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PSYCHOLOGICAL SQUELAE (PTSD) FOLLOWING FLOODING IN A NORTH CENTRAL STATE OF NIGERIA

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ABSTRACT: *In August 15, 2016, there was a heavy down pur leading to Ado river in Karu local government of Nasarawa State overflowing its banks resulting in flooding in which about 500 houses properties were destroyed and some residents lost their lives. The researchers found it necessary to assess the psychological sequelae associated with the flooding and how people were coping. Cross sectional descriptive design was sued to study 257 respondents selected through multistage sampling technique. Respondents were administered with PTSD checklist and coping styles apart from the demographic characteristics of respondents. Of the 257 respondents, the most frequent psychological sequelae (PSTD) were destruction of personal property (96.1%), being evaluated from the community (96%), being startled (88%). Higher percentage of male respondents put up active coping strategy while 48.5% adopted active coping styles. 85% of female respondents and 75.6% males turned to religious activities as coping styles.It was concluded that post-traumatic stress disorder should be considered anytime a natural disaster like flooding occurs. In such occasion mental health of the community members should be protected it was recommended that adequate channelization should be carried out and community member should be discouraged from dumping refuse in the camals.*

KEYWORDS : Psychological sequelae, flooding, north Central, PSTD

INTRODUCTION

Psychological sequelae could be explained in term of post –traumatic stress disorder (PTSD) which accompanied a severe and complex natural disasters it is precipitated by exposure to psychologically distressing events and is characterized by intrusive memories about the traumatic event, persistent avoidance of stimuli associated with the trauma and persistent symptoms of increased arousal (Hu et al, 2015) Death toll in the flooding that ravaged the Mararaba, Gurku, Kabiayi and Ado communities in the Karu Local Government area of Nasarawa State on Monday 15th August, 2016 had risen to 15 while scores were still missing. Also no fewer then 36 houses were swept away in the incident while properties worth millions of naira were destroyed with rice farms submerged in the water. The flooding came barely two weeks after the national emergency management Agency issued a warning alert over imminent flood disaster in some states including Nasarawa (Punch, August 19, 2016). Several

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psychological sequelea have been consist found following exposure to natural disaster is post-traumatic stress disorder (Breslau, Chase & Anthony 2002; Norris, 2005). The symptoms include trauma re-experiencing, emotional numbing and / or avoidance and exaggerated arouse (American Psychiatric Association, 2000).

Prevalence of PTSD: A systematic view which comprised of about 10,500 participants with PTSD demonstrated that between 18% and 50% of patients experienced a stable recovery within 3-7years, the remaining subjects either facing a recurrent or a more chronic course (MKorina, Wicherts, Lorobbrecht & Priebe, 2014). However, the development of chronic PTSD varies due to different types of trauma for example, follow-up studies in subjects with PTSD after oil platform, disasters, world trade centre disaster, Oklahoma city bombing, buffalo creek dam collapse, and war displayed a chronicty rate of PTSD within the range of 6.3 – 68.9%. chronic PTSD can persist for a long time for instance a previous study revealed that chronic PTSD can persist of over 27years (Boe, Holgersen & Holen 2011; Soo et al 2011; North, Pfefferbau, Kawasaki, Lee & Spitznagel, 2011; Green et al; 1990; Keenan, Stallman, Stallman & Sommer, 2003) flood is one of the most common and severe natural disasters (Liu et al, 2006; Paranjothy, et al 2007).

Gender and PTSD: In general gender has been shown to be associated with the development of PTSD, with women being more susceptible than men (Lee & Young 2001) and this trend has also been found in people exposed to disaster (Galea et all, 20105; 2008; Grievink et al, 2006 Norris e al; 2002; Tunstall et al; 2006). Age may also play a role in predicting psychological outcomes following disaster. Children and adolescents appear more at risk of developing psychological distress than adults (https://www.researchagate.net/publication/43136204, 05/09/16) Galea et al. (2005), found that neuroticism, obsessive traits and psychiatric co-morbidity were associated with disaster – related PTSD Norris et al (2002), found that pre-disaster psychiatric history was an individual determinate of psychological outcome following disasters. Other individual level predictors have included income level and socio-economic class (Norris et al, 2012) and level of social support available pre and post disaster (Acierono et al; 2007; Galea et al; 2008l La Greca, Silverman & Prinstein, 1996; Wang et al; 2000). Common mental disorders and more severe and enduring mental illness may come about following natural disasters such as flooding which account for over half all natural disaster (Liu et al; 2006).

In a study carried out by Hu et al (2015), of the 851 subjects, 57 died of old age, 121 migrated to other villages or countries, and 389 temporarily left to find work in other cities. There were more young subjects among the unreachable victims. The result of the research carried out by Karen et al (2007) showed that the mean age of respondents was 44 years (range 22-82) and the majority were females (64.9%) all respondents had at least a high school diploma and 20.3% han an annual household income <$40,000. A majority of respondents lived with a spouse of partner (65.7%) before Hurricane.

Coping with PSTD: Coping styles are seen as playing a significant part in the response to disasters (Korol, 1990; ranchman, 1980; Terr, 1989. Vernbery et al (1996), investigated the impact of children's coping on emotional distress following hurricane Andrew. Following inclusion of exposure variables, individual characteristic and social support, coping variables

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accounted for an additional 21% of the variance in PTSD. Higher use of coping strategies was associated with increased likelihood of PTSD, regardless sof the type of strategy employed. Disasters may initially elicit a variety of coping strategies both positive and negative, which can actually have a detrimental effect on mental health. As these events are usually novel experiences, individuals may have to learn how to cope with them successfully. Although least frequently used, blame/anger appeared to be the copping strategy that had the most negative effect on psychological outcome, suggesting that some coping strategies are more helpful than others (Mason et al 2010).Given that more lives were lost, properties destroyed homes destroyed and he constructions of few building on the natural and constructed flood plans, the risk of flooding may increase wit post-traumatic stress disorders or psychological sequelae when it occurs.

Goal of the Study: The goal of this study was to assess psychological sequelae/Post traumatic stress disorders and coping styles following the devastating effects of flooding.

SETTING

Research Design: The study adopted the descriptive research design. This design was adopted as the researchers did not manipulate any of the variables but were described as occurred in the study.

Sample size determination: The sample size was determined using Areope (2006) sample size determination calculation. It states that when one is not sure of the universe, the researcher could put the universe as 1000.

Therefore this formula was used

$$nf = \frac{n}{\frac{1+n}{N}}$$

Where 'nf' is desired sample size

'n' is sample size when population is >10,000

"N" the universe/population = 1000

$$= \frac{400}{\frac{1+400}{1000}}$$

$$= \frac{400}{1.4} = 286$$

Therefore the sample size was put at 286.

Sampling Technique: Multi stage sampling technique was use. The four communities affected by the flood were clustered out of which two were selected through balloting. The areas affected by the flood were isolated and the respondents were chosen through convenience sampling until the number f the sample size was achieved. This took a period of six days. However only 257 respondents returned thrice filled questionnaire through the researcher assistants.

Instrumentation

Apart from the demographic characteristics of respondent that were designed by the researches two other instrument were standardized instruments

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1. Demographic characteristics of the respondents – This is the section A of the instrument, consisted of five main items ranging from age, sex, marital status, level of education to employment status
2. Post traumatic stress disorders checklist (PCL). It was designed by weather et al (1993). It is an easily administered self-report rating scale for assessing the 17DSM-IV symptoms of PTSD. It has excellent test-rest reliability over a 2-3days period. Internal consistency is very high for each of the three groups of items correspondent to the DSM-IV symptom clusters as well as for the full 17 items scale. The PCL correlates strongly with other measures of PTSD, such as the Mississippi scale, the PK scale of the MMPI-2, and the impact of Events scale and also correlates moderately with level of combat exposure (Blanchard, Jones – Alexander, Bucly, forgeries, 1996, Cardove et al, 1995; Forbes, Creamer & Niddle 2001; Weathers et al 1993).
3. Section C – coping styles. The proponent of the instrument was carvers, however the Nigerian version shorter than that of carvers was designed by Prof. Asuzu. It consisted of 14 items using yes or no.

Data Collection Procedure

The standardized instruments consisting of 3 sections were sued to collect the necessary information from the respondents. There were 3 trained research assistants who were fluent in Hausa and English languages. They have been exposed to the instruments in order to covey accurate meaning of items n the instruments to the respondents. The questionnaires were administered to the respondents at the places of relocation with the promise to collect it back on the second day. Because of the devastating nature of the incident, the questionnaires were retrieved on the 3rd day. However only 257 were retrieved. The other respondents had travelled out of the communities without leaving the questionnaire to the chairman of the landlord association.

Data Entry/Analysis

Data were entered into Epi into 3.3.2, cleaned, and edited for inconsistencies before analysis. Descriptive statistics were used in the summary of the data, while inferential statistics were used to test for significant association and predictors. Researchers used to test for significant association and predictors. Researchers used frequencies, proportions and tables to summarize the data, baviarate analysis and multiple logistic regressions were performed to identity factor associated with the occurrence of PTSD. The chi-test was used in determining statistically significant associations, while factors with P-values <0.05 were included in the logistic regression model. Adjusted odds ration were determined with 95% confidence interval (CI) to identify predictors of PTSD.

Ethical Consideration

Ethical approval was obtained through the letter of introduction from the ministry of environment, Nasarawa state which was given to the caretaker chairman of the Local Government. The verbal approval was given by the chiefs and elders of the communities. The written consents of the respondents were obtained.

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RESULTS

Table 1: Demographic characteristics of Respondents

	Variables	Frequency (N)	Percentage %
1.	Gender		
	Male	123	47.9
	Female	134	52.1
	Total	257	100%
2.	Age		
	18-27	50	01.9
	28-37	51	02
	38-47	53	02.1
	48-57	30	01.2
	58-67	25	0.97
	68-77	15	0.58
	78-87	19	0.74
	88 and above	15	0.58
3.	Religion		
	Islam	207	80.5
	Christianity	50	19.5
	Total	257	100%
4.	Marital status		
	Married	154	59.7
	Widow	53	20.5
	Single	35	13.5
	Divorce	11	04.3
	Separated	04	01.6
	Total	257	100
5.	Level of Education		
	Quranic	101	39.3
	Primary	68	26.5
	Secondary	50	19.5
	Tertiary	07	02.7
	None	31	12.1
	Total	257	100
6.	Employment status		
	Unemployed	176	68.5
	Employed	65	25.3
	Students	10	03.9
	Retiree	06	02.3
	Total	257	100

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Table 1 above showed that 52.1% (134) were females while 47.9% (123) were males. Majority of the respondents were Muslims (80.5%), equally above average were married (59.7%); 39.3% of respondents had Quranic Education while 2.7% had tertiary education. In terms of age ranged between 18 with many of the respondents were between the ages of the workforce.

Table 2: Response to PTSD check list (civilian version PCL-C

s/n	Variable	Number	Percent	95% confidence level
1.	Repeated disturbing memories, thoughts or images of a stressful experience from the past	247	96.1	93.1-98.1
2.	Repeated disturbing dreams f a stressful experience from the past	247	96.1	92.5-97.9
3.	Suddenly acting or felling as if a stressful experience were happening again	246	95.7	92.5-97.8
4.	Felling very upset when something reminded you of a stressful experience from the past	239	92.6	88.7-95.5
5.	Having physical reactions (e.g heart pounding, troubled breathing, or sweating when something reminded of a stressful experience from the past	227	88.0	83.4-91.7
6.	Avoid thinking about or talking about a stressful experience from the past or avoid feelings related to it	224	86.8	82.1-90.7
7.	Avoid activities or situation because they remind you of a stressful experience from the past	215	83.7	78.6-88.0
8.	Trouble remembering important parts of a stressful experience from the past?	180	69.8	62.8-75.3
9.	Loss of interest in things that you used to enjoy	177	66.9	62.8.74.5
10.	Feeling distant or cut off from other people?	176	68.1	62.0-73.7
11.	Feeling emotionally number or being unable to have loving feelings for those close to you?5	165	64.2	58.0-70.1
12.	Feeling as if your future will somehow be cut short?	154	59.9	53.7-66.0
13.	Trouble falling asleep	150	58.4	62.1-64.5
14.	Felling irritable or having angry outbursts	149	58.0	51.7-64.1
15.	Having difficulty concentrating	118	45.7	39.5-52.0
16.	Being super alert or watchful n guard	101	39.1	33.2-45.4
17.	Feeling jumpy or easily startled	100	38.8	32.8-45.0
18.	Feeling guilty on the building construction	86	33.3	27.6- 39.4
19.	Developing apprehension of rainfall	04	1.7	04.2

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Table 3: Gender and Traumatic Events following flooding

s/n	Variable	N	%	N	%	Confidence interval 95%	p.value
1.	Super alert	27	26.7	74	73.3	0.2(0.1-0.3)	<0.000
2.	Witness death of family	76	43.4	99	56.6	0.3(0.2 -0.6)	<0.000
3.	Physical injury	44	37.3	74	62.7	0.3(0.2 -0.6)	<0.000
4.	Easily startled	79	44.6	98	55.4	0.4(0.2-0.7)	<0.001
5.	Lack of food	39	39.0	61	61.0	0.4(0.3-0.7)	<0.001
6.	Loved one disappearing	32	37.2	54	62.8	0.4(0.2-0.7)	<0.001
7.	Stolen of possessions	68	44.2	86	55.8	0.5(03-08)	0.003
8.	Without shelter	79	47.9	86	52.1	0.6(0.4-1.1)	0.01
9.	Ill health	118	54.9	97	45.1	2.0(1.0-4.0)	0.05
10.	Lost properly	131	53.3	115	46.7	3.0 (0.8 – 11.7)	0.09
11.	Evaluated from town	124	51.0	121	49.0	0.4(0.1-1.5)	0.2
12.	Separation from family	89	49.4	91	50.6	0.7(0.4-1.2)	0.2
13.	Destruction of personal properties	127	51.4	120	48.6	0.5(0.1-1.8)	0.3
14.	Shortage of Clothing	74	49.3	76	50.7	0.8(0.5-1.3)	0.4
15.	Emotionally disturbed	116	51.1	111	48.9	0.8(0.4-1.6)	0.5
16.	Shortage of medicine	79	53.0	70	47.0	1.1(0.7-1.9)	0.6
17.	Separated from the loved ones	125	52.3	114	47.7	1.2(0.5-3.1)	0.7
18.	Death of family member	117	52.2	107	47.8	1.1(0.5-2.2)	0.8
19.	Feeling f distance or cut off from other	02	50.0	02	50.0	0.8(0.1-5.7)	0.8

Table 4: Coping Styles

s/n	Variables	Yes	%	No	%	Yes	%	No	%
1.	Active coping	111	90.2	12	09.6	65	48.5	69	51.5
2.	Planning	35	28.5	88	71.5	75	56.0	59	44.0
3.	Suppression of competing activities	77	62.6	46	37.4	102	76.1	32	23.9
4.	Restraint coping	30	24.4	93	75.6	78	58.2	56	41.8
5.	Seeking social support (instrumental)	95	77.2	28	22.8	111	82.8	12	09.0
6.	Seeking social support (Emotional)	102	82.9	21	17.1	112	83.6	22	16.4
7.		98	74.8	25	20.3	73	54.5	61	45.5
8.	Restraint coping	90	73.2	33	26.8	100	74.6	34	25.4
9.	Acceptance	111	90.2	12	9.8	79	59	55	41.0
10.	Turning on religion	93	75.6	30	24.4	114	85.1	20	14.9
11.	Focus/venting of emotions	87	70.7	36	29.3	103	76.9	31	23.1
12.	Denial	50	40.7	73	59\.3	112	83.6	22	16.4
13.	Behavioural disengagement	99	80.5	24	19.5	101	75.4	33	24.6
14.	Mental disengagement	87	70.7	36	29.3	97	72.4	37	27.6
15.	Alcohol/drug disengagement	91	74.0	32	26.0	55	41.0	79	59.0

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In table 1,a total of 257 respondents were studied. The mean age of the respondents was 38.7 years (SD=15.2years) with a range of 18-95years. The most traumatic events were destruction of personal properties and evacuation from their town/villages, 96.1% and 96% respectively. Equally significant percentage of respondent were startled (88%) 87% reported the death of a family member while 84% experienced ill health. The exposure of female and male respondents exposed to the traumatic events showed significant variations. Out of the respondents that experienced super alert, according to Table 3, only 27% females. Amongst the respondents that witnessed the death of family members, less than half (43%) were females (0.3, with the confidence internal of 0.2-0.6; $p<0.000$) and only 37% of females had physical injury (0.3, confidence interval of 0.2 – 0.6; $p<0.000$). among the respondents that experience startled, 45% were females (0.4, with the confidence level of 0.2-0.7 $p<0.001$). other traumatic events that were significantly less to females were lack of foods (04, confidence level of 0.3 – 0.7, $p< 0.0001$), disappearance of loved ones (0.4, 0.2-0.7; $p<0.001$, having personal belonging being stolen 0.5, 0.3 – 0.8; $p= 0.0003$), and being without shelter (0.6, 0.4 – 1.1, $p=0.01$). the only psycho-trauma which more females were exposed was ill health (2.0, 1.0-4.0; $p=0.05$).

In table 4, with coping strategies adopted by respondents, males respondents expressed ability for active coping (90%) seeking for social support (77.2%), acceptance of reality 90.2% 75.6% increased their religious activities, 70.7% would vent their emotion while 74% indulged in alcohol consumption. For female respondents in terms of coping 76.1% suppressed competing activities, 82.8% solicited for social support, 83.6% denied the reality of the situation while 72.4% head mental disengagement and 75.1 had behavioural disengagement.

DISCUSSION

In this research, it was evident that there were serious psychological sequelae (PSTD) associated with flooding which included evacuation from the town, easily startled, destruction of personal properties, death of family member, suffering from ill health those finding were congruent with the findings of Brestau, chase and Anthony (2002), Norms (2005), Galea et al (2005), and Liu et al (2006) who fumed cases of neuroticism, obsessive traits and psychiatric association (2006) when they posted that social economic of people exposed to natural disasters were affected and even some of them would loose their jobs and they have to look for jobs elsewhere.
This study showed that majority of the respondents were females, this finding corroborated the findings of Galea et al (2005, 2008); Lee and Young (2001); Grievink et al (2006) and Tunstatt et all (2006) who opined that females are more prone to stress disorders when they are exposed to natural disaster.

CONCLUSION

Exposure to flooding was associated with increased risk of psychological sequelae. Participants who experienced that most severe flooding and had to vacate their homes were approximately twice as like lay to meet the criteria for PTSD. It is not clear whether the increased likelihood of psychological symptoms is a result of exposure to the disaster of relocation itself.

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RECOMMENDATION

Considering the number of respondents it was recommended that the research should be carried out on higher number of respondents,

LIMITATION

The number of respondent seems to be smaller considering the normality of the flooding

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