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(Citation)
Disaster Medicine and Public Health Preparedness,15(3):344-351

(Issue Date)
2020-04-27

(Resource Type)
journal article

(Version)
Accepted Manuscript

Long-lasting effects of the 2013 Yolanda Typhoon on overall health of mothers and children

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Long-lasting effects of Yolanda on MCH

Acknowledgement

This study was financially supported by Research Center Urban Safety and Security Kobe University (2017, L3.TAP12). The authors declare that there is no conflict of interest. The authors also thank the research assistants for the devotion during the data collection and all the study participants for their kind cooperation.

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Abstract

Objective: Three years after the 2013 Yolanda Typhoon, this study sought to determine the factors associated with the stress of the affected mothers and the health of the children on Leyte island, and the preparedness of the community to mitigate future potential disasters.

Methods: Three hundred mothers with children from 0–7 years old were selected through convenience sampling, structured interviews conducted using the Hurricane-Related Traumatic Experiences questionnaire and the PTSD Checklist 5 (PCL5), and the children's weights and heights were measured.

Results: The provisional PTSD prevalence was found to be 53.3% three years after Yolanda. The multiple regression analysis with multiple imputation for the missing values found that housing and childcare attitudes were significantly associated with preparedness.

Conclusion: This study concluded that living in multistoried houses was useful for disaster mitigation and that the caregiving responsibility for their children could be a disaster preparedness motivation for mothers.

Key words: typhoon, post-traumatic stress disorder, emergency preparedness, maternal and child health, multiple imputation method

INTRODUCTION

On the 6th of November 2013, the Republic of the Philippines was hit by a Category 5 Typhoon 'Yolanda', which was also known as 'Haiyan'. The typhoon, which had a central pressure of 858–884 hPa and an average wind speed of 315 kph, was the fourth strongest tropical cyclone to hit the Philippines since 1958, affected more than 3 million families and resulted in 6,300 deaths, 28,688 injured and 1062 missing[1].

The disasters triggered by natural hazards and the after effects have been found to result in post-traumatic stress disorder (PTSD)[2] in victims, with the prevalence ranging from 5% to 60% in the first 1–2 years[2–4]. Some studies have concluded that women have a higher post-disaster risk of developing PTSD symptoms than men because of biological reasons and their social status[3,5–7]. Pregnant women, in particular, have been found to be at serious risk due to anxiety about their pregnancy and the health issues suffered when appropriate medical services, antenatal care and public health services were not available[8]. For example, it was found that after Hurricane Katrina in the United States, pregnant women who had been exposed to more than three severe events during the hurricane had an increased risk of PTSD and depression[9] and post-disaster maternal psychological distress was significantly increased[10].

Other studies have also found that the prenatal maternal stress (PNMS) and parental stress in the post-disaster period affects both the mother's and the baby's physical and mental health. For example, it has been found that PNMS was negatively associated with functional play development, language and intellectual functioning in two-year-old childrens[11] and strongly associated with their body composition[12,13] and that parent's post-traumatic stress symptoms were related to their children's general psychological stress.[14]

Appropriate household emergency preparedness is one of the most effective ways to reduce the disaster damage[15]. Kohn et al. reported that a higher perceived risk contributed to an increase in personal preparedness activities; however, the depth of psychological distress following a disaster was not found to have a clear link with an increase in disaster preparedness activities[16]. Unfortunately, after Typhoon Yolanda, many pregnant women were faced with acute food shortages and a lack of safe drinking water and clothes[8].

Therefore, to ensure the health of the community, it is vital to assess the long-term effects of Typhoon Yolanda on maternal and child health and determine the household disaster preparedness of the females who take care of children, the elderly and the sick. To this end, this study, therefore, sought to assess the current mental health of mothers, specific factors associated with maternal stress, the current state of children's physical development and the mitigation preparedness related to potential future disasters in Tacloban, the Philippines, three years after Typhoon Yolanda.

METHODS

Study site

The study was conducted on Leyte Island in the Eastern Visayas in Region VIII, which is located between Cebu Island and Samar Island. Tacloban is the capital of Leyte province, which has 42 municipalities and a population of approximately 1.96 million in 2015[17]. The Philippine ranked the fourth in countries most affected by extreme weather events from 1998 to 2017 and the third among all of the countries with the highest risks worldwide[18]. Hydro-meteorological events including Floods and storms were occupied more than 80% of natural hazard in the Philippines during the last half-century[18]. Eastern Visayas is composed three main islands which are Leyte, Samar and Biliran and directly faces the Pacific Oceas[19]. The sea and island water bring people to rich sources of salt and marine products[19]. At the time of typhoon Yolanda, approximately 93% of all the deaths due to the natural

hazard, primarily caused because of drowning and trauma following storm surges[1], occurred in region VIII, with 92% being on Leyte island.

Study design

This was a cross-sectional study conducted by employing structured interviews from the 1st January to 25th January,2017.

Study participants and data collection

Mothers and children were recruited by convenience sampling. The criteria included were mothers with children between 0 and 7 years old who had experienced Typhoon Yolanda. In fact, the first author and the research assistant visited a target house introduced by one of research assistant in Barangay 5A and conducted interviews after procuring informed consent and measuring weight and height of children. Simultaneously, the other research assistant also visited the neighbours and interviewed and measured following the same procedure. The structured interviews were conducted in Waray by native Waray-speaking research assistants. The children's weight and height were recorded by a digital scale and a measuring tape. Their growth was evaluated using the Z-scores of the WHO's growth standard[20]. In case the children were not at home, such homes were visited again to procure the weight and height measurements. When we visited as many houses as possible in a one Barangay, we moved to different Barangay using networks of friend and repeated the same processes until reached 300 participants in total. Consequently, we could get the participants from Barangays 1 ,4, 5, 5A, 8, 8A, 56, 79, 83A, 83C, 97 and 101 in Tacloban.

Tool development

The questionnaires were developed on the basis of standard tools described below, and other socioeconomic factors were assessed using previously validated questionnaires.

Post-traumatic disorder

The PTSD Checklist 5 (PCL-5), which has been widely used to measure PTSD, was adopted[21]. In a previous study in Leyte province after Yolanda, the Cronbach's alpha was 0.93 and the scale composite reliability rho was 0.94[22]. PTSD prevalence was judged to be provisional PTSD on the basis of the DSM-V[21], and the total PCL-5 score was employed for the multiple regression analysis to investigate the risk factors associated with increased PTSD.

Hurricane-Related Traumatic experiences

The Hurricane-Related Traumatic Experiences questionnaire (HURTE) was developed by Vernberg et al. to measure HURTEs for children after hurricane Andrew [23]. It originally had three items for perceived life threats (1 question), life-threatening experiences (6 questions) and loss-disruption experiences (10 questions). Two questions were deleted from the loss-disruption item because of a lack of fit, and 'your parents' were changed to 'you and your partner'. One question was also added about whether any family members had died.

Disaster preparedness

Three question items for older people and their caregivers[24] were taken from a study conducted after the Great East Japan Earthquake for which the words 'care recipient' were changed to 'family'.

Data analysis

Descriptive statistics were calculated using raw data by R software version 3.6.0[25]. As the two questions related to pets in HURTE had missing data (116 and 121), the raw data distribution was examined and question meanings re-considered, after which it was decided to exclude these from the analyses because of possible participant misunderstanding. After this procedure, there were still 217 missing values (10.3%) for the 70 variables; that is, each variable included 0 to 24 (8%) missing records. To ensure the effective use of the data, before the further multiple regression analyses, a multiple imputation method was applied to create 1000 datasets, for which the estimated coefficients were integrated, and the multiple imputation conducted in R software and Amelia II version 1.7.5 package[26]. The results were found to be statistically significant for $p < 0.05$.

Cronbach's alpha was used to assess the reliability of PCL-5, and a t-test and an analysis of variance (ANOVA) were conducted to examine the factorial relationships between the demographic data, the maternal and child health outcomes, the PCL-5, the HURTE and disaster preparedness. The related HURTE, disaster preparedness and PCL-5 factors were then analysed using logistic regression and multiple regression analyses, with the Nagelkerke's R-squared or adjusted R-squared being used as the goodness of fit indicator.

Ethical considerations

This study was ethically approved by the ethics committee of Kobe University Graduate School of Health Sciences (approval number = 560). Written informed consent from each participant was obtained before the interviews.

RESULTS

General information

Demographic data and socioeconomic status

As shown in Table 1, most mothers were in the 20s and 30s, and the children ranged in age from under 1 year old to 7 years old, 39.7% were married, and 54.0% of them were just living together. The education level of the mothers and their husbands/partners were as follows: elementary school (23.1%, 34.8%), high school (53.1%, 44.9%) and university (23.8%, 20.3%); therefore, most mothers had higher education levels than their husbands/partners. Household income in 95% of participant households was below the absolute poverty line (US$1.90 = 95PHP per day, n = 291). A majority of participant mothers were housewives, and 17.7% were self-employed, such as owners of a 'Sari–sari store'. Five husbands/partners did not work and 54.7% of husbands/partners worked in temporary jobs. More than 85% of participants lived in their own houses: 26.6% in multistorey houses and about 50% in concrete houses.

Children's health

Among 0- to 5-year-old children, 47 (22.9%) children were underweight, and 1(0.5%) were overweight (n = 205), 86 (42.4%) children were stunted, and 113 (55.7%) were normal height (n = 203), 13.8% of the children had trouble sleeping and 11.4% had trouble eating. Children's health did not appear to be affected by their mother's PTSD.

HURTE

Perceived life threat

In all, 84.8% of women had perceived a life-threatening experience during Yolanda. The Z-scores for the children's heights were significantly different between the mothers who had a perceived life threat and the mothers who had not (t-test: df = 234.87, t = 2.015, p = 0.045).

Life-threatening experiences

The one-way ANOVA showed statistically significant effects for house ownership (F = 5.034, P = 0.025) and anxiety over the preparedness for the next disaster (F = 8.923, P = 0.003) for lofe-threatening experiences. The multiple regression model results indicated that there was a relatively larger anxiety contribution to life-threatening experiences than house ownership. The coefficients for house ownership remained negative, and anxiety over the preparedness for the next disaster remained positive (Table 2); however, the variance inflation factors were less than 10, and the adjusted R-square was only 0.042.

Loss-disruption experiences

Loss-disruption experiences were significantly affected by education (F = 5.658, P = 0.017), partner's education (F = 5.256, P = 0.022), marital status (F = 5.299, P = 0.021), house materials (F = 4.245, P = 0.039), number of storeys in households (F =15.096, P < 0.001), place of delivery (F = 0.103, P = 0.004), monthly expenses (F = 4.673, P = 0.031), number of children (F = 5.820, P = 0.016), evacuation plan (F = 6.474, P = 0.011) and missed vaccinations (F = 4.454, P = 0.035).However, most of these effects disappeared when the multiple regression model was applied (Table 3), with the adjusted R-squared being 0.144. The coefficients for number of storeys in households and place of delivery remained negative and those for evacuation plan remained positive. The order of contributions to loss-disruption experiences were evacuation plan, number of storeys in households and place of delivery.

Disaster preparedness

Personal and/or household disaster preparedness

In all, 21% of participants admitted that they were 'Not prepared at all', 26.3% said they were 'A little unprepared' and 52.7% said they were 'somewhat well prepared'. Disaster preparedness was found to be statistically significantly affected by house ownership (P = 0.012).

Evacuation plan

Only 56.5% of respondents had evacuation plans for the next disaster. Education level (P = 0.009), partner's education level (P = 0.001), marital status (P = 0.041), number of storeys in household (P < 0.001), place of antenatal care (P = 0.028), monthly expenses (P = 0.005), existence of problems during pregnancy (P = 0.005) and loss-disruption experiences (P = 0.011) were significantly different depending on whether there was an evacuation plan or not. The logistic regression analysis showed that the number of storeys in household and problems during pregnancy significantly affected whether there was an evacuation plan or not, with the odds ratios, respectively, being 2.30 and 3.38 (Table 4).

Anxiety about disaster preparedness

Most respondents had anxiety about their lack of preparedness with 48.3% being 'very worried', 40.7% being 'somewhat worried' and only 11% being 'not very worried'. The one-way ANOVA showed that during Yolanda, there were information problems (P = 0.001), pregnancy problems (P = 0.036), missing their children's vaccination (P = 0.003) and life-threatening experiences (P = 0.003), each of which was statistically significant different depending on the anxiety status. When the multiple regression analysis was applied, information problems, missed vaccinations and life-threatening experiences remained significant (Table 5). The coefficients for amount of information remained negative, and those for missed vaccinations and life-threatening experiences remained positive. The

order of standardised partial regression coefficients was life-threatening, amount of information and missed vaccinations.

Provisional PTSD and PCL-5

The reliability of the PCL-5 was confirmed by the Cronbach's alpha, which was 0.8903, and the provisional PTSD prevalence was measured at 53.3%. Consulting during pregnancy about their troubles ($P = 0.044$), mother's access to health facilities ($P = 0.022$), children's access to health facilities ($P = 0.008$), child's sleep disturbances ($P = 0.032$), anxiety about the preparedness for the next disaster ($P < 0.001$) and perceived life-threatening experiences ($P = 0.017$) were all found to be significantly affected by provisional PTSD. The multiple regression showed anxiety over preparedness had a statistically significant effect on the total PCL-5 score ($P < 0.001$; Table 6).

DISCUSSION

Income of participants

From the current study, even more than 95% of participants and their families lived under absolute poverty line but more than 20% of participants and their partners were graduated from high school. Comparing the results of National Demographic and Health Survey in 2017 (NDHS), male and female with the household population of age 6 and over from lowest wealth quintile completed high school were 8.8% and 11.3%, respectively[27]. Current study participants relatively high education level than NDHS in 2017. According to the Philippine Statistic Authority, a family of five monthly needed no less than PhP 10,481 (US$ 209.62) on an average, and this amount was essential to meet the basic food and other needs in a month during 2018[28]. It means at least PhP 69.43 (US$1.39) were necessary for fulfilling the basic need per person per day in the Philippines. The national poverty[29] line in the Philippines were lower than absolute poverty. Even if the national poverty line in the Philippines was considered, more than 80% of the participants could not get enough money for to fulfil their basic needs in this study. Such poverty circumstances might thereby explain the fact that more than half of participants' partners were engaged in temporary jobs. To make clear that the percentage of temporary job was the consequences of Typhoon Yolanda, the occupation before the Yolanda need to be asked in the future research.

Child health condition

The results of the National Nutrition Survey (NNS) in Eastern Visayas on Leyte Island revealed that the prevalence of stunted growth in children less than 5 years old had fallen from 44.5% in 1989 to 33.7% in 2011, and the prevalence for children less than 5 years old to be underweight had also fallen from 27.3% in 1998 to 20.2% in 2011. Compared to data on stunted growth from 2011, 2013 and to the current study, our data were the least favourable; the rates were 30.3% for the 2013 NNS and 42.3% in this study. For underweight, all scores were similar; however, the data in this study were the least favourable, i.e., 20% in NNS 2013 and 22.9% in this study. First, the existence of a certain relationship between malnutrition and poverty is obvious. Because most of our participants lived beneath the absolute poverty line, sampling bias and the fact of low observed variation may have affected the results. Second, the prevalence of stunting was more common than underweight for the entire period. There is a possibility that genetic factors played a role in the children's height because both NNS and this study followed the WHO standard[30]. Finally, there is a possibility that height measurements were distorted by sloped ground surfaces and the common tendency of the children of not remaining still; the children often cried and tried to escape while recording the measurements. However, underweight, an indication of acute malnutrition, revealed only a slight increase. This great achievement might be owing to the fact

that the GO/NGO efforts had been successful in maintaining and even improving child health in the area[31]. No relationship was found between mothers with provisional PTSD and child sleeping disturbances or child eating problems, which differed with the results of an earlier study in Indonesia[14]. However, a relationship was found between mothers who had perceived a life threat and the child Z height scores. Although the present study was unable to determine causality, this finding could support Stewart's theory[32] that a mother's distress affects children's growth.

Disaster circumstances and preparedness

Multiple regression analysis revealed that people who lived in their own house had lower life-threatening experiences, and people who lived in a multistorey house and had delivered their baby in a health facility had lower loss-disruption experiences. Regarding house ownership, living in their own houses leaded to take more precaution and kept people away from life-threating experiences. Additionally, people who had greater life-threatening and loss-disruption experiences felt more anxiety about their own disaster preparedness and had not prepared an evacuation plan. Despite the tragedy brought to Leyte Island by Typhoon Yolanda, 21% of the participants had made no preparations for the next disaster, and 43.5% had no evacuation plan. Previous studies have also highlighted a lack of household disaster preparedness[15,16,24], even when the people know its importance. These contradictory phenomena might also explain the presence of unrealistic optimism, a state that is characterised by the belief that one will experience fewer negative life events than others[33,34]. It was found that respondents who lived in multistorey houses and had had problems during pregnancy were more likely to have an evacuation plan, with odds between 2.30 and 3.38, respectively (Table 4), which suggests that mothers who faced problems during pregnancy might feel a greater responsibility towards their unborn child and therefore be more motivated to prepare for a future disaster; this finding is consistent with the findings of Levac et al., a study in the United States of America[15,35], who found that caregiving responsibilities towards children or older adults became a motivation for disaster preparedness.

This tendency was seen in the results of the multiple regression analysis for the factors affecting the range of loss-disruption experiences (Table 3) and disaster preparedness anxiety (Table 5). Mothers who faced experiences associated with their child's health might take action to reduce the damage from the disaster and be more cautious regarding disaster preparedness.

Mother's provisional PTSD

There was a 53.3% provisional PTSD prevalence in the current study, which was higher than in previous studies even conducted after Typhoon Yolanda, in which the highest score was 48.1% [2,3,36,3738]. This may have been because of the participant characteristics, such as being female, having more than one child and living under the absolute poverty line; all of which have been found to be significant risk factors for PTSD[2,3,6]. Further, the differences were observed in disaster magnitude and diagnose measurements. On the contrary, over half of the participants expressed doubt of the possibility of having PTSD. It is essential to support those victims with expert-approved methods, as well as by conducting follow-ups and study.

Different from previous studies[3,9], the total PCL-5 score, however, was found to be significantly associated with only anxiety over disaster preparedness in the multiple regression analysis. In other words, no other risk factors for the development of PTSD were found in this study (Table 6). As mentioned above, the participants in this study had quite similar backgrounds, i.e., there was little variance leading to minor overall differences.

Limitations

Although some long-lasting effects of the typhoon disaster were found on maternal and child health, this study had several limitations. First, convenience sampling may not properly represent all mothers who experienced Typhoon Yolanda. Second, because this was a cross-sectional study, causality cannot be assumed. Third, in some questions which we aimed to ask participants about situation at the time of Yolanda (i.e. about their house), participants might misunderstand to answer current situation because we failed to specify temporality. Forth, although we used the PCL-5 to assess the participants provisional PTSD, it was not possible to diagnose it because we missed some items, such as the psychosocial symptoms. Finally, we may also have missed the potentially related PTSD factors due to the limited sample size. To follow up on these limitations, more detailed future research is needed.

CONCLUSION/RECOMMENDATION

Living in multistorey houses appeared to be important to mitigate typhoon disaster related experiences and having responsibility for children could be a key factor in making mothers pay attention to disaster preparedness. These findings could be beneficial for policymaking in flood- and hurricane-prone areas.

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Table 1 demographic data

Items		Person	%
Mother's age (n=296)	0 -19 years old	10	3.4
	20 - 29 years old	145	49.0
	30 - 39 years old	121	40.9
	40 years old -	20	6.8
Children's age (n=298)	0 years old	5	1.7
	1 years old	36	12.1
	2 years old	45	15.1
	3 years old	53	17.8
	4 years old	66	22.1
	5 years old	55	18.5
	6 years old	34	11.4
	7 years old	4	1.3
Mother's education level (n=294)	Elementary	68	23.1
	High school	156	53.1
	University	70	23.8
Partner's education level (n=276)	Elementary	96	34.8
	High school	124	44.9
	University	56	20.3
Monthly income per capita (n=291)	0 – 999 PHP	144	49.5
	1000 – 1999 PHP	105	36.1
	2000 – 2999 PHP	30	10.3
	3000 – 3999 PHP	10	3.4
	4000 PHP -	2	0.7
Monthly Expense per capita (n=292)	0 – 999 PHP	189	64.7
	1000 – 1999 PHP	77	26.4
	2000 – 2999 PHP	17	5.8
	3000 – 3999 PHP	7	2.4
	4000 PHP -	2	0.7
House ownership (n=300)	Temporary shelter	20	6.7
	Rental house	23	7.7
	Own house	257	85.7
House material (n=295)	Wood	116	39.3
	Wood and concrete	11	3.7
	Concrete	168	56.9
Number of storeys in households	1 storey	218	73.4
	2 storeys	79	26.6

Table 2The multiple regression analysis of Life-Threatening Experiences

Independent variables	Partial regression coefficient	Standard error	p value	Standardized partial regression coefficient
House ownership[1]	-0.218	0.108	0.044	-0.115
Anxiety over the preparedness for the next disaster [2]	0.247	0.088	0.005	0.161
Adjusted R squared	0.042			

House ownership[1]: 1.Temporary house 2.Rental house 3.Own houseore
Anxiety over the preparedness for the next disaster [2]: 1.Not very worried 2.Somewhat worried 3.Very worried

Table 3 The multiple regression analysis for Loss- Disruption Experiences

Independent variables	Partial regression coefficient	Standard error	p value	Standardized partial regression coefficient
Education[1]	-0.035	0.065	0.594	-0.036
Education (partner)[2]	0.017	0.064	0.788	0.019
Marital status[3]	0.133	0.070	0.059	0.115
House materials[4]	0.087	0.059	0.146	0.083
Number of storeys in households[5]	-0.342	0.142	0.016	-0.148
Place of delivery[6]	-0.069	0.030	0.021	-0.131
Monthly expense	<0.001	<0.001	0.204	-0.077
Number of children	0.196	0.103	0.058	0.116
Z score of children's height	-0.203	0.119	0.089	-0.099
Evacuation plan[7]	0.743	0.248	0.003	0.174
Adjusted R squared	0.144			

Education[1,2]: being enrolled 1.Elementary school 2. Junior high school 3.Senior high school 4:University and more
Marital status[3]: 1.Single 2.Separated 3.Widowed 4. Living together 5.Married
House materials[4]: 1.Wood 2. Wood and Concrete 3. Concrete
Number of storeys in households[5]: 1.1 storey 2. 2 storeys
Place of delivery[6]:
1.Home/Road 2.Brangay Health Station (BHS) 3.Rural Health Unit (RHU) 4.Midwifery Center 5.Private Clinic 6.Hospital
Evacuation plan[7]: 0. Don't have 1.Have

Table 4 The logistic regression analysis for Evacuation plan

Independent variables	Odds ratio	95% Confidence interval	p value
Education[1]	1.011	[0.759, 1.348]	0.938
Education(partner)[2]	1.166	[0.875, 1.554]	0.296
Cohabitation[3]	0.370	[0.104, 1.315]	0.125
Number of storeys in households [4]	2.300	[1.230, 4.300]	0.010

Place of Antenatal care[5]	1.065	[0.919, 1.234]	0.401
Monthly expense	1.000	[1.000, 1.000]	0.175
Problem during pregnancy[6]	3.383	[1.172, 9.765]	0.025
Family loss[7]	0.596	[0.316, 1.125]	0.111
Loss-Disruption Experiences[8]	0.847	[0.653, 1.100]	0.214
Nagelkerke's R squared	0.170		

Education[1,2]: being enrolled 1.Elementary school 2. Junior high school 3.Senior high school 4:University and more
Cohabitation[3]: 0.Separated 1.Living together
Number of storeys in households[4]: 1.1 storey 2. 2 storeys
Place of Antenatal Care (ANC)[5]: 1.BHS 2.RHU 3.Midwifery Center 4.Private Clinic 5.Hospital
Problem during pregnancy[6]: 0.Don't have 1. Have
Family Loss[7]: 0.Don't have 1. Have
Loss-Disruption Experiences[8]: The total score of Loss-Disruption Experiences in HURTE

Table 5 The multiple regression analysis for anxiety over the preparedness for the next disaster

Independent variables	Partial regression coefficient	Standard error	p value	standardized partial regression coefficient
Problem during pregnancy[1]	0.234	0.132	0.077	0.100
Number of information[2]	-0.117	0.044	0.008	-0.151
Missed vaccinations[3]	0.408	0.160	0.011	0.145
Life-Threatening Experiences[4]	0.103	0.036	0.005	0.159
Adjusted R squared	0.091			

Problem during pregnancy[1]: 0.Don't have 1. Have
Number of information[2]: The number of information sources during Yolanda
Missed vaccinations[3]: 0.Don't have 1. Have
Life-Threatening Experiences[4]: 0.Don't have 1. Have

Table 6 The multiple regression analysis for total score of PCL-5

Independent variables	Partial regression coefficient	Standard error	p value	Standardized partial regression coefficient
Consulting person during pregnancy[1]	1.183	0.604	0.051	0.108
Trouble of accessing to the health facilities[2]	0.787	3.695	0.832	0.018
Trouble of accessing to the health facilities (children)[3]	4.381	3.467	0.207	0.104
Child's sleep disturbance[4]	3.351	2.161	0.122	0.088
Perceived life threat experience[5]	3.780	2.032	0.064	0.103
Anxiety over the preparedness for the next disaster[6]	4.894	1.086	<0.001	0.249
Adjusted R squared	0.125			

Consulting person during pregnancy[1]:
1.Relatives 2.Husband 3.Hilot 4.Nurce 5.Midwife 6.Doctor 7.More than two medical stuffs
Trouble of accessing to the health facilities[2,3]:
In last 6 months, have you(your children) ever had the troubles of accessing the health facility? 0.Don't have 1. Have
Child's sleep disturbance[4]: In last 6 months, have you felt your children have any problems of sleep? 0.Don't have 1. Have
Perceived life threat experience[5]: The total number of Perceived life threat experience in HURTE
Anxiety over the preparedness for the next disaster[6]: 1.Not very worried 2.Somewhat worried 3.Very worried