



Mental Health Problems amongst Internally Displaced Persons in Darfur

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Mental Health Problems amongst Internally Displaced Persons in Darfur

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Suggested running head: Mental health problems amongst IDPs in Darfur

For Peer Review Only

Abstract

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1
2
3 War victims are regarded as one of the highest risk groups for mental disturbances. This study
4 investigated the effects of Darfur conflict on mental health of 430 internally displaced persons
5 (IDPs) from three camps located around Fasher and Nyala twons. Stratified random sampling
6
7 technique was used to select participants. Male participants represented 50.6% of the sample
8
9 while female participants represented 49.4%. The Posttraumatic Stress Disorder (PTSD)
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11 Checklist and the General Health Questionnaire (GHQ-28) were used in addition to a
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13 questionnaire measuring demographic variables and living conditions. It was hypothesized that
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15 high prevalence of PSTD symptoms and high prevalence of non-psychotic psychiatric
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17 symptoms will be evident. Results showed high dissatisfaction rate (72%) with living
18
19 conditions among IDPs. There was also high prevalence of posttraumatic stress disorder (54%)
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21 and general distress (70%) among IDPs. Female participants showed more somatic symptoms
22
23 compared to their male counterparts. Married participants were more distressed, anxious, and
24
25 showed more social dysfunction, while single ones reported more avoidance symptoms.
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27 Significant differences related to date of displacement were found in posttraumatic stress
28
29 disorder and arousal. The group of IDPs displaced in 2003 scored higher on these scales than
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31 those displaced in 2004 and 2005. There was also significant difference related to date of
32
33 displacement in distress, somatic symptoms, depression, anxiety, and social dysfunction. Again,
34
35 IDPs displaced in 2003 scored higher on these scales
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37 Results were discussed in light of the study hypotheses and previous findings. It was concluded
38
39 that three factors might affect the dissatisfaction of IDPs with living conditions inside camps.
40
41 These are; lack of employment, unsuitability of food items, and lack of security around camps.
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43 It was recommended that psychological support services should be among the prime relief
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45 services provided by aid agencies.
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49 Key words: Darfur, IDPs, posttraumatic stress, distress,

Introduction

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The Darfur region of western Sudan is composed of three States; North Darfur, South Darfur, and West Darfur. These three States are of large area comprising 250 000 square kilometers with an estimated population of 6 million persons. The starting point of the armed conflict in

Darfur region was typically said to be in or around 2002. There were various factors that contributed to the conflict in Darfur. These are poverty, governmental role, political neglect, dispute over grazing rights and use, land tenure, and marginalization of the region by the national governments. These factors led to rebel movement organized by Sudanese Liberation Army and Justice and Equality Movement (De Waal, 2009). However, the scale of conflict increased noticeably in February 2003 (The United Nations, 2005). This conflict resulted in massive displacement of people. Some took refuge in neighboring Chad and other countries, while others were grouped in camps inside Darfur itself.

It is well documented that conflicts, wars, violence, and being displaced negatively affect the victims' well-being and result in complex humanitarian crisis. Refugees are regarded as one of the highest risk groups for mental disturbances. More than 50% of them manifest mental health problems ranging from chronic disorders to severe trauma (Editorial, 2002). Experiencing devastation of armed conflict and exposure to violence have consistently been found to be associated with poor mental health (Miller et al., 2002). War-related risk factors that endanger refugee mental health include arbitrary destruction of homes and communities, witnessing the death or serious injury of loved ones, sexual violence, psychological and physical torture, and forced participation in fighting (Miller et al., 2002).

Researchers interested in mental health of refugees had mainly focused on understanding the role of war-related and pre-migration experiences in onset of depression and post traumatic stress in this group of people (Miller et al., 2002).

In their study of predictors of psychological distress among Southeast Asian refugees, Chung and Kagawa-Singer (1993) found that pre-migration traumatic experience and camp experience

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Deleted: , experience of loss and disruption of social relationships (Hadi, Llabre, and Spitzer, 2006). Mental health of refugees is also endangered by post exile factors such as social isolation, unemployment (Pernice, and Brook, 1996) deprivation, life in overcrowded camps, disruption of community and social support networks, and uncertainty over the future (Editorial, 2002).

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Deleted: Hadi et al. (2006) found in their study of Kuwaiti children and their mothers that children whose fathers were arrested during Iraqi invasion reported significantly more depression and anxiety than a control group. Mothers whose husbands were arrested and mothers whose husbands were missing also showed significantly more depression than a control group.

strongly predicted psychological distress five years or more after migration to the United States of America. Their results further indicated that Vietnamese and Lao women experienced more distress than their male counterparts.

Bilanaskis and Pappas (1996) studied the impact of war stress on mental health of 58 war refugees in a refugee camp in Serbia. They found that 63.8% of the sample members were suffering psychological problems as measured by the General Health Questionnaire (GHQ), and 44% were suffering post traumatic stress disorder (PTSD). The General Health Questionnaire total distress score was correlated with personal experience of traumatic events, the number of traumatic events, the degree of exposure to the events, trauma symptoms, and post traumatic stress.

Exposure to traumatic events such as war may further result in severe emotional and behavioral disorders such as post traumatic stress (Karl, Maltam, and Maercker, 2005). Posttraumatic stress disorder (PTSD) was first recognized during Vietnam War when American soldiers manifested severe symptoms as a result of experiencing war (Ehlers and Clark, 2000).

Posttraumatic stress disorder (PTSD) is defined as an anxiety disorder that develops in response to severe traumatic life stress (American Psychiatric Association, 1994). It is associated with psychological and physical dysfunctions (Palyo and Beck, 2005) such as exaggerated startle, insomnia, hypervigilance, and distorted information processing (Karl et al., 2005). PTSD symptoms can be classified into three categories: over arousal, avoidance, and intrusive symptoms (American Psychiatric Association, 1994).

Forty eight studies, within the date parameters of 1970-2005, were found pertaining to the development and maintenance of PTSD in civilian survivors of war trauma and torture (Johnson and Thompson, 2008). Numerous studies on refugees and displaced populations affected by various forms of war trauma, had reported very high rates of PTSD among participants.

Deleted: The GHQ is widely used for screening general distress (general health) in people affected by war and in community settings as well (De Jong, Van Der Kam, Ford, et al., 2007)

Deleted: War may further lead to a range of severely traumatic experiences for civilians such as witnessing, experiencing or confronting a life threatening events (Battles, 2007), and separation from one's family (Dahl, Mutapic, and Schei, 1998).

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Deleted: A prevalence rate of PTSD of 71% was found among displaced Bosnian women in a war zone (Dahl et al. 1998).

Cardozo, Vergara, Agani, and Gotway (2000) researched the mental health of Kosovar Albanians, immediately after the war in Kosovo and one year later. They found PTSD prevalence rates of 17.1% and 25% respectively. Scholte et al. (2004) reported PTSD prevalence rate of 20.4% following war and repression in Eastern Afghanistan whereas Somasundaram and Sivayokan (1994) reported a prevalence rate of 27% following the war in Sri Lanka.

Deleted: and Cardozo, Kaiser, Gotway, and Agani (2003)

The present study aimed at investigating the effects of Darfur crisis, in terms of traumatic events and resulting living conditions inside camp, on mental health of internally displaced persons (IDPs). We hypothesized that high prevalence of PTSD symptoms will be evident and high prevalence of non-psychotic psychiatric symptoms will be found. Socio-demographic data would be used in conducting subsequent analysis.

Deleted: Measured life-time PTSD was found in four post-conflict settings. The rates were; 37.4% in Algeria; 28.4% in Cambodia; 17.8 % in Gaza; and 15.8% in Ethiopia. Cardozo et al. (2004) and Abu Saba (1999) found PTSD prevalence rate of 42% in post-war Afghanistan and 75% among Beirut students who had been exposed to a high number of traumatic war events during Lebanon civil war in 1970s and 1980s. Miller et al. (2002) studied the relative contribution of war experiences and exile-related stressors to levels of psychological distress among two groups of Bosnian refugees: a clinical and a community groups. The clinical groups were attending a mental health clinic. The results showed that level of daily activities (exile-related variables) and loss (a war-related variable) were the strongest predictors of depression in the clinical group. For the community group, social isolation (an exile-related variable) was the strongest predictor of depression.

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Deleted: High prevalence of both posttraumatic stress disorders and general distress are expected

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Deleted: A sample of 430 internally displaced persons of age ranges between 12 to 85 (mean age= 34.6 years) in three camps of Seraif (24.2%), Utash (23.3%), and Abu shoak (52.6%). were randomly selected and took part in this study. The first two camps are located around Nyala town (southern state of Darfur) and the latter around Fashir town (northern state of Darfur)

Method

Participants

A sample of 450 IDPs was targeted, however, 430 of them agreed to be interviewed. Participants were from three camps; Seraif (24.2%), Utash (23.3%), and Abu shoak (52.6%). The first two camps were located around Nyala town (south Darfur state) and the latter around Fasher town (north Darfur state). Each camp was divided into four areas. Participants were selected from households (one from each) according to their availability. If this process of sampling is to be described, it is more likely to be stratified random sampling.

Participant ages ranged between 12 to 85 (mean age=34.6 years). Male participants (mean age=35.2) represented 50.6% of the sample while female participants (mean age= 34.1) represented 49.4%. About 74.4% of the participants were married, 20.5% singles, 0.7% divorced, and 3.8% widowed. The majority of the participants were from north Darfur state (53.7%), while 41.9% were from south Darfur state and 4.4% from west Darfur state. About 44.2% of the participants belonged to Fur tribe, 20.7% to Zaghawa tribe and the rest belonged to

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other tribes. Participants entered the camps in early 2003 through 2004 to mid 2005 (10.3%, 82.9%, and 6.8% respectively).

Materials and procedures

In the year 2005, participants (IDPs) were interviewed by the authors and two other interviewers (a male and a female) who were trained on how to interview and collect data from IDPs.

Participants were approached in their tents and requested to take part in the study. The objectives of the study were explained and confidentiality of information was assured. IDPs responded to three sets of questionnaires back translated from English into Arabic. The first questionnaire was specially designed for the purpose of this study and it consists of three parts; 10 questions exploring demographic information; 21 questions on living conditions; and 3

questions exploring displacement history. The second questionnaire was the Post Traumatic Stress Disorder Check List (PCL) (Weathers et al, 1993) which was composed of 17 items rated on a 1-5 Likert scale. Test retest reliability for the original scale was 0.96 (alpha=0.93) and convergent validity was 0.93, as correlations with the Mississippi scale for PTSD show (Weathers et al, 1993). The PTSD Check List assesses the three symptom clusters of PTSD, re-experiencing symptoms, numbing/avoidance symptoms, and hyper-arousal symptoms,

corresponding to the Diagnostic and Statistical Manual for Mental Disorders (DSM-IV) criteria

B, C and D, respectively. Dobie et al (2002) cited a number of studies in which the score of 35

to 50 was considered as the optimal score provides cut-off points. However, in our study, the

score of 50 was used as an optimal screening cut-off point. The sum of total responses

generates a total score ranges from 17-85, the mean score was 50.05 (SD= 12.88, alpha

reliability = 0.82). Factor analysis yielded three factors consistent with the original three

symptom clusters of the PTSD specified by the DSM-IV (American Psychiatric Association,

1994). The third questionnaire was the General Health Questionnaire (GHQ-28 items) (GHQ28;

Goldberg & Williams, 1991). Factor analysis yielded four sub-scales consistent with the original

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Deleted: PCL was initially developed and administered in samples of Vietnam and Persian Gulf veterans (Weathers and Ford, 1996). It has been used successfully in mixed gender populations of civilian trauma patients (Blanchard, Jones-Alexander, Buckley, and Forneris, 1996) and in parents of pediatric cancer patients (Manne, Du Hamel, Gallelli, Sorgen, and Redd, 1998). The score of 35 to 50 was considered as the optimal score provides cut off point in these studies (Dobie et al, 2002)

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Deleted: This questionnaire was subjected to factor analysis using equal variances (weights) as prior communality estimates. The factor axis method was used to extract the factors, and this was followed by varimax (orthogonal) rotation

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questionnaire subscales which gauge anxiety, depression, somatic symptoms, and social dysfunction. The mean score on this scale was 14.0 (SD= 8.2, Alpha reliability= 0.94). The General Health Questionnaire is a well validated instrument for measuring non-psychotic psychiatric disorders in both clinical and community settings including those affected by violence (Cardozo et al. 2000; De Jong et al., 2007). There are two methods of scoring the questionnaire; the first is the General Health Questionnaire scaling method (0,0,1,1) and the second is the Likert scaling method (0,1,2,3). The former is appropriate for recognizing non-psychotic psychiatric cases and the latter for survey research (Swallow, Lindow, Masson, and Hay, 2003). For differentiating psychiatric from non-psychiatric cases the General Health Questionnaire scoring system with a cutoff point of 4 or more is usually used. When using the Likert system, the General Health Questionnaire total score measures general distress. In our study, both methods of scoring were used. Both the PTSD and General Health Questionnaires have been widely validated in many countries and cultures (Cardozo et al, 2000).

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Deleted: All IDPs reported that lack of security or war was sole cause of their displacement. Displacement took place in 2003, 2004, and 2005. However, the year 2005 witnessed the highest rate of displacement (66.3%).

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Deleted: Most IDPs (83%) indicated that provision of food is satisfactory, however, 76% of them believed that the type of food (lentils and wheat) is unsuitable and doesn't match with their food tradition (Millet). A significant minority of IDPs (29%) reported that some of their relatives experienced the death because of food shortage and 21% of them stated that some of their family members were malnourished. More than 90% of them reported that food services were lacking some important ingredients such as meat, milk, millet, and sugar.¶

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Results

Living conditions

Descriptive statistics showed that most of the IDPs (72%) believed that the living conditions in camps were poor in terms of freedom of movement, quality of shelter (tents), unfriendly environment, sanitation, clean water, and social services such as education, health, wood fuel, and employment. About 74% of IDPs reported that the camps were located in unsecured areas, though, 75% of them believed that security inside the camps was prevailing.

PTSD Checklist

When a cut-off point of 50 was used, 54% of IDPs were classified as possible PTSD cases. The DSM-IV criteria for diagnosing PTSD symptoms were used to differentiate symptomatic from non-symptomatic cases. The findings of items of each diagnostic cluster were given in table 1.

Insert table 1 about here

Pearson correlation analysis indicated that age was negatively related to PTSD score, arousal and avoidance symptoms ($r = -0.13, p < 0.01$; $r = -0.11, p < 0.05$; $r = -0.13, p < 0.01$, respectively).

PTSD score, arousal, and re-experiencing symptoms were each related to general distress, somatic symptoms, anxiety, social dysfunction, and depression see (table2). Avoidance symptoms were related to depression only (see table 2).

Deleted: (GHQ score)

Insert table 2 about here

T-test results showed significant difference between the married and single IDPs in avoidance symptoms ($t = 2.19, df = 418, p < 0.05$). The single participants had the highest score. No significant sex differences were found in post traumatic stress disorder, avoidance, reexperiencing, or arousal symptoms.

Deleted: T-test results revealed significant difference in avoidance between IDPs in Fashir camp and IDPs in Nyala camps ($t = 3.5, df = 423, p < 0.05$). IDPs in Fashir showed more avoidance symptoms.

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Analysis of variance showed significant difference related to date of displacement in PTSD score and arousal ($F = 4.64, df = 2, 417, p < 0.05$, $F = 7.65, df = 2, 417, p < 0.01$, respectively). The group of those who were displaced in the year 2005 ($N = 12$) reported the highest PTSD score ($M = 55.5$), the lowest score ($M = 48.9$) was reported by those who were displaced in the year 2004 ($N = 284$). Bonferroni post hoc results indicated that the groups of people displaced in 2003 ($N = 117$) and 2004 ($N = 284$) were significantly different in their mean PTSD score ($MD = 4.0$; $P < 0.05$). The leading group was the one who was displaced in 2003.

Deleted: Significant ANOVA results do not specify which group is leading the difference among the groups. To do so, a pairwise comparison was conducted among the four groups using ANOVA post hoc analysis.

Analysis of variance results also showed that those who were displaced in 2005 had the highest symptoms on arousal ($M = 28.3$). The least score on arousal symptoms were obtained by those who were displaced in 2004 ($M = 23.3$). Bonferroni post hoc results of arousal indicated that the groups of people displaced in 2003 and 2004 were significantly different in their mean scores ($MD = 3.03$; $P < 0.05$). The leading group was the one who was displaced in 2003.

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As for date of camp entry, analysis of variance showed significant difference in PTSD score and arousal ($F=2.32$, $df=4, 421$, $P<0.05$; $F=3.3$, $df=4, 421$, $P<0.05$, respectively). Those who entered camps in the second half of 2003 reported the highest PTSD score ($M=54.8$), and those who entered in the second half of 2004 were the lowest scorers ($M=48.0$). Concerning arousal symptoms, the highest scorers were those who entered camps in the second half of the year 2003 ($M=27.7$) and the lowest were those who entered in the second half of 2004 ($M=23.0$).

Bonferroni post hoc showed no significant mean differences in PTSD score or arousal.

The General Health Questionnaire

When a cut-off point of 9 was used, 70 % of the respondents were classified as non-psychotic psychiatric cases.

Pearson correlation analysis revealed significant associations between age and social dysfunction only ($r=0.12$, $p<0.05$).

T-test results indicated that the only sex difference was in somatic symptoms ($t=2.11$, $df=423$, $P<0.05$). Female participants showed more somatic symptoms. Concerning marital status there were significant differences in distress, anxiety, and social dysfunction ($t=2.45$, $df=398$, $P<0.05$; $t=2.21$, $df=396$, $P<0.05$; $t=2.63$, $df=396$, $P<0.05$, respectively).

The married participants scored higher on these variables.

Analysis of variance resulted in significant differences related to date of displacement in general distress, somatic symptoms, depression, anxiety, and social dysfunction ($F=7.1$, $df=3, 418$, $P<0.001$; $F=3.72$, $df=3, 417$, $P<0.05$; $F=10.31$, $df=3, 415$, $P<0.001$; $F=4.83$, $df=3, 416$, $P<0.01$; $F=3.51$, $df=3, 416$, $P<0.05$, respectively).

The group of IDPs displaced in 2004 obtained the lowest mean scores, while the group of those displaced in 2005 had the highest mean scores in all above-mentioned scales, excluding high mean scores in anxiety and depression scales.

Deleted: GHQ-28

Deleted: the standard cut-off point of 5 (Goldberg and Hillier, 1979) was used with the GHQ, 82.7% of the participants were classified as possible non-psychotic psychiatric cases. Even with a higher

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Deleted: Number of family members was negatively related to general distress, depression, anxiety, and social dysfunction (see table 1).

Deleted: Married participants were more distressed, anxious, and showed more dysfunction.

Deleted: For t-test purpose, the two camps in southern state (Nyala) were merged and been given value (1), and the camp in the northern state (Fashir) was given the value (2). The result indicated significant differences between the two new camps in general distress, somatic symptoms, anxiety, and social dysfunction ($t=3.13$, $df=425$, $P<0.01$; $t=4.08$, $df=424$, $P<0.05$; $t=3.22$, $df=423$, $P<0.05$; $t=3.24$, $df=423$, $P<0.01$, respectively). IDPs in Nyala town camps scored higher on these scales. Significant differences were also found between married and unmarried participants in distress, anxiety, and social dysfunction ($t=2.00$, $df=420$, $P<0.05$; $t=2.12$, $df=418$, $P<0.05$; $t=2.33$, $df=418$, $P<0.05$, respectively).

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3 Bonferroni post hoc results showed that the only significant mean differences in the General
4 Health Questionnaire (distress) and its subscales were between the two groups of IDPs displaced
5 in 2003 and 2004 (MD=3.77, P< 0.01; MD=0.71, P<0.05; MD=1.22, P<0.001; MD=1.0,
6 P<0.001; MD=0.82, P<0.05, respectively). Those who were displaced in 2003 consistently
7 scored higher and thus less healthy.

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12 Regarding date of camp entry, results showed significant differences in general distress, somatic
13 symptoms, anxiety and social dysfunction (F=2.72, df=4, 422, P<0.05; F=3.91, df=4, 421,
14 P<0.01; F=3.02, df=4, 420, P< 0.05; F=2.34, df=4, 420, P<0.05, respectively). IDPs entered
15 camps in 2003 reported high scores in general distress, somatic symptoms, and anxiety
16 (M=16.63, M=4.52, M=4.63, respectively), while IDPs entered camps in 2005 reported high
17 score in social dysfunction (M=5.10). IDPs entered camps in 2004 showed the least scores
18 (M=12.75, M=3.32, M=2.13, M=3.25, M=3.82). Bonferroni post hoc showed no significant
19 mean differences in any of above-mentioned scales.
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30 Discussion

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33 To our knowledge, this is a pioneer study of general and mental health of Darfurian internally
34 displaced persons (IDPs). The results showed ed high levels of both posttraumatic stress symptoms
35 and increased non-psychotic psychiatric morbidity among Darfurian IDPs. These results
36 support our hypotheses. The high prevalences, can be attributed to the fact that those IDPs
37 experienced and witnessed extreme violence in terms of burning and looting of properties, mass
38 destruction, air bombardment, massive shelling, and killing of family members and relatives.
39 Furthermore, living conditions in the camps were also very difficult and most of IDPs were
40 unemployed.
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48 The coexistence of PTSD, arousal, and reexperiencing symptoms with general distress, somatic
49 symptoms, anxiety, social dysfunction, and depression might reflect the fact that both PTSD and
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its subscales and the General Health Questionnaire, and its subscales are measures of symptoms of ill-mental health. Therefore, the inter-correlation between them is expected.

Deleted: GHQ

Regarding marital status, the high score in avoidance obtained by single participants might refer to their lack of affective social support provided by marriage. The lack of gender differences in our study, might be attributed to the fact that both sexes were at high risk because of the disastrous situations all IDPs undergone, though, women were targeted for rape by assaulters.

Deleted: The negative associations of age with PTSD score, arousal and avoidance symptoms suggest that age may work as a moderator of the influence of these problems on IDPs.

However, a previous study by Ekblad, Prochazka, and Roth (2002) had suggested that female participants in their samples might have been more vulnerable to developing PTSD because of psychological consequences of being raped, violent loss of spouse and children, and becoming widowed.

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It appeared from analysis of variance results that the group of IDPs displaced in 2003 represents an exceptionally high risk group for developing various mental health problems including posttraumatic stress disorder, general distress, somatic symptoms, depression, anxiety, and social dysfunction. The group of IDPs displaced in 2004 represented the lowest risk group for developing the above-mentioned mental health symptoms. Since the conflict in Darfur

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erupted in February 2003, IDPs displaced in 2003 were among the first war victims and the most affected and suffering groups. At that time camps were not yet established and aid work was not initiated. Therefore, this group might have encountered extremely difficult situations such as lack of shelter, food, and security and being bewildered. It is clear from analysis of variance results that IDPs entered the camps in the second half of 2003 had the highest levels of both, PTSD scores and arousal symptoms. This finding might also be explained in light of the starting of armed conflict in early 2003, which led IDPs to be subjected to extreme violence.

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The positive association between age and social dysfunction may signify the difficulties faced by older IDP's in their efforts to cope with their new social environment created by

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3 displacement. It might be difficult for older IDP's to regain the social status that they had
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5 enjoyed in their original societies, where roles are carefully assigned. It could also be argued
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7 that older IDP's may be readily socially dysfunctional even before being displaced due to limited
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9 mobility and limited activity.

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11 The high levels of somatic symptoms reported by female IDPs is consistent with findings of
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13 Weanzel, Steer, and Beck (2005), which indicated the tendency of women to report such high
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15 symptoms compared to male participants. The higher levels of distress amongst married
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17 participants compared to single ones, does not support the results of Roberto, Chaaya, Fares, and
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19 Abi Khirs (2006) which showed that single participants scored higher on psychological distress
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21 measured by the General Health Questionnaire. This result also contradicts the findings of
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23 Hamid (submitted) which showed raised levels of distress, depression and social anxiety among
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25 married participants. However, the conditions under which IDPs are found are not comparable
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27 to normal conditions under which Hamid's sample lived. The association of being married with
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29 more distress, anxiety and social dysfunction might suggest that married IDPs find themselves
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31 under more pressure as they shoulder the moral and social responsibility to protect their family
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33 members against various threats and dangers. It may also be more difficult for married IDPs to
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35 form new social networks than the younger non-married ones.

Deleted: The negative association between number of family members, on one hand, and general distress, depression, anxiety, and social dysfunction, on the other hand, might suggest that big families in Darfur provide a better chance to cope with distress and other mentioned mental health problems or that they are less prone to such problems.

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37 Although marriage might be a protective factor against psychiatric morbidity under normal
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39 living conditions, this might not be the case under challenging conditions such as armed
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41 conflicts or natural disasters where married IDPs are expected to shoulder more responsibility
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43 for their family members in terms of providing security, refuge, and food.

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45 The tendency of IDP's in Nyala camps to be more prone to higher general distress, somatic
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47 symptoms, anxiety, and social dysfunction may be attributed to the miserable living conditions
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49 in Seraif and Utash camps, around Nyala town, compared to conditions in Abu shoak camp,
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51 around Fasher town. Utash camp is extremely crowded and some of its inhabitants received no

Deleted: Finding married participants in our study to have higher levels of distress, compared to single ones, does not support the results of Roberto, Chaaya, Fares, and Abi Khirs (2006) which showed that single participants scored higher on psychological distress measured by the General Health Questionnaire. This result also contradicts the findings of Hamid (submitted) which showed raised levels of distress, depression and social anxiety among married participants. However, the conditions under which IDPs are found are not comparable to normal conditions under which Hamid's sample lived. The association of being married with more distress, anxiety and social dysfunction might suggest that married IDPs find themselves under more pressure as they shoulder the moral and social responsibility to protect their family members against various threats and dangers. It may also be more difficult for married IDPs to form new social networks than the younger non-married ones.

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3 food supplies. During our presence in Seraif camp we heard gun shooting around and witnessed
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5 some soldiers in alert positions.

6 Limitations

7 The cut-off point method may not be the ideal way of diagnosing PTSD in victims.

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9 Alternatively the DSM-IV diagnostic method for PTSD could be used to increase the accuracy
10 of diagnosing victims. Another limitation is that F ratio of the DSM-IV PTSD diagnosis has not
11 been assessed in the present study. Hence, the tendency of some respondents to overestimate
12 prevalence of symptoms is not controlled. A further possible limitation is the use of cut-off
13 point of 9 with the General Health Questionnaire. Using a higher cut-off point will undoubtedly
14 lower the prevalence rate of distress. The descriptive nature of the present study represents
15 another limitation. More focused could be directed towards intervention studies rather than
16 descriptive ones.

27 **Conclusion and implications**

28
29
30 This is the first field study focusing on mental health problems encountering IDPs in Darfur
31 following the armed conflict that started in 2003. The study was conducted in three IDP camps
32 located in north and south Darfur states. It represents an attempt to add to understanding of war
33 victims' mental health. Our study reflects the wide spread prevalence of mental health problems
34 among IDPs in Darfur. Three factors might affect the dissatisfaction of IDPs with living
35 conditions inside the camps, that is, i) lack of employment, ii) unsuitability of food items, and
36 iii) lack of security around camps.

37
38 PTSD and general health distress were highly prevalent among Darfurian IDPs, in particular,
39 those who were displaced in 2003. IDPs in Nyala town experienced more health problems than
40 those in Fashir town. This can be attributed to the relatively better living conditions inside IDPs
41 camp around Fashir town.

Deleted: Lack of security was the sole reason for internally displacement in Darfur.

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Implications: Displacement and war experience were major factors endangering IDPs' mental health. Results of this study imply that psychological support services should be among the prime relief services provided by aid agencies. They also imply that living conditions inside camps need to be improved and security should be provided or enforced.

In Darfur case, most IDPs have been staying in the camps for more than two years. Hence, future research may need to investigate post displacement factors that might negatively influence mental health. Examples of such factors are unemployment, loss of social network and support, dependency on relief aid. There is also a need to focus on vulnerable groups of IDPs such as children, women, and the elderly.

Deleted: Future research needs

Deleted: to use longitudinal designs to investigate causality and monitor acute and severe mental health problems in Darfurian IDPs.

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Table 1: Percentages of IDPs with PTSD symptoms versus non-PTSD symptoms (N=425)

DSM-IV Symptom cluster	Non-symptomatic (%)	Symptomatic (%)
Criterion B		
Persistent re-experiencing of the traumatic event:		
Recurrent distressing recollections of the event	12.5	87.5
Recurrent distressing dreams of the event	27.6	72.4
Acting or feeling as if events were recurring	26.4	73.6
Intense psychological distress at exposure to cues that resemble the event	21.4	78.6
Physiological reactivity on exposure to cues that resemble the event	36.9	63.1
Criterion C		
Persistent avoidance of stimuli associated with the trauma and numbing of general responsiveness:		
Efforts to avoid thoughts, feelings, or conversations associated with the trauma	38.1	61.9
Efforts to avoid activities, places, or people that arouse recollections of the trauma	37	63
Inability to recall an important aspect of trauma	56.8	43.2
Criterion D		
Persistent symptoms of increased arousal:		
Markedly diminished interest or participation in significant activities	44.3	55.7
Feeling of detachment or estrangement from others	56.6	43.4
Restricted range of affect	45.5	54.5
Sense of foreshortened future	44.9	55.1
Difficulty falling or staying asleep	34.7	65.3
Irritability or outbursts of anger	48.3	51.7
Difficulty concentrating	49.5	50.5
Hypervigilance	45.4	54.6
Exaggerated startle responses	52.7	47.3

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Table 2: The coefficients of correlation between different variables

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Variable	Distress	Somatic symptoms	Depression	Anxiety	Social Dysfunction	Arousal	Reexperiencing	Avoidance
Age	.09	.08	.00	.06	.12*	-.10*	-.08	-.13**
Distress	=	.85**	.76**	.91**	.87**	.59**	.49**	.08
Somatic symptoms	=	=	.47**	.71**	.67**	.43**	.40**	.07
Depression	=	=	=	.63**	.53**	.57**	.39**	.13**
Anxiety	=	=	=	=	.71**	.54**	.45**	.05
Social dysfunction	=	=	=	=	=	.51**	.42**	.06
Arousal	=	=	=	=	=	=	.57**	.28**
Re-experiencing	=	=	=	=	=	=	=	.21**
Avoidance	=	=	=	=	=	=	=	=

Note: * < .05 ** < .01

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Table2: The coefficients of correlation between different variables¶
Avoidance ... [1]

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Table2: The coefficients of correlation between different variables

<i>Variable</i>	PTSD	Arousal	Reexperiencing	Family members	Avoidance
<i>somatic symptoms</i>	.43**	.42**	.40**	-	-
<i>GHQ score</i>	.58**	.59**	.49**	.12*	-
<i>anxiety</i>	.52**	.54**	.45**	.12*	-
<i>Social dysfunction</i>	.49**	.51**	.42**	.10*	-
<i>age</i>	-.13**	-.11*	-	.18**	-.13**
<i>Depression</i>	.54**	.57**	.39**	-.11*	.32**

Note: * <0.05, ** <0.01

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For Peer Review Only

Dear Editor in-Chief

Thanks for the significant comments you have sent and forwarded to us. We are writing to state that we have made the required changes recommended by the reviewers as well as yourself. However, we would like to highlight some remarks raised by the reviewers, precisely, the second reviewer, the third one, and yourself.

The second reviewer recommended *the use of a clinical interview by trained raters to diagnose a psychiatric disorder*. The aim of our study is to survey and screen the internally displaced victims of Darfur conflict and to see how reported symptoms relate to some factors. Further, the setting and nature of camps doesn't provide required privacy for clinical interview. Therefore, we think the clinical interviewing do not suit our study.

The third reviewer suggested the use of cut-off points of 12/13 and 23/24. Numerous studies used different cut-off points ranging from 4 to 12/13 with the GHQ-28. The other scores 23/24 are usually used as maximum cut-off points with the GHQ-60. Therefore, we consider the use of a cut-off point of 9 to be suitable.

The Editor in-Chief recommended the use of more integrated approach for data testing such as using one ANOVA for all between subjects factors. We administered two way- ANOVA and integrated all between subject factors. However, this resulted in many methodological problems. For example, there were un-proportional number of subjects in different ANOVA cells. Some cells have less than 4 subjects in them, some have one subject, and others have more than thirty subjects. Therefore, it is not possible to meet the required normality of distribution.

Thanks for your time and consideration

Saif A. MUSA (Ph.D)
Abdalla A. Hamid (Ph.D)