

# Experiences of Nurses in the Implementation of Hospital Disaster Plan: A Phenomenological Study

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**Abstract**— The role of nurses in each phase of disaster management is regulated in the Hospital Disaster Plan (HDP) prepared by the hospital management. The experiences of nurses in handling disaster at various stages need to be explored. The aim of the study is to get description of nurses' experiences in HDP at PKU Muhammadiyah Bantul Hospital. This study was a qualitative study with a phenomenological approach. Five nurses who have been working for minimum five years and are involved in a disaster team were recruited. A semi-structured interview between 30 and 45 minutes was conducted. There were three emergent themes; those are the roles of nurses in preparedness and mitigation phase, the roles of nurses in disaster/emergency response phase and the roles of nurses in the development of collaborative networks in disaster management. The roles of nurses in running HDP programs were found to be good in terms of preparedness, mitigation, disaster response phases and collaborative network development. Strengthening the capacity of nurses must be continuously encouraged in running HDP programs.

**Keywords**—Role of nurse- Hospital Disaster Plan

## 1. INTRODUCTION

Disaster management has currently been ineffective due to the partial, sectorial, and less integrated paradigm of disaster management. Current disaster management is still currently focusing on the government's efforts limited to providing physical assistance and carried out only in the emergency response phase. The alteration of government system and the increasing involvement of non-governmental organizations in community activities require fundamental improvement in the disaster management system. A counseling of disaster preparedness calls for good cooperation between the central government and the regional government, even with the communities or areas prone to disasters. Indonesia is a disaster-prone country. Thus, preparedness is greatly important and must be established at each level of the groups in the community. Experiences show that destruction due to disasters can be dramatically reduced if all components are better prepared [1].

Hospitals, as health institutions, have an obligation to be prepared for all possibilities of what might happen when a disaster strikes by way of developing a system. The preparedness of hospitals is attainable provided that an organization of hospital disaster response is established, cooperation is built between a hospital and another party (ambulances, blood banks, public health offices, Red Cross Indonesia, media, other hospitals, etc.), and training

is given to the hospital workers in order to make them accustomed to the disaster plan and to enable them to implement the plans [2]. The preparation of disaster plans at all levels and components, including hospitals, must be performed functionally. HDP is designed not to be limited to medical emergency, but to cover all command system in the hospitals, health logistics, disaster nursing system, communication and telematics, as well as to cater the need for backup capacity in terms of facilities and human resources. Hospitals must play active roles in medical services when a disaster occurs as part of the Integrated Emergency Response System (IEMS) or is commonly called as SPGDT-B (*Sistem Penanggulangan Gawat Darurat Terpadu-Bencana*) in Indonesia. SPGDT-B provides a quick and precise system of handling disaster, starting from pre-hospital, inter (transportation) to intra-hospital services and specific referral systems.

The data 76 (92%) hospitals in Switzerland had a plan in case of mass casualty incidents, and 76 (93%) had a plan in case of accidents within the hospital itself. Hospitals experienced a lack of preparedness in certain situations: less than a third of the hospitals had specific plans for nuclear/radiological, biological, chemical, and burns (NRBC+B) patients: nuclear/radiological (14; 18%), biological (25; 31%), chemical (27; 34%), and burns (15; 49%), and 48 (61%) EDs had a decontamination area. Less than a quarter of hospitals had specific plans for the most vulnerable patients during disasters, such as the elderly (12; 15%) and children (19; 24%) [3].

The majority of nurses who had participated on training for disaster mitigation plans positively rated the organizational aspect of disaster management and its way of stimulating participatory opportunities<sup>5</sup>. They believed that the experiences of implementing disaster programs can be an effective strategy to motivate cooperative learning and can also serve as an anticipative step during disasters, which they are not able to understand from daily practices. Therefore, the nurses' experiences in disaster management at various stages are necessary to explore. This study is to obtain a clear picture of the significance of the program in hope of achieving a qualified exploration in high objectivity.

## 2. METHODS

This study was descriptive qualitative with a phenomenological approach [6]. The participants of the study were five nurses who worked in emergency departments and belonged to a team of nursing care<sup>7</sup>. The

participants were recruited through purposive sampling technique with the inclusive criterion of having joined a disaster team in a hospital for at least five years. The data were collected by conducting a semi-structured interview[7].

### 3. RESULTS

#### THE ROLES OF NURSES IN THE PHASE OF PREPAREDNESS AND DISASTER MITIGATION

##### I. THIS THEME IS COMPRISED OF SIX SUBTHEMES:

##### 1.1 The Initiators of Disaster Team

The results of the interview with the nurses as the initiators of disaster team in PKU Muhammadiyah Bantul Hospital showed that before the 2006 Yogyakarta earthquake, nurses together with doctors had initiated a disaster team called PKU Disaster Relief (PDR), which was later developed into becoming Disaster Medical Committee (DMC) by the Central Board of Muhammadiyah. Not only that, Central Board of Muhammadiyah also developed hospitals to become the disaster alert community network. The following is an excerpt of the interview:

*"... in PKU Bantul the disaster team had been formed before the earthquake struck Bantul. Coincidentally I ... initiated it with Doctor T ... at that time to form a team to handle disasters ..."* (Informant 1)

*"... for it had been initiated before, it was easy for us to unify our perception..."* (Informant 1)

##### 1.2 The role of nurses as members of a disaster management team

The results of interview with the nurses indicated that those who joined the disaster team had to be prepared at all times to give services during disasters for 24 hours.

The following are excerpts of the interview with the informants:

*"... we encouraged them to join the team and it can be said that they are reliable to manage the disaster both inside and outside the hospital."* (Informant 1)

*"... when the earthquake hit, I was not working because I had a night shift. At 10 in the morning I was called to rush to the hospital..."* (Informant 3)

Nurses as the members of the disaster team had to be prepared to respond to disasters not only happening inside the hospital, but also outside of the hospital. The following are the excerpts of the interview:

*"... we were also sent to the disaster area outside the hospital..."* (Informant 4)

*"... nurses were sent to Lombok three times..."* (Informant 4)

##### 1.3 The role of the nurses in running the village disaster preparedness program

Nurses had a role in fostering people, developing the facilities, and sharing knowledge and skills to build village disaster preparedness. It is hoped that when a disaster strikes, people are able to determine which victims are required to be sent to hospital and which are

not. Besides, the development of the village disaster preparedness can also prepare people to be volunteers when hospitals need them. The following are the excerpts of the interview:

*"Then we tried to improve the hospital capacity; then, the hospital received a program called CPDN Hospital Preparedness Community from the Central Board of Muhammadiyah. The hospital was the network of community disaster preparedness, so we had several villages with disaster preparedness. We prepared all the people, built the facilities, and transferred our knowledge to them, so we moved the emergency indirectly to the hospital, and we had network points that could recruit who were required to be taken to the hospital and who were not."* (Informant 1)

*"... in the previous program, we also had fostered areas such as Kretek and Srandakan. These two areas were developed to become tough villages. It was our hope when we developed the villages that the people would be ready to become hospital volunteers..."* (Informant 2)

##### 1.4 Planners

Nurses had a role in the process of preparing HDP. The plan included the human resource plan, consisting of the preparation of backup nurses during disasters, the selection of disaster team, and the improvement of capacity/competency of the hospital workers in handling disasters. These steps were mainly performed by the Disaster Medical Team (DMT) of PKU Muhammadiyah Bantul Hospital. Nurses were also involved in the preparation process of place mapping or sketching when disasters occurred at the hospital. They were also involved during the process of designing criteria for disaster recovery activation; based on the types of cases and the number of casualties, and the design of ambulances which were the aids from Japan after the 2006 earthquake. The following are the excerpts of the interview:

*"... we conducted a training program for them, they were trained about Emergency First Aid (EFA)..."* (Informant 2)

*"... we planned to implement it in the hospital if the ward had been built, but we checked the condition of the emergency rooms..."* (Informant 2)

*"There was a plan, for example if a number of accidents happen, the patients marked in red should be placed in the emergency room and the hallway, then those marked in yellow in the clinic, and the south are for those marked in green. The place of treatment has been determined since the plan has been arranged..."* (Informant 2)

*"We had already had a placement map when disaster occurs, both from inside and outside the hospital. It is discussed in our hospital disaster plan..."* (Informant 1)

*"We were asked to design the ambulances according to our need. Later, we needed to consult Japan for design."* (Informant 1)

### 1.5 Communicators

Nurses became communicators in the phase of disaster preparedness. Nurses had the most important role in giving services in emergency departments when admitting mass casualties. They needed to report to the director of medical services (DMS). DMS later coordinated with the chief director to immediately activate the disaster recovery plan at the hospital. The following are the excerpts of the interview:

*"... we simply needed to report to the districts and sub-districts, then they would coordinate with the central MDMC..."* (Informant 1)

*"... maybe we needed to communicate with them again, because there were too many of us in the emergency rooms..."* (Informant 3)

*"... some times the passengers of three buses from Tangerang suffered from poisoning. We activated our HDP. Since we lacked people, we reported this case to the DMS, DMS coordinated with the chief director, then DMS immediately activated the recovery disaster plan at the hospital..."* (Informant 1)

### 1.6 Coordinators

Nurses became coordinators in calculating the patient capacity, arranging the schedule for the team, and determining the team composition based on each team member's competence. The following are the excerpts of the interview:

*"The number of patients each room can accommodate had been calculated. Since 2012, we had made a contract with pharmacies about the supply. If a disaster happens, they must be ready to send the supply to us; they cannot say no..."* (Informant 1)

*"We made schedule for this month and we were divided into several teams. For example, team A has a shift in the first week, team B has a shift in the second week, so which team is in charge during a disaster depends on the schedule..."* (Informant 2)

### 1.7 Evaluators

Nurses acted as evaluators in hospital disaster plan, team evaluation, training programs, and the improvement of the hospital's human resources through disaster drills for the nurses. The following is the excerpt of the interview:

*"The standard of the evaluation had already been determined, so we just needed to use it to evaluate the team.... Whether the content was relevant or not, including the plan. It has changed a lot, so we were just trained since it is different now..."* (Informant 2)

## THE ROLES OF THE NURSES IN THE PHASE OF DISASTER RESPONSE

### II. THIS THEME IS SUPPORTED BY FIVE SUB-THEMES, NAMELY:

#### 1.1. Care providers

As care providers, nurses performed triage, needs assessment, and nursing care, such as performing life-saving on patients. The following is one of the interview results:

*"The model of triage we used last time was the red one. We put some patients outside, while the patients inside were all triaged red. Those who came to the hospital were handled immediately. The patients who were being infused and well taken care of were placed outside so that we could treat other patients..."* (Informant 3)

#### 1.2. Communicators

The role of nurses as communicators in disaster response based on the nurses' experiences was to communicate with the volunteers coming to the hospital and with the patients and families, and to make reports to the DMS based on the results of the needs assessment.

*"We have volunteer management, not everyone is allowed to enter. For example, in the 2006 earthquake, we rejected several medical specialists because we didn't need pediatricians, but we needed doctors who had the specialty of traumatic injuries. Because the patients suffered from fractures, we needed orthopedic trauma doctors and general surgeons..."* (Informant 1)

*"... at that time, the officials came, and because I was the oldest, I was asked to do assessment and report it to the DMS. I reported it although the methods were quite simple. We just needed to count the number of patients..."* (Informant 1)

#### 1.3. Coordinators

As coordinators in disaster response, the nurses were responsible for ensuring internal and external coordination. Internal coordination included the coordination in disaster preparedness team, the coordination related to the lack of staff, the logistic and financial coordination, and the coordination regarding the deployment of disaster preparedness team to hospitals. On the other hand, external coordination was the coordination between Muhammadiyah hospitals, PUSBANKES (help center for health care services), and professional organizations, such as PPNI, to support human resources.

*"... because we often met for coordination, we understood the processes quite well..."* (Informant 1)

*"Each of us was a shift coordinator. We were responsible for the lack of staff, but the head of the office was in charge in the mornings..."* (Informant 2)

*"... we often coordinated with the professional organizations; they were also asked to give contribution during disasters..."* (Informant 2)

#### 1.4. Liaison Officer

Nurses as liaison officers were responsible for ensuring the supply of medicines and consumables, such as infusion fluid and sewing thread, with the pharmacies. In addition, nurses also had to coordinate with other operational units to prepare logistics and human resources in the emergency response phase. The following are the results of the interview:

*"We had made a commitment with several pharmacies for the supplies to be prepared when a disaster happens or other occurrences that obstruct our access...."* (Informant 1)

*"We coordinated, so we communicated what we needed, such as staff, human resources, and logistics...."* (Informant 1)

#### 1.5. Leaders

In the disaster response phase, nurses acted as field managers and the motivating force within the disaster team.

*"... I was one of the members of the disaster team. I was a field manager, so I was responsible for what happened in the field...."* (Informant 2)

*"... The motivating force was the nurses ...."* (Informant 2)

### THE ROLES OF NURSES IN THE DEVELOPMENT OF COLLABORATIVE NETWORKS TO RESPOND TO DISASTERS

#### III. THIS THEME IS SUPPORTED BY TWO SUB-THEMES, NAMELY:

##### 1.1. Collaborators

Nurses played a role in developing the collaborative networks that was especially related with the supply of workers during disasters and condition when hospitals lacked nurses. The collaborative networks were made between Muhammadiyah hospitals coordinated through MDMC, BPBD (National Board for Disaster Management), and volunteers from disaster preparedness villages as well as from educational institutions.

*"In addition to the fulfillment of human resources, we as nurses were also asked to develop the networks. So it's possible when patients were admitted to our hospital, but we didn't have enough nurses on the shift. That's why it's necessary to make collaborative networks so that we can get the supply of nurses when we lack workers."* (Informant 2)

##### 1.2. Trainers in the society

The nurses acted as a training team for the people in the surrounding community or the people in the disaster preparedness villages. The training program covered the practice to assess the vulnerability in their areas, the making of follow-up plans about the structure of commands if a disaster happens, and the disaster simulation in accordance with types of disasters that can

potentially happen in their areas. The following is the excerpt of the interview:

*"... There, we trained them to assess the vulnerability of their areas, what to do to make a structure of command if a disaster happens, and disaster simulation depending on the disasters that potentially occur there...."* (Informant 2)

#### IV. DISCUSSION

Disaster management is regulated in Laws of the Republic of Indonesia Number 24 Year 2007 on Disaster Management. Hospital Preparedness for Emergencies (HOPE) is designed to prepare hospitals for disaster planning and response. Hospitals have a key role in managing disasters and emergencies[9].

Hospitals can be impacted by disasters. Therefore, it must be ensured that the buildings are secure and the human resources have disaster and emergency preparedness plan. Based on the results of the study, it is found that there were three recurring themes about the roles of nurses in hospital disaster plan, including:

##### 1. THE ROLE OF NURSES IN THE PHASE OF DISASTER PREPAREDNESS AND MITIGATION

Based on the results of the study, it can be seen that nurses had seven roles: initiators, disaster team members, executors of village preparedness programs, planners, coordinators, communicators, and evaluators. The most nurses (57.1%) responded that the disaster preparedness covered coordination, planning, surveillance, training, and communication when a disaster happened[10].

The nurses' role as the initiators of a disaster team together with doctors is seen when they initiated a disaster team called PKU Disaster Relief (PDR) in 2006. Then in 2007 the Central Board of Muhammadiyah developed it into Disaster Medical Committee (DMC). Since then, they have always tried to increase the capacity. The hospital receives an honor to implement a program from the Central Board of Muhammadiyah called CPDN Hospital Preparedness Community, indicating that the hospital is one of the networks of disaster preparedness community.

Nurses as the members of a disaster team collaborated with the other members of healthcare team, which was comprised of nurses, doctors, pharmacists, sanitarians who were responsible for disaster management. The following is the excerpt of the interview:

*"There were doctors, nurses, sanitarians, pharmacists, and others. The team was quite complete and strong because it was not only doctors and nurses who participated. For example, the last time the physiotherapists were sent to Lombok because they were really needed there. We attempted to make it more comprehensive, more complete."*

The team is divided into three. They are monthly scheduled according to each team's competence. The team is prepared for both internal and external disasters. For example, a quick response team was deployed to disaster areas in Lombok and in other countries. The first deployed team is the team that has a higher competence to conduct assessments, triages, communication in the disaster area

and as a report to PKU Muhammadiyah Bantul Hospital for a follow-up of the next team. The deployment of the disaster team has been easy and quick and all the coordination has always been performed through MDMC. The HDP preparation usually starts with the establishment of an HDP team. The team will be able to successfully give optimum results if the management of the hospital has the commitment and consistency. Consistency is necessary because disaster management, including the HDP preparation, is a continual process; thus, some efforts to maintain the team performance are necessary. It can be realized by establishing a disaster and emergency committee, or any similar agency[8]. Regardless of their clinical setting, nurses are required to possess abilities to respond to the disasters effectively, take new roles, and accept new responsibilities when dealing with disasters or emergency[12].

The nurses' roles on running village disaster preparedness, including the development of tough villages, are expected to be able to increase people's knowledge and skills in dealing with disasters so that more people are eager to be disaster volunteers needed by hospitals. Besides, if a disaster happens, people can sort and choose which patients need to be taken to hospitals and which ones should not.

The nurses' roles as planners encompass planning the nursing staff, disaster preparedness team, and disaster volunteers. In handling disaster casualties, hospitals must have adequate preparation. It can be realized by making plans on how to manage emergencies, or contingency plans. Hospitals compose contingency plans with an aim to carry out everyday functions towards patients who have been admitted earlier (business continuity plan). The plan is generally called Hospital Disaster Plan[8]. The purpose of disaster plan is to provide policies, procedures, and guidance necessary to protect lives, restrain injuries, and protect properties before, during, and after disasters. A comprehensive emergency response plan discusses disaster management phases[10]. HDP is supposed to be resulted from the process of evaluating certain area's disaster threats (hazard mapping), its past experience and its resource availability –especially its human resources; done by taking both local and national policies into account[8].

The roles of nurses in PKU Muhammadiyah Bantul Hospital as coordinators and communicators include internal and external communication and coordination, such as MDMC, BPBD, local public health offices, and others. This is in parallel with the study conducted by stating that nurses and other health service providers have to collaborate with officials at all levels involved in disaster preparedness[4]. Even before disasters occur, nurses can play a key role in preparing societies and individuals so that potential hazards can be reduced when a disaster actually happens. All of these things are important when planning for vulnerable population, such as pregnant and puerperal women and babies who have special needs during crisis[4].

The nurses' role as evaluators includes giving evaluation on disaster preparedness, such as simulation,

training, and drilling the hospital staff with skills in responding to disasters. The nurses' role as educators prepares nurses for disaster response by adjusting the curriculum and by fulfilling the increasing needs of education and training in disaster nursing for all groups of nurses. The accuracy of preparedness towards disaster nursing taught both in undergraduate nursing program and also in education program needs to be evaluated in terms of its theory and its practicality. This is not in line with the study by Seroney in 2015) arguing that 80% of nurses reported that disaster simulation and training were not conducted consecutively.

## 2. THE ROLE OF NURSES IN THE DISASTER RESPONSE PHASE

The results of the study show that there were five sub-themes related with the nurses' role in the phase of disaster response. In this phase, nurses had roles as care providers, communicators, coordinators, liaison officers, and leaders. Nurses played these roles not only in the internal hospitals, but also in the external hospitals during disasters.

Nurses as care providers during emergency response conduct a needs assessment, make a mapping of the exposed patients, do triages, and perform actions on patients during emergencies. Nurses have vital roles because they are the biggest force in public health service. However, some studies indicate that nurses have inadequate preparedness and confidence to respond to the disasters effectively<sup>11</sup>. The absence of the easily-identified roles for nurses will lead to confusion, potential injuries on the patients, and terrible coordination among disaster response team. This is in line with what one of the informants said when sharing the story of his first experience dealing with earthquake in Bantul in 2006. The following is the excerpt of the interview related to the nurses' confusion when responding to a disaster for the first time:

*“To be honest, that was the first time I was confused to see all of those patients, confused about which patients should be first taken care of, it was very terrible, all patients were terribly injured.”* (Informant 5)

The confusion the nurses felt was caused by their inability to decide which patients should be prioritized. The large number of critically injured patients was not able to be handled by the small number of nurses. In addition, training was rarely performed. During disasters, chaos always happens, leading to the disruption and the non-optimal results of the process of handling patients. With an effective HDP, chaos can be reduced so that services can still be given in accordance with the standards so that mortality and morbidity can be kept as minimal as possible (Wartatmo, 2011). This is in parallel with the study which revealed that the factors affecting the preparedness in responding to the disasters are past experiences in disaster response and education and training previously received (Labrague *et al.*, 2018). Having an experience with the earthquake in Bantul allows PKU Muhammadiyah Bantul Hospital to improve its quality of disaster response.

The roles of nurses as communicators and coordinators include communication in order to prepare additional nurses and to facilitate the communication and coordination between the members of healthcare team, patients, and families during disasters. The clear communication is an important element in disaster planning and response either in formal or in informal forms as well as paper and electronic documentation<sup>4</sup>.

The roles of nurses as liaisons include coordination with operational units, such as pharmacies for medicines, consumables, and logistics. Additionally, the nurses' role as leaders includes planning, coordination, and communication in disaster response.

### 3. THE ROLES OF NURSES IN THE DEVELOPMENT OF COLLABORATIVE NETWORKS IN DISASTER RESPONSE

The results of the study indicate that nurses play a role in developing the collaborative networks in disaster response. They act as collaborators in making cooperation and educators in the society. The role of nurses as educators in the society encompasses giving training to common people in the society on how to perform disaster response. They teach people about PPGD (Emergency First Aid), train them to assess vulnerability, compose the structure of commands, and conduct disaster simulations.

Nurses play a crucial role before disasters by preparing people and society so that the potential hazards of disasters can be reduced. It is highly important to make plans for the vulnerable population, such as pregnant and puerperal women as well as babies, because they have special needs during crisis. Nurses who have women's health or midwifery background can facilitate disaster response and quick recovery to minimize the disaster impacts to women and babies[4].

Collaborative networks can be built by governments or non-governmental organizations, such as BPBD, MDMC, health professional organizations, the society, and educational institutions. The role of the society in disaster response is regulated in Perka BNPB No 14/2014: the process of the society involvement in the implementation of planned, integrated, coordinated, and comprehensive disaster management plans can give protection to the people from hazards and earthquake impacts.

### 4. CONCLUSION

The nurses in PKU Muhammadiyah Bantul Hospital seemed to have a good performance in the implementation of HDP. There are three main themes related to the nurses' roles; those are the phase of disaster preparedness and mitigation consisting of seven sub-themes, the phase of disaster response consisting of five sub-themes, and the

phase of the development of collaborative networks in disaster response consisting of two sub-themes. Strategies are needed to strengthen the nurses' roles in the implementation of HDP in PKU Muhammadiyah Bantul Hospital; one of which is by giving regular training to the nurses in order to improve their knowledge and skills in disaster response.

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### REFERENCES

- [1] Speziale & Carpenter (2003). *Qualitative research in nursing: Advancing the humanistic imperative*. Philadelphia, PA: Lippincott Williams & Wilkins. <http://www.angelfire.com/nc/neurosurgery/Hospdipap1.html>
- [2] Cheung M, Vu A, Varlese D, Xoing W, Hupert N, (2010). Hospital preparedness exercises guidebook (AHRQ) Publication No. 10-00001-Rockville, MD: Agency for Healthcare Research and Quality. *Continuing Education in Nursing*, 43(6), 284--288.
- [3] Dell'Era Simone, Olivier Hugli and Fabrice Dami · **2018, Hospital Disaster Preparedness in Switzerland Over a Decade: A National Survey**, • DOI: <https://doi.org/10.1017/dmp.2018.59>., Published online by Cambridge University Press: 05 July 2018
- [4] Ahwonn(2012) 'The Role of the Nurse in Emergency Preparedness', *Nursing for Women's Health*, 16(2), pp. 170-172. doi: 10.1111/j.1751-486X.2012.01726.x.
- [5] Chan Sunsinne et al. 2010, Development and Evaluation of an Undergraduate Training Course for Developing International Council of Nurses Disaster Nursing Competencies in China, *Journal of Nursing Scholarship* **42.4** - 405-13. Blackwell Publishing Ltd.
- [6] Lesty J. Moleong (2012). *Metodologi Penelitian Kualitatif*. Bandung : Remaja Rosdakarya.
- [7] Loiselle G. Carmen et al (2011). *Canadian of Essential Nursing Research*. Third Edition. London Philadelphia : Walker & Willkin
- [8] Milles. B. Matthew & Huberman. A. Michael (2007). *Analisis Data Kualitatif*. Jakarta : UI Press
- [9] Direktorat Jenderal Bina Pelayanan Medik Departemen Kesehatan RI, 2007, *Hospital Preparedness For Emergencies and Disaster (HOPE)*. IKABI-PERSI Jakarta.
- [10] Seroney, G. C. (2015) 'the Role of a Nurse in Disaster Management At Kapsabet District Hospital: a Global Health Concern', *Baraton Interdisciplinary Research Journal*, 5, pp. 91-101. doi: 10.1007/s11892-016-0789-4.
- [11] Labrague, L. J. et al. (2018) 'Disaster preparedness among nurses: a systematic review of literature', *International Nursing Review*, 65(1), pp. 41-53. doi: 10.1111/inr.12369.
- [12] Rivera-rodriguez, E. (2017) 'Role of the Nurse During Disaster Preparedness : A Systematic Literature Review and Application to Public Health Nurses'.