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Original Article

Well-Being and Post-Traumatic Stress Disorder due to Natural and Man-Made Disasters on Adults

Muhammad Naveed Riaz[1], Sadia Malik[2], Sehrish Nawaz[3], Muhammad Akram Riaz[4], Naila Batool[5], Jawwad Muhammad Shujaat[6]
Department of Psychology, University of Sargodha[1,2,3], Sargodha, International Islamic University[4,6], Islamabad, University of Haripur[5], Haripur.

Present Address: Department of Psychology, University of Haripur[1], Haripur, University of Lahore[3], Sargodha Campus, Sargodha.

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Abstract

Background: Research has shown that man-made disasters effect people more severely than natural disasters. Females are affected more severely as compared to males in disasters. The most prominent effects are low well-being and high post traumatic stress disorder (PTSD).
Objectives: To compare the differences in well-being and PTSD among adults exposed to natural and man-made disasters.
Subjects and Methods: This cross-sectional survey was conducted on 150 young adults exposed to flood in Punjab (50), terrorism in KPK (50) and suicide bombing (terrorism) in Islamabad (50).
Results: Adults exposed to natural disaster like flood scored significantly higher on well-being as compared to adults exposed to man-made disaster like terrorism and suicide bombing. Post-traumatic stress disorder was more in terrorism exposed adults as compared to flood exposed adults. Within gender, females adapted better to man-made disasters.
Conclusion: Adults exposed to natural disaster adapt better than those exposed to man-made disaster and females adapt to man-made disasters better than men.
Key words: Well-being, PTSD, natural disaster, man-made disaster, male, female.

Introduction

Over the past 20 year almost 800 million people worldwide have been severely affected by natural disasters and other catastrophic incidents[1]. In Pakistan, people are under constant and severe stress and fear due to series of natural and manmade disasters. Disasters are divided in two distinct categories i.e. natural disasters and technological disasters. Natural disasters like flood and earthquake are considered as an act of God and the will of destiny that cannot be denied[2]. Technological disasters like terrorism and suicide bombing are regarded as man-made which occur due to human wickedness, hatefulness and bad blood[3]. Existing literature on disasters suggests that the young adults are at a greater risk to develop psychological problem, probably due to vulnerability in the transition phase through which adults are passing[4].

Corresponding Author:
Muhammad Naveed Riaz
Department of Psychology
University of Huripur, Haripur .
Email: m_naveed313@yahoo.com

Lazaratou et al.[4] investigated the effects of earthquake on survivors and found that survivor's wellbeing was negatively affected by such catastrophic events. Researchers therefore, started to look for after effects following both types of disasters as diverse response pattern was elicited by victims of natural and technological disasters[5]. Technological disasters create far more severe and long lasting pattern of social, economic, cultural and psychological impacts than natural disasters[6]. Terrorist incidents cause higher level of post traumatic stress disorder (PTSD) than natural disasters[6]. The reason behind less sever effect following natural disasters could be that people believe that natural disasters are caused by natural forces which are uncontrollable and man has no way except surrendering his will to these divine forces.

Gender studies showed that females suffer more after a natural disaster than males[4]. Psychiatric epidemiological survey of 203 refugee belonging to different countries revealed that females were more vulnerable to multiple psychiatric symptoms than males in the aftermath of disasters[7]. Following a terrorist attacks on World Trade Center, it was reported that adult college

going females had higher level of stress[8]. Emotional stress and coping in response to television news coverage of the 9/11 terrorist attacks by other workers showed that females experienced greater level of distress during media coverage of disasters[9].

Studies indicate that there is a great chance to adopting post traumatic stress disorder (PTSD) by people who are exposed to disaster and this disorder is very common after traumatic events[10]. Following 1995 terrorist bombing in Oklahoma City, a very high rate of PTSD was found in victims after the disaster[11]. The level of PTSD is high in those who are directly exposed the disaster[12-14] as compared to general public. The prevalence of PTSD is approximately 50 to 60% in first 2 years after disaster[15]. Survivor of World Trade Center presented with chronic symptoms such as depression and PTSD[16]. Research has reported that there are significant difference in gender in PTSD where a national household survey showed that 3.7% boys and 6.3% girls experienced PTSD[17]. Another survey after the 9/11/attack showed that woman were at greater risk for PTSD than men[18]. Women have been reported to be more vulnerable to anxiety[19] depression and PTSD[20]. Men and women differ in coping with disasters and therefore, they vary in vulnerability toward PTSD[21]. The present study aimed to examine the effect of natural and man-made disaster on mental health outcomes including PTSD, depression and well-being among two types of disaster victims. The study further examined the gender differences in PTSD, depression and well-being among natural and man-made disaster victims.

Subjects and Methods

The study population comprised of young adults exposed to natural disaster i.e. flood exposed and man-made disaster i.e. terrorism and suicide bombing. Flood exposed adults were selected from Punjab province, terrorism exposed adults were selected from KPK, and suicide bombing exposed adults were selected from Islamabad. Purposive sampling technique was used. All three type of disaster exposed adults were equally divided into 50 each with 50% being males and 50% females in each cohort.

Well-Being Questionnaire developed by Khan[22] which comprised of 10 items and five-point rating scale was used. Alpha reliability of the scale is computed as 0.74 among flood exposed, 0.73 among terrorism exposed and 0.77 among suicide bombing exposed adults. Post-Traumatic Stress Diagnostic Scale by Foa, Steketee, and Olasov-Rothbaum[23] comprising of 17 items and five-point rating scale was used. Alpha reliability of the scale is computed as 0.74 among flood exposed, 0.89 among terrorism exposed and 0.99 among suicide bombing exposed adults.

Results

Fifty adults exposed to floods, 50 exposed to terrorism and 50 exposed to suicide bombing were selected. Table-1 shows that there was significant difference in mean well-being [F (2, 147) = 29.48, p < .001] among disaster exposed adults. Flood exposed adults significantly scored higher on well-being as compared to terrorism exposed and suicide bombing exposed cases. Results indicates significant differences in mean PTSD [F (2, 147) = 29.48, p < .001] among disaster exposed cases. Terrorism exposed adults scored significantly higher on PTSD as compared to suicide bombing and flood exposed adults. Post-hoc comparisons indicate significant mean differences between three groups. (Table-1)

Table 1: Mean, standard deviation and F-values for adults on well-being and PTSD.

	Flood exposed (n = 50)		*Terrorism exposed (n = 50)*		*Suicide bombing exposed (n = 50)*				
Variables	*Mean*	*SD*	*Mean*	*SD*	*Mean*	*SD*	*F*	*p*	*Post- Hoc*
Well-being	36.62	6.19	35.86	6.73	28.02	6.13	28.03	.000	1>2>3
PTSD	48.26	9.31	52.22	10.60	39.86	12.41	16.93	.000	1<2>3

Table 2: Effect of disaster type and gender on well-being and PTSD.

	Psychological Well-being				*Post-Traumatic Stress Disorder*			
Source	*SS*	*df*	*MS*	*F*	*SS*	*df*	*MS*	*F*
Corrected Model	2674.46	5	534.89	13.91***	5369.02	5	1073.80	9.72*
Intercept	168337.50	1	168337.50	4377.90***	328255.26	1	328255.26	2970.88*
Disaster type	2266.72	2	1133.36	29.48***	3983.52	2	1991.76	18.03*
Gender	156.06	1	156.06	4.06*	1273.12	1	1273.13	11.52*
Disaster x gender	251.68	2	125.84	3.27*	112.37	2	56.19	0.51
Error	5537.04	144	38.45		15910.72	144	110.49	
Total	176549.00	150			349535.00	150		
Corrected Total	8211.50	149			21279.74	149		

Table-2 indicates significant effect of disaster type [F (2, 149) = 29.48, $p < .001$], gender [F (1, 149) = 4.06, $p < .05$] and disaster type x gender [F (2, 149) = 3.72, $p < .05$] on well-being. Figure 1 shows that female adults exposed to flood, terrorism, and suicide bombing significantly scored higher on well-being as compared to male adults. For PTSD, there was significant effect of disaster type [F (2, 149) = 18.03, $p < .05$], gender [F (1, 149) = 11.52, $p < .05$] and non-significant effect of disaster type x gender [F (2, 149) = .51, $p > .05$]. Figure-1 shows that females exposed to flood, terrorism, and suicide bombing significantly scored higher on wellbeing as compared to male adults while diverse results were seen for PTSD (Figure-2).

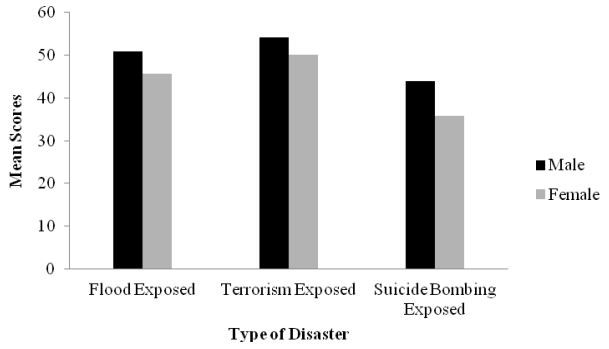

Figure 1: Mean scores of male and female on well-being with respect to disaster type.

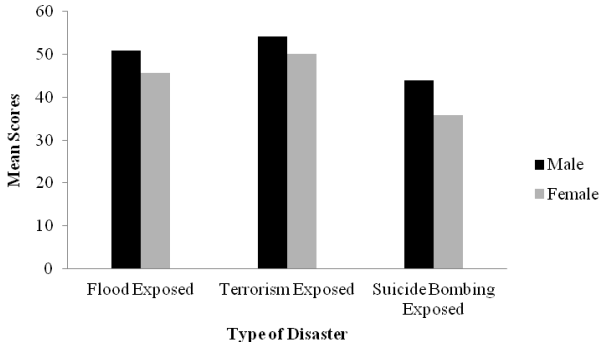

Figure 2: Mean scores of male and female on PTSD with respect to disasters type.

Discussion

The present study compared the state of wellbeing and PTSD in natural vs man made disasters in Pakistan and showed that adults exposed to natural disaster (flood) significantly score higher on well-being compared to man-made disasters (terrorism and suicide bombing). Same was reported by other workers[15,24,25]. It is reported that exposure to any kind of disaster threatens people's well being and people who exposed disasters are more vulnerable to various kinds of psychological problems in general[24], PTSD[15] and lack of wellbeing[25] in particular.

Natural disaster are considered an act of God and everyone accepts the will of destiny either willingly or unwillingly[2], therefore this consideration satisfies them and saves them from psychological problems to some extent[26].On the opposite side technological disasters are conflict prone and never ending type of disaster which possess plentiful miseries and sufferings, therefore, these are more threatening to victim's wellbeing[27].

Lower level of well-being seen in males in the present study is opposite to that reported by Lazaratou et al.[4] who reported that female suffer more problems in the aftermath of disasters than their opposite gender. This difference could be due to the reason that most male participants of the present study were not only exposed but were also the direct victims of the disasters as compared to female who were simply exposed to disasters.

Compared between terrorism exposed adults vs natural disaster on PTSD, the terrorism exposed adults scored significantly higher as compared to flood exposed adults indicating that the exposure to man made disaster results in more severe psychological effects as compared to exposure to natural disaster. The current findings are in line with findings from other research[28]. Studies have shown that disasters leave behind long lasting physiological and psychological destruction for all who have been directly or indirectly effected by disasters such as witnesses and rescue personnel[29].

Female have a two times greater possibility of having PTSD[30] but this was not true in the present study. The reason could be that in the present study, female participants were solely exposed whereas most male participants were either direct victims or more close to the incident of disaster. Evidence suggests that people who are close to disaster site are at higher risk of adopting PTSD then those who are distinct from disaster site[17].

The limitations of our study are that the data was collected from a single source through self-reported measures and therefore, vulnerable to variance. In future research, triangulation may be a better solution. The data was rather heterogeneous as female were solely exposed to disasters whereas most of the males were direct victims besides being exposed, leading to skewed findings in females.

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