

VULNERABILITY OF THE ROLE OF WOMEN IN DISASTER MANAGEMENT BASED ON PREPAREDNESS, RESPONSE, AND RECOVERY PHASES

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Abstract

The role of women in disaster management is currently underdeveloped in Zamboanga del Norte. This may be due to failure of women to get involve in disaster management particularly recognizing their significant role in the preparedness, response, and recovery phases. This study was conducted to determine the vulnerability of the role of women in disaster management based on preparedness, response, and recovery phases in Zamboanga del Norte, Dipolog and Dapitan Cities. Descriptive survey method of research was employed with the aid of questionnaire checklist which was administered to 373 members of the Local Women Organizations in the province. The study revealed that role of women in disaster management was intensely vulnerable in the areas along preparedness, response, and recovery phases. This necessitates that enhancement along preparedness phase is needed, more focus and understanding of the response phase is imperative, and redefining role during recovery period must be enforced to reduce vulnerability and build resilience of the role of women in the province.

Keywords and Phrases: *vulnerability, disaster management, preparedness, response, recovery*

Introduction

Emergency plans that specifically address the roles of women in disaster management are currently underdeveloped in the global scenario. Living conditions and inequalities are common situations increasing women's exposure and vulnerability to natural and anthropogenic hazards of many kinds. Local observation also revealed that women's intentions to mitigate known hazards are frequently undermined by structural and interpersonal barriers. This may be due to failure of women to get involve in disaster management particularly recognizing their significant role in the three phases, namely: preparedness, response, and recovery.

Warfield (2015) asserted that disaster management aims to reduce, or avoid, the potential losses from hazards, assure prompt and appropriate assistance to victims of disaster, and achieve rapid and effective recovery. This emphasizes that to reduce, or avoid, losses from hazards involves the preparedness phase; to assure prompt assistance to victims engages the response phase; and to achieve rapid and effective recovery engrosses the recovery phase. The United Nations International Strategy for Disaster



Reduction (ISDR) stressed that preparedness involves activities and measures taken in advance to ensure effective response and recovery to the impact of hazards (UNESCO, 2014a). Matsuura (2005) also pointed out that preparedness, response, and recovery are the keys to reducing the deadly effect of disasters.

However, United Nations Educational, Scientific and Cultural Organization (UNESCO, 2014b) averred that societies all over the world have developed specific sets of preparedness to avoid or mitigate the effects of natural disasters, but these are poorly documented and little understood. Matsuura (2005) also pointed out that preparedness, response, and recovery activities involving disastrous events have not been given priority. UNESCO (2014b) strongly stressed further that to mitigate the risks stemming from natural hazards, women at risk must be informed of dangers and the protective measures available, and well versed in the skills of prevention and resilience. Significantly, disaster management has served to highlight the importance of local and traditional knowledge in preparedness, response, and recovery phases in the region (Shaeffer, 2007), particularly the least women from threatened locations.

Along this context, the study was conducted to determine the role of women in disaster management based on preparedness, response, and recovery phases and estimate the vulnerability of the role of women in disaster management in the province of Zamboanga del Norte. The process anticipates to developing in the local marginalized groups of women, who are vulnerable to disastrous events, the disaster preparedness, response, and recovery activities. Estimating vulnerability of the role of women in disaster management establishes possible opportunities for improving the women's overall vulnerability in Zamboanga del Norte. In so doing, it is expected that finding of the study enforces and emphasizes the needs and roles of women in building a culture of disaster resilience in the province.

Methods and Materials

This study employed the descriptive survey method of research with the aid of a questionnaire checklist to find out the role of women in disaster management based on preparedness, response, and recovery phases as its main instrument.

The elected local women officials of the Local Women Organizations (LWO) were utilized as respondents of this study. Zamboanga del Norte comprises of two (2) cities of Dipolog with 21 barangays and Dapitan with 50 barangays. The province consists of twenty-five (25) municipalities with their corresponding barangays, namely: Baliguian – 17, Godod – 17, Gotalac – 33, Jose Dalman – 18, Kalawit – 14, Katipunan – 30, La Libertad – 13, Labason – 20, Leon T. Postigo – 18, Liloy – 37, Manukan – 22, Mutia – 16, Piñan – 22, Polanco – 30, Roxas – 31, Rizal – 22, Salug – 23, Osmeña – 39, Siayan – 22, Sibuco – 28, Sibutad – 16, Sindangan – 52, Siocon – 26, Sirawai – 34, and Tampilisan – 20. Respondents were obtained by the use of Sloven's Formula.

The local women officials as population of the study were comprised of 6,910. With the margin of error of 5 percent, 378 respondents were obtained. Stratified proportionate

random sampling was used in taking respondents from each municipality or city. The proportion was obtained by dividing 373 by 5,528 which yielded 0.076 rounded off to the nearest thousandths. The number of representatives from each municipality or city was then computed by getting the product of the proportion and the number of local women officials. The number of barangays corresponding to the number of representatives from each municipality or city was drawn using lottery method. From the selected barangay with ten (10) local women elected officials, one representative was taken using also the lottery method.

Frequency counting and percentage were used to quantify the role of women in disaster management based on preparedness, response, and recovery phases. Percent was calculated by getting the frequency of each category divided by the total number of cases.

Principal component analysis was employed to determine the coefficients of resilience of the respondents for the disaster preparedness, disaster response, disaster recovery, and the percent of variance of resilience. Resilience was obtained as follows:

$$R = c_1P + c_2Res + c_3Rec$$

where: R = Resilience

c_1 = Coefficient of resilience for preparedness

c_2 = Coefficient of resilience for Response

c_3 = Coefficient of resilience for Recovery

P = Preparedness

Res = Response

Rec = Recovery

Mean was used to determine the overall percent of resilience of the respondents and standard deviation was obtained to determine how far the overall percent of resilience deviate from the mean. Moreover, vulnerability is inversely related to disaster preparedness, disaster response, and disaster recovery. Respondents are vulnerable to the three phases, namely: preparedness, response, and recovery to the extent that they are not resilient to the phases. Hence, vulnerability indices of the respondents were calculated based on the formula:

$$V = 1 - R$$

where: V = Vulnerability index

R = Resilience

Mean was also used to determine the overall percent vulnerability indices of the respondents and standard deviation was obtained to determine how far the overall percent of vulnerability indices deviate from the mean.

Results

Preparedness phase involves the participation of women in disaster management to



reduce, or avoid, losses from hazards. This simply defines the role of women's involvement in the areas along managing the preparation period. Table 1 shows the role of women in disaster management along the preparedness phase. The table divulges that more than 50 percent of women were involved in education of the community in skills for use in the response phase and evacuation planning of vulnerable individuals and community. This means that women's community participation is active preparing for, or reacting to, disasters. This implies that women were concerned in analysis, decision-making, planning and programme implementation and they undertook spontaneously without the involvement of external agencies.

However, women's involvement in the testing of community disaster plans was least observed. In totality, approximately 30 percent of women were only involved in defining their role in disaster management along preparation phase. This means that the opportunities for women participation varied from place to place and at different points in the disaster-management cycle. This implies that a participatory approach to disaster-related activities should be promoted to achieve full safety of the most vulnerable women.

Table 1 Role of Women in Disaster Management along Preparedness Phase

Areas of Involvement of Women	Frequency	Percent
1. Practice of safety measures in the home	164	43.4
2. Education of the community in skills for use in the response phase	199	52.6
3. Identification of community resources	161	42.6
4. Preparation and implementation of family disaster plans	188	49.7
5. Participation in community disaster planning	168	44.4
6. Involvement in the testing of community disaster plans	73	19.3
7. Participation through women's groups in public awareness and information programs	144	38.1
8. Evacuation planning of vulnerable individuals and community groups	194	51.3
9. Learning construction skills to assist with the provision and maintenance of safe housing	173	45.8
10. Addressing in advance the needs of relief workers such as rest, food, etc.	135	35.7
Overall	116	30.7

On the other hand, response phase involves the participation of women in disaster management to assure prompt assistance to victims from hazards. This simply defines the role of women's participation in the areas along supervision during the response period. Presented in Table 2 is the role of women in disaster management along the response phase. A close look at the table, maintaining environmental health and

providing emotional support for community members were the most concerned among women in Zamboanga del Norte. This means that bulk of women in the province engaged in health promotion in response to disasters so as to reduce risk, increase resilience, and mitigate the impact of disasters on health. This implies that women played a significant role in community participation as basis of successful health promotion.

Unfortunately, however, women were least engaged in indentifying the needs and available resources in disaster management during the response period of the occurrence of disasters. This means that greater percentage of women were not particular on the assessment of target group needs which process is often called as needs assessments. This implies that, when hazards strike, women could not able to appropriately select content and methods in programme delivery, managing program delivery, and evaluating programme processes and outcomes since the process is not yet in place and better known by most women as part of their role in disaster management.

In totality, the table reveals that fewer percentage (21.7%) of women were particular in disaster management along the response period on the eventuality of disasters. This means that, during the response phase, it is expected that only handful of women focuses on meeting the basic needs of the affected until more permanent and sustainable solutions can be found. This may be attributed perhaps to the financial constraints that most women in the locality are experiencing which could hardly even sustain their personal necessities.

Table 2 Role of Women in Disaster Management along Response Phase

Areas of Involvement of Women	Frequency	Percent
1. Search and rescue	111	29.4
2. Shelter management	116	30.7
3. Maintaining environmental health	215	56.9
4. Solid and sewage proper disposal	85	22.5
5. Food safety	75	19.8
6. Identification of needs and available resources	82	21.7
7. Emergency feeding, clothing, etc.	128	33.9
8. Provision of first aid and appropriate referrals to other levels of health care	169	44.7
9. Care of vulnerable groups like the elderly and handicapped	141	37.3
10. Providing emotional support for community members	192	50.8
Overall	82	21.7

Shown in Table 3 is the role of women in disaster management along recovery phase. Recovery phase engages women to assure prompt assistance to victims. It can be viewed in the table that almost 60 percent of the respondents identified their important role towards items 2, 6, 7, and 8. However, an overall picture of the role of women in disaster management along recovery phase revealed that only about 40 percent of the



surveyed women identified recovery phase as part of their crucial role in disaster management. In the real scenario, recovery phase needs a collaborative partnership. Finding resources for disaster management requires a partnership among all levels of government and the private sector. Although, this allows women to contribute to emergency management solutions but the barrier is that most women under surveyed belonged to the underprivileged and marginalized groups of women in the province. Thus, managing disaster during recovery phase is not their priority.

Table 3 Role of Women in Disaster Management along Recovery Phase

Areas of Involvement of Women	Frequency	Percent
1. Support for the restoration of primary health care services	128	33.9
2. Re-afforestation and replanting of crops	224	59.3
3. Resettlement of disaster victims	156	41.3
4. Making provision for water storage facilities	128	33.9
5. Assisting with reconstruction of damaged buildings	195	51.6
6. Establishment of education facilities	216	57.1
7. Identifying and working with grassroots organization	225	59.5
8. Maximizing participation in focus group discussions to allow open exchange of ideas	219	57.9
9. Involvement in monitoring and evaluation of reconstruction	128	33.9
10. Participation in the financial recovery programs	164	43.4
Overall	142	37.6

The principal component is based on finding which variables are most strongly correlated with each component, that is, which of these numbers are large in magnitude and the farthest from zero in either positive or negative direction. In this study, a correlation/resilience value of above 0.5 is deemed important (Online Course, 2014).

Shown in Table 5 are the coefficients of resilience. The table shows that the first principal component was strongly correlated with response and preparedness phases. This means that response and preparedness phases among women varied together. This means further that the role of women along response phase increased due to the increased in their role along preparedness phase. Furthermore, the first principal component correlated most strongly with the role of women in response phase. This follows that women were resilient based on response phase and obtained higher role on response phase on the occurrence of hazards compared to their role along preparedness and recovery phases.

On the other hand, the second principal component showed increasing role of women in disaster management based on preparedness, response, and recovery phases. This means that there is still room for improvement of women's role in disaster management based on preparedness, response, and recovery phases on the occurrence of disasters.

Table 5 Coefficients of Resilience

Principal Components	Preparedness (P)	Response (Res)	Recovery (Rec)	% of Variance of Resilience
First	-. 0.563	- 0.613	- 0.555	68.8
Second	0.682	0.036	- 0.731	8.81

Presented in Table 6 is the resilience of the respondents. The table reveals that the role of women in disaster management was resilient to none of the areas of involvement of women along preparedness, response, and recovery phases. This means that the role of women in disaster management was not resilient to their involvement in the areas along preparedness, response, and recovery phases. This means further that women could not able to make progress easily and quickly when hazards, natural or anthropogenic, will be encountered by them.

Table 6 Resilience of Respondents

Principal Components	Mean	Standard Deviation
First	- 0.238	0.126
Second	- 0.015	0.069

Table 3 presents the vulnerability indices of the role of women in disaster management. A vulnerability index is a measure of the exposure of a population to the areas of involvement of women along preparedness, response, and recovery phases. The first and second principal components disclosed intensely vulnerable indices. Results mean that the role of women in disaster management under survey was intensely vulnerable to their involvement in the areas along preparedness, response, and recovery phases. This confirms to the above finding that the role of women in disaster management was vulnerable to the areas of involvement to the extent that they (women) were not resilient to them (areas of involvement).

Table 7 Vulnerability Indices of Respondents

Principal Components	Mean	Standard Deviation
First	1.238	0.126
Second	1.015	0.069

Discussion

The yearly worldwide damage resulting from natural and anthropogenic disasters gives grounds for concern. A single disastrous event can cause deaths, injuries, destroy crops and buildings, thus, totally disrupting the community life.



In many societies, women constitute more than fifty percent of the population and are a major human resource in socio-economic development (Tuballa, 2014 and Tizon, 2012). However, this resource can only be realized if women are involved and active in the development process (Warfield, 2015).

This study was centered around the need for women to relating to their involvement in disaster management within the context of development process in Zamboanga del Norte and the two (2) cities of Dipolog and Dapitan. The study identified the role of women in disaster management along preparedness, response, and recovery phases.

Preparedness measures among women are to achieve a level of readiness to respond to any emergency situations (Warfield, 2015). The disparity of the measures, however, is varying which resulted to non-logistical readiness among women to deal with disasters making their role in disaster management vulnerable along preparedness phase. It can be concluded that enhancement along this phase is needed by having well-defined mechanisms and procedures, rehearsals, developing long-term and short-term strategies, public education and building early warning systems so as to build resilience among women in the province. This necessitates further to take action of ensuring that strategic reserves of food, equipment, water, medicines and other essentials shall be maintained to combat the occurrence of catastrophes.

In similar vein, emergency response is to provide immediate assistance to maintain life, improve health, and support the morale of the affected population (Warfield, 2015). However, the role of women in disaster management along response phase is intensely vulnerable due to handful of women engages in disaster management along this phase. This needs, therefore, more focus and understanding of the role of women in disaster management along the response phase to meet the basic needs of women to build resilience in responding possible hazards to occur in the province.

Moreover, Warfield (2015) asserted that recovery phase pertains to capability of the affected population of undertaking a growing number of activities aimed at restoring their lives and the infrastructure that supports them. However, result of the study infers that the role of women in disaster management is vulnerable along recovery phase being not their priority. This construes that women have distinct point at which immediate relief changes into recovery and then into long-term sustainable development. Thus, women need to redefine their role in disaster management during the recovery period to enhance prevention and increase preparedness, thus reducing vulnerability. Most importantly, smooth transition from recovery to development is expected to build a strong resiliency of the role of women in disaster management.

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