Type of carer contacted related to current drug use; those who contacted a psychiatrist or other specialist were more likely to be currently using psychotropic drugs compared to those who contacted a GP or an NGO. Type of treatment received from carers also related to current drug use; those who were prescribed psy-

Table I. Sample Characteristics

	Site I (n= 1234)			Site II (n= 773)						
	X	SD	n (%)	X	SD	n (%)	df	χ^2	t	p≤
Demographic characteristics										
Gender (female)			660 (54)			529 (68)	1	43.4		.001
Age	40	16.2		36	14.5		1772		5.4	.001
Education (1-6) [1]	4.2	1.2		3.9	1.3		1967		5.3	.001
Marital status (married)			828 (67)			512 (66)	1	0.1		NS
Personal history										
Past psychiatric illness			96 (8)			28 (4)	1	10.8		.001
Psychiatric illness in the family			46 (4)			21 (3)	1	1.2		NS
Previous trauma experience			242 (20)			71 (9)	1	38.6		.001
Trauma characteristics										
Trapped under rubble			48 (4)			2 (0.3)	1	24.3		.001
Lost family members			56 (5)			9 (1)	1	16.2		.001
Lost second degree relatives			396 (32)			51 (7)	1	173.8		.001
Lost friends and/or relatives			1023 (83)			221 (29)	1	596.8		.001
Lost property			403 (33)			59 (8)	1	165.4		.001
Damage to home (1-5) [2]	2.1	1.2		1.22	0.55				18.3	.001
Time since earthquake (days)	419	74		393	19				11.5	.001
Intensity of fear during the earthquake (0-4)	2.66	1.3		2.5	1.2				2.8	.01

[1] 1 = no schooling / illiterate, 2 = no schooling / literate, 3 = primary school, 4 = secondary school, 5 = high school, 6= university / post-graduate studies [2] 1 = no damage, 2 = minimal damage, 3 = moderate damage, 4 = severe damage, 5 = collapsed
NS: non-significant

chotropics by their carers were more likely to be currently on drugs; type of presenting complaint did not have en effect in that respect. Two-thirds of the survivors who currently used drugs reported to be on antidepressants. Current use of benzodiazepines was less than ten percent for both sites. More non-BZ sedatives were prescribed in Site I, whereas antidepressants were more commonly prescribed in Site II. Women were more likely than men to be prescribed non-BZ sedatives.

Predictors of contact with services

A logistic regression analysis was conducted to examine the predictors of contact with any carer for psychological problems. The explanatory variables were taken from the Survivor Information Form (SIF) and the Health Services Use Questionnaire. The explanatory variables entered into the regression were: age, gender, education (1-6), marital status (1 = married, 2 = not married), past psychiatric illness (0 = no, 1 = yes), family history of psychiatric illness (0 = no, 1 = yes), history of previous trauma (0 = no, 1 = yes), study site (1= Değirmendere/high impact, 2=Avcılar/low impact), having been trapped under the rubble, loss of family members, loss of relatives/friends/neighbours, participation in rescue work, material loss (all coded as 0 = no, 1 = yes), extent of damage to home (1 = no damage, 2 = mini-

Table II. Health services use variables across sites

	Site I (n =1234) N	(%)	Site II (n = 773) N	(%)	Df	χ^2	p<
Presence of Post-earthquake psychological problem	489	(40)	186	(24.2)	1	52.3	.000
Types of presenting complaint *							
General stress/nerves	161	(33.1)	91	(51.7)	6	30.7	.000
Earthquake-related fear/distress	120	(24.7)	44	(25.0)			
Sleep problem	79	(16.3)	25	(14.2)			
Low mood/unhedonia	64	(13.2)	7	(4.0)			
Memory problems	23	(4.7)	1	(0.6)			
Other	39	(8.0)	8	(4.6)			
First contact with any carer	191	(39.7)	85	(47.2)			NS
Type of carer first contacted*							
GP/hospital	19	(9.9)	36	(42.9)	4	50.9	.000
Specialist	45	(23.6)	14	(16.7)			
Psychiatrist	71	(37.2)	25	(29.8)			
NGO	52	(27.2)	4	(4.8)			
Other	4	(2.1)	5	(6.0)			
Presence of current psychotropic use	96	(7.8)	36	(4.7)	1	7.2	.007
Type of current psychotropic used*							
BZ	8	(9.5)	2	(8.7)			NS
Non-BZ sedative	15	(17.9)	1	(4.3)			
Antidepressant	52	(61.9)	15	(65.2)			
Other	9	(10.7)	5	(21.7)			

* The figures may not add up to total due to missing data.
NS: non-significant

mal, 3 = moderate, 4 = severe, 5 = collapsed), reported fear during the earthquake (0 = none, 4 = very much), traumatic stress and depression factor scores, time since earthquake (days), and type of post-earthquake problem (1= general distress/irritability, 2= sleep problem, 3= earthquake-related fear or distress, 4= depression-related (low mood/unhedonia), 5= other). A logistic regression analysis was carried out using presence of contact with services (coded as 0=no, 1=yes) as dependent and the 19 explanatory variables mentioned above (Table III). Presence of contact with services was predicted by three variables: previous psychiatric illness, low mood/unhedonia symptoms after the earthquake, and experiencing material loss. Thus, neither demographic variables nor traumatic stress symptoms came out as predictors of health services use. Repeating the regression analyses within sites, gender or low vs. high scorers on the TSSC resulted in similar predictions (data not reported).

Table III. Predictors of any type of services use

Significant predictors				Confidence interval	
	Wald	P	Odds Ratio	Lower	Upper
Previous psychiatric illness	14.0	.001	2.67	1.6	4.47
Mood/unhedonia as chief complaint	6.6	.01	2.24	1.21	4.13
Material loss	5.6	.05	1.68	1.1	2.58

Variables entered: age, gender, education, marital status, previous psychiatric disorder, family history of psychiatric disorder, previous trauma, rubble experience, loss of family members, loss of friends/relatives, participation in rescue, fear during the earthquake, site, level of damage to the house earthquake experienced, material loss, TSSC Factor I, TSSC Factor II, type of psychological complaint, time since earthquake

Predictors of type of carer contacted

A multinomial regression (NOMREG in SPSS) was used to determine predictors of contacting different types of carers. Type of first contact (1=GP, 2= specialist other than psychiatrist, 3= mental health professional (psychiatrist or psychologist), 4=NGO) was regressed on the above 19 explanatory variables; the "other carer" group was left out because of small numbers of cases in this group. The results showed that (Table 4) contacting a specialist versus a GP was predicted by being from Site I (Değirmendere). Contacting a mental health professional versus a GP was predicted by younger age and being from Site I. Finally, contacting an NGO versus a GP was predicted by higher fear during the earthquake, being male and being from Site I. Type of presenting complaint did not have an effect on the type of carer contacted. The effect of age was very small and other demographic, trauma related or clinical variables did not predict type of carer contacted first.

Predictors of current psychotropic drug use

The same set of variables was used to predict current psychotropic drug use. The above logistic regression analyses were repeated in the same fashion, adding type of carer contacted for psychological problems to the regression equation (Table V). Current use of any psychotropic drug (0= no, 1= yes) was predicted by contacting a psychiatrist or other specialist after the earthquake as opposed to contacting GP or NGOs, past psychiatric illness, higher PTSD factor scores, higher depression factor scores, higher degree of damage to home, and older age.

Since the number of cases currently on drugs was small (N=132), we could not run multinomial regression analyses to examine the predictors of type of current drug use, as we did above for the type of carer; but 28% of people who had not contacted a carer after the earthquake were currently on psychotropics. Those people were probably on these drugs before the earthquake or had self-prescribed after the earthquake. None of them were on benzodiazepines, which is an indication of the effectiveness of controlled prescription policy on benzodiazepine use in Turkey. Type of current drug used did not relate to site, gender, age or PTSD or depression factor scores.

DISCUSSION

One in seven earthquake survivors contacted a carer for psychological problems after the earthquake. This rate is three times higher than that (4.7%) found in a Turkish random national sample of the general population (Kılıç 1998). The rates for services use in the current sample were similar to those found in people with a psychiatric diagnosis in the general population, both in Turkish (Kılıç 1998) and American (Kessler et al 1999) samples. Although an increased frequency in the use of services after a disaster was expected, not all who needed health care contacted services. Our results showed that demographic variables such as gender or age did not affect health care- seeking. Most important factors relating to service use after the earthquake seem to be previous psychiatric illness and complaints of low mood/unhedonia after the earthquake. Having had a psychiatric illness in the past increased the chances of contacting a carer 2.6 times. It is understandable that people who had past psychiatric illness would be more likely to have had contact with services in the past and would find it easier to seek help when there is need. Depressive complaints after the earthquake seem to be strongly associated with health care seeking; depressive symptoms increase the odds of contacting a carer more than twice. Depression related to service use more strongly than PTSD in some studies

Table IV. Predictors of types of carer contacted

Specialist versus GP					
Significant predictors				Confidence interval	
	Wald	P <	Odds Ratio	Lower	Upper
Being in Site I	8.8	.01	6.67	1.9	23.4
Psychiatrist/psychologist versus GP					
Significant predictors				Confidence interval	
	Wald	P	Odds Ratio	Lower	Upper
Being in Site I	11.4	.001	7.2	2.29	22.9
Lower age	8.9	.01	.95	.92	.98
NGO versus GP					
	Wald	P	Odds Ratio	Lower	Upper
Being in Site I	21.7	.001	66.8	11.4	392
Being male	4.1	.05	5.59	1.06	29.4
Greater fear during the earthquake	6.75	.01	2.3	1.23	4.41

Variables entered: age, gender, education, marital status, previous psychiatric disorder, family history of psychiatric disorder, previous trauma, rubble experience, loss of family members, loss of friends/relatives, participation in rescue, fear during the earthquake, site, level of damage to the house earthquake experienced, material loss, TSSC Factor I, TSSC Factor II, type of psychological complaint, time since earthquake

(Norris et al 1990, Amaya-Jackson et al. 1999, Marshall et al. 1998). In Kessler et al's study (1999), those with PTSD had higher rates of medical and psychiatric services use than those with depression, though differences were small. The higher rates of services use reported in the literature for depression over that of PTSD is not likely to be due to higher distress in depressed cases than PTSD cases. Amaya-Jackson et al. (1999) stress the fact that the differences between depression and PTSD exist despite their similarity in terms of impairment caused by the disorders. The differences are more likely explained by the fact that depression has gained a wider recognition in the community than PTSD, mainly due to widespread public education. Another possible explanation is that, since depression is known to recur, depressed cases either had depression in the past, or had a depressed family member. Past psychiatric illness, or having a depressed relative may lead to a familiarization with psychiatric services or may decrease the fear of stigma attached to mental illness.

It would be expected that people with higher traumatic stress scores would tend to seek help more, which was not the case in the current sample: the regression analyses showed that TSSC factor scores did not predict service use. This means that some people who need treatment may not be receiving it. There are many factors that limit access to psychiatric health care. Goldberg and Huxley (1992) describe the awareness, labeling, economic, stigma and demographic factors that affect the decision to consult. Although there is an increasing awareness about depression in the community, the same is not true for anxiety disorders. Therefore some people may not be aware that they have a psychological problem, or that it can be treated. We assessed current perceived need for treatment by one item. Since time since earthquake did not relate to any of the clinical variables, we may conclude that this variable has remained stable since the earthquake. The reported need for treatment was predicted by past psychiatric illness, psychiatric illness in the family, depression and traumatic stress factors, and loss of friends/relatives (data not reported). This finding suggests that the low contact with services seen among those with high traumatic stress symptoms cannot be solely attributed to lack of awareness about the presence of a problem. Although economic factors may limit access to care, this is not likely to play a major

Table V. Predictors of any type of current psychotropic drug use

Significant predictors				Confidence interval	
	Wald	P	Odds Ratio	Lower	Upper
Older age	9.86	.01	1.05	1.02	1.08
Higher depression factor score	8.22	.01	1.56	1.15	2.12
Higher traumatic stress factor score	7.94	.01	1.95	1.23	3.11
Contacting a psychiatrist/ psychologist first	6.06	.05	4.78	1.38	16.6
Greater damage to home	5.74	.05	1.58	1.09	2.3
Past psychiatric illness	5.72	.05	2.8	1.2	6.39
Contacting a specialist first	4.09	.05	3.84	1.04	14.1

Variables entered: age, gender, education, marital status, previous psychiatric disorder, family history of psychiatric disorder, previous trauma, rubble experience, loss of family members, loss of friends/relatives, participation in rescue, fear during the earthquake, site, level of damage to the house earthquake experienced, material loss, TSSC Factor I, TSSC Factor II, type of psychological complaint, type of first carer, time since earthquake

role in our sample. All NGOs in the earthquake area provided care for free, and GP/hospital treatments were also free for most people. Some people may be reluctant to seek help, because of social disadvantages or lack of effective social support systems. Stigma attached to mental illness may be another reason for not seeking help. Finally, as Schwartz and Kowalsky (1992) have shown in survivors of a mass shooting, some people may be reluctant to seek help because of the nature of their symptoms. Knowing that "therapy" will involve talking about the trauma, which is likely to arouse disturbing memories, some survivors may be avoiding contact with services. In fact, of the three PTSD symptom clusters, only avoidance cluster did not have a significant correlation with presence of contact with services, the other two had low but significant positive correlations (data not reported). Avoidance is a common and disabling set of symptoms seen after traumas, which responds favourably to treatment (Başoğlu et al. 2003). An outreach approach is therefore essential to solve the unmet need for treatment and should be backed with public education focusing on the nature of earthquake-related symptoms and stressing that help is available.

The fact that material loss predicted services use and traumatic stress scores did not is interesting. Loss is generally accepted to more strongly relate to depression than to traumatic stress. In our sample, material loss related both to traumatic stress and depression factors; the relation with depression was stronger (data not reported). Although material loss related to psychological distress in our sample, these results imply that the prediction of services use by material loss was over and above that explained by psychological distress alone. Other factors may also be responsible and it is worth studying what types of stresses are caused by material loss.

The current rates for psychotropic drug use (6.6%) was comparable to that found for a pre-earthquake national sample (5%, Kılıç 1998); that study used the same question to determine current psychotropic use. This shows that overall psychotropic drug use has not shown a significant increase after the earthquake. Traumatic stress and depression factor scores were significantly associated with higher rates of psychotropic use in both sites; the association with traumatic stress was stronger. The fact that current drug use was not solely determined by doctor's prescription shows that people tend to self-prescribe medications, more so if they have used it in the past. Considering the fact that one does not need a prescription to buy most psychotropics in Turkey, this finding may be useful in determining the groups at risk for psychotropic misuse or abuse.

Mental health professional was the preferred carer in Site I, whereas survivors in Site II contacted GPs more often than other carers. The two sites differed in terms of resources allocated after the earthquake, and the population in Site I is known to have higher economic stand-

ards than Site II. These findings indicate that people tend to by-pass the GP for psychological problems when they have access to other carers. This tendency for an American by-pass (Goldberg & Huxley 1992) was repeatedly shown in other samples in Turkey (Kılıç 1998, Kılıç et al. 1994). NGOs seem to play an important role in Site I, where 27% of all service users contacted an NGO. Psychosocial interventions were more often provided by NGOs, compared to GPs or other specialists who preferred drug treatments for most of their clients. Drug treatments can be attractive both to the physician and to the patient, and may seem practical at first, but involve many risks and cost more time and money in the long run. Yet, benefit was reported to be very similar across different treatments. Our experience with earthquake survivors shows that survivors can effectively be treated by cognitive-behavioural therapy (CBT) in a relatively short period (Başoğlu et al. 2003). CBT has the additional advantage of ease of administration by other health workers and even lay people. Training the medical practitioners in administering CBT will lead to effective treatment, save specialist time and also prevent risks and costs of drug treatments.

The current study has several limitations. Out of all eligible households, we reached just over fifty percent. The main reason for the low rate of contact was the devastation caused by the earthquake. We did not use a structured clinical interview in assessing PTSD and depression. The self-report questionnaire we used, however, was validated before on a similar sample using CAPS and the major depression module of the SCID (Başoğlu et al. 2001). We did not assess number of visits to carers and our questionnaire allowed only three types of carers to be recorded. We probably did not lose much information by not assessing numbers of visits to any carer, since Kessler et al. (1999) report that number of visits closely related to different types of services used in their study. We did not assess the exact dates of contact with services, a variable that could affect the current symptom levels. Another limitation of the study is the lack of information on comorbid medical illnesses. Both PTSD and depression frequently coexist with medical illnesses and this is also true for post-traumatic conditions (Breslau & Davis 1992, Schnurr et al. 2000, Ouimette et al. 2004). Some studies suggest that presence of comorbid physical illnesses are responsible for the high rates of services use seen in trauma survivors with PTSD and depression (Marshall et al. 1998, Deykin et al. 2001), although findings are not consistent on this issue. It is, therefore, essential to include assessment of medical illnesses in future studies. The strength of the current study lies in the fact that it is based on a fairly large random sample, subjected to a relatively uniform severe trauma. With the exception of Kessler et al. (1999) and Amaya-Jackson et al. (1999), most studies on the subject are limited to health care-seeking samples, and may therefore be missing those who do not come into contact with services at all. Using random community samples exposed to a trauma prevents such a bias.

CONCLUSIONS

Our study showed that most of the earthquake survivors in Turkey who reported earthquake-related psychological symptoms did not come into contact with health services. In addition, those who did contact services were not the ones who needed help the most, as shown by the absence of prediction of service use by any of the clinical variables. This finding indicates that there is a serious unmet need for treatment of earthquake-related psychological problems. Since PTSD and depression are known to cause significant disability for the person and a heavy social and economic burden for the society, increasing the rates of contact with services could help reduce the burden. The findings demonstrate the significance of an outreach approach in the aftermath of disasters, since many people with significant symptoms may be reluctant to seek help or may not even be aware that they have a treatable problem. It is also possible that even though they are aware of the problem, they may not present with psychological complaints and may therefore go undetected in routine clinical settings (Zimmerman & Mattia 1999, 2000). People with distress may be reluctant to seek help because of fear of stigma, because of lack of trust for health-care system, or they may be actively avoiding treatment because treatment itself may remind the painful memories. Awareness campaigns and training courses targeting GPs have helped an increasing recognition and treatment of depression in Turkey in the last decade (Sağduyu & Özmen 1996). Similar campaigns for the effects of psychological traumas are lacking despite the two devastating earthquakes that killed 20.000 people. Public education should be coupled with training of general practitioners and other health care workers, and should try to build confidence in primary care personnel in the treatment of trauma-related disorders.

Considering the fact that a fifth to a quarter of our sample had either probable PTSD or depression, the rate of psychotropic use among the survivors was lower than expected. Although it was the psychiatrist who prescribed

the current drug in most cases, past psychiatric illness or current traumatic stress symptoms also predicted current drug use. The potential for abuse or unnecessary use of antidepressants requires investigation, since unsupervised drug use may create medical risks and delay proper treatment. The contrast between sites in terms of health care use reflects the inefficient functioning of our health-care system, the reasons of which should be investigated. It is possible that people do not trust GPs for treatment of psychological symptoms in terms of competency or confidentiality. These findings show the need to implement continuing education and supervision of primary health care workers. Primary care units in our country mainly function as outpatient clinics and rarely do outreach services except in cases such as immunization campaigns. A reorganization of services that will include an outreach component is necessary to respond to the huge health problem posed by disasters such as earthquakes.

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