EXPERIENCES OF NURSE SURVIVORS ON DISASTER:
A SYSTEMATIC REVIEW

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ABSTRACT

Background: Majoring attention to disaster survivors sometimes makes a fact that nurses who are survivor as well are being forgotten. This study reviews conducted researches using nurses’ narrative as analyzed data then provides a review on how they working, coping and learning when giving medical assistance during disaster.

Method: Using a systematic review, literature is identified through PubMed and Scopus using “nurse”, “nursing”, “experience” “disaster” “survivor” “coping” and “Asia” as keywords.

Finding: Nine (7) publications representing nurses’ experience from United Stated, Taiwan, New Zealand, Haiti and China are reviewed from a total of 2672 retrieved articles.

Result: While experience various challenge as survivors who are also in delivering aid during disaster, nurses can handle, cope and learn from their recent experience. To enhance nurses’ wellbeing, the considerable contribution from nurses’ organization in collaboration with government is highly recommended.

Keywords: Experience, nurse, survivor, disaster

I. Introduction

Nurses, who have professional ethics to give proper medical aid for those injured people including survivors and victim on disaster, are the largest group of global health care workforce[1]. Aside from such fact, the voice of nurses working in disaster is missing [2] as majority studies mainly evaluate disaster nursing practice[3]-[7] or take a highly attention for the survivor[8]-[12].

Then, what disaster is? Quarantelly states that finding a consensus about what a disaster is? is almost impossible, but finding a gage consensus about disaster definition enables its use for basic identification field of study[13]. Disaster comes from French ‘désastre’, Italian ‘disastro’ and Latin astrum, which means ‘star’ because the ancients believed that earthquakes, volcanoes and the like were mandated by the heavens[14]. According to Fritz[15] a disaster is an event concentrated in time and space, in which a society or one of its subdivision undergoes physical harm and social disruption or some social functions of the society or subdivision are impaired. Disasters are divided into two basic groups: man-made disaster including war, pollution, nuclear explosion-and-transportation accident and natural disaster including earthquakes, volcanoes, hurricane, floods and fires[14].

Giving medical aid under hazard and aiding in medical health care system is totally different. While we can see proper medical equipment are provided in Hospital daily, in disaster area insufficiency becomes familiar. It may be without power, shelter, communication, food and water, injured people cannot get transportation to the nearest health care, or on the contrary, Emergency Medical Service (EMS) may not be able to gain access to victim[16]. Health care facilities may also be damaged
immediately. As a consequence, nurses should also deal with uncomfortable ad-hoc medical station complete with a shadowed of unpredictable hazard. A two nurses’ experience from Moore’s tornado\textsuperscript{[17]} and Wenchuan’s earthquake\textsuperscript{[18]} found that situation they confronted were overwhelming and beyond the scope from daily nursing. It was included increasing number of patients, lack of equipment and terrain difficulty. Because of those heavy challenge in disaster area, nurses are possibly develop Post-Traumatic Stress Disorder (PTSD)\textsuperscript{[18]–[20]} or, conversely, it facilitates nurses to find some positivity instead.

Related to the missing voice of nursing and obscuring the fact that nurses are also disaster survivor, exploration of nurses’ perspective when working on disaster remain limited. From the limits, only few studies had examined certain country or certain kind of disaster. Therefore, it is assumed that a need of nurses experience during disaster became necessary. This study, then, conducts to describe a substantive of nurse narratives from working, coping and learning during delivering medical aid on disaster throughout the world.

<table>
<thead>
<tr>
<th>What is known?</th>
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<tbody>
<tr>
<td>• Nurses have substantial role in delivering medical aid during disaster. However, only few of current literatures have been available to address perspective of nurses, previous studies that already conducted simultaneously had highlighted nurses’ competency of caring injured people in disastrous event or to the survivors.</td>
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<table>
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<tr>
<th>What this paper adds?</th>
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<tr>
<td>• A review articles that informs nurses experiences during disaster event, particularly experiences of working, coping and learning.</td>
</tr>
</tbody>
</table>

| Suggestion for disaster management authority and nurse association for promoting nurse well-being and enhancing their service in this area. |
| Emphasizing the importance for future research in this topic. |

II. Method

Using systematic approach, this review was conducted on the body of Online Access Catalogues (OPACs) from May 18 to May 20 2017. Particularly, English targeted articles are searched by Boolean searching in PubMed and Scopus with criteria that are summarized in Table I.

<table>
<thead>
<tr>
<th>Table I. Criteria for Article to Be Reviewed</th>
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<tbody>
<tr>
<td><strong>Inclusion criteria</strong></td>
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<tr>
<td>• Published in English</td>
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<tr>
<td>• Nurses stood at disaster area</td>
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<tr>
<td>• Had qualitative analysis and narratives</td>
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<tr>
<td>• Relevant discussion about nurse experience during disaster</td>
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To systemize searching process, the details of searching strategy and syntax used Boolean searching. Boolean can be very useful for specifying exactly within information is needed by user. In Boolean language a search for ‘social AND science’ will locate all the records including both the word ‘social’ and the word ‘science’, AND only finds documents including the set of specified words. A search for ‘social OR science’ will locate all the records containing either the word ‘social’ or the word ‘science’, but not necessarily both\textsuperscript{[21]}. Likewise, Boolean’s ‘nurse OR nursing’ is intended to capture records about either nurse or nursing with a combination of
another mandatory keywords combining by AND. In sum, there are 6 searching combinations from 7 keywords that are sequentially provided below:

<table>
<thead>
<tr>
<th>Code</th>
<th>Keyword</th>
</tr>
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<tbody>
<tr>
<td>A</td>
<td>Nurse</td>
</tr>
<tr>
<td>B</td>
<td>Nursing</td>
</tr>
<tr>
<td>C</td>
<td>Experience</td>
</tr>
<tr>
<td>D</td>
<td>Disaster</td>
</tr>
<tr>
<td>E</td>
<td>Survivor</td>
</tr>
<tr>
<td>F</td>
<td>Coping</td>
</tr>
<tr>
<td>G</td>
<td>Asia</td>
</tr>
</tbody>
</table>

Codes combination for searching strategy
1. (A) OR (B) AND (C) AND (D)
2. (A) OR (B) AND (C) AND (E)
3. (A) OR (B) AND (D) AND (E)
4. (A) OR (B) AND (D) AND (F)
5. (A) OR (B) AND (D) AND (F) AND (G)
6. (A) OR (B) AND (C) AND (D) AND (G)

PubMed is accessed free with any search engine, however, Scopus searching is using a proxy link from university library. Those processes did without having limitation either in type of articles or year published by filling in searching feature page, PubMed Advance Search Builder page and Scopus Document Search page, the keywords were searched sequentially and carefully recorded.
Those which seemingly had characteristic of studies’s purpose and those who are excluded from research criteria has been assessed. Identification processes were running forward until selected articles were found based upon titles, abstracts, and full texts. (Quantity articles on identification process are presented in PRISMA flow diagram).

III. Results

From a total of 2670 titles, 30 abstracts and 14 full text articles around the world were assessed based on criteria until it is elected 7 articles from United Stated, Taiwan, New Zealand, Haiti and China. The data analysis identified a recognition of similar intersection of working, coping and learning during disaster. For working, particularly, data identified in some integral parts; effectiveness of disaster training, patients-and challenge, and psychological distress. This way was doing to identify and highlight phrase that exemplified this part from a broad theme of working.

<table>
<thead>
<tr>
<th>Code and Country</th>
<th>Kind of disaster</th>
<th>First author</th>
<th>Year published</th>
</tr>
</thead>
<tbody>
<tr>
<td>A1 USA</td>
<td>Tornado</td>
<td>Sallie J. Shipman [22]</td>
<td>2016</td>
</tr>
<tr>
<td>A2 Taiwan</td>
<td>Earthquake</td>
<td>Fu-Jin Shih [23]</td>
<td>2002</td>
</tr>
<tr>
<td>A4</td>
<td>Earthquake</td>
<td>Elizabeth Sloand [25]</td>
<td>2013</td>
</tr>
<tr>
<td>A5 Haiti</td>
<td>Earthquake</td>
<td>Sandra K. Richardson [26]</td>
<td>2013</td>
</tr>
<tr>
<td>A6 New Zealand</td>
<td>Earthquake</td>
<td>Y.-N. Yang [27]</td>
<td>2010</td>
</tr>
<tr>
<td>A7 China</td>
<td>Terrorist attack</td>
<td>Suzanne S. Dickerson [28]</td>
<td>2002</td>
</tr>
</tbody>
</table>

Effectiveness of Disaster Training

Majority of nurses who already got mass casualty training highlighted that it did help in emergency room (ER) while it did not work for confronting medical aid on community response. They add an ability to adapt in situation was the best way to encounter problems facing in the real environment. Moreover, on the other case of rescue, nurses peevishly stated that lacking experience on real environment such as rural and mountainous area was slowing up their nursing practice in disaster area. Table IV includes the overall narratives of nurses working on disaster.
Figure 1 The PRISMA flow diagram for identifying studies to review

TABLE IV. CODES AND NARRATIVES OF NURSES WORKING ON DISASTER – EFFECTIVENESS OF DISASTER TRAINING

<table>
<thead>
<tr>
<th>Code</th>
<th>Narratives</th>
</tr>
</thead>
</table>
| A1   | “Extensive disaster training didn’t help me with this [disaster response], because it’s [mass casualty versus community response] totally different”  
“mass casualty might help me if I had went to the emergency room, but it didn’t in the shelter.” |
| A2   | “All of us were trained to carry out rescue plans in Taipei. We lacked rescue experiences in the rural or mountain areas” |
| A3   | - |
| A4   | “As a nurse. That prepares you nothing. I mean ...I have all my certification, I have all this ...I’m qualified, but you’re not prepared for anything like
Working On Disaster – Effectiveness of Disaster Training

that ... I mean nothing really prepares you, you just gotta adapt once you get there.”

A5 -

“Our rescue team was the earliest arrival and we found Yinxiu town totally destroyed. There was no running water, no electricity and lo local medical services. We were soon surrounded by a large crowd who were desperately seeking medical assistance. Although we knew our first priority was triage, we recognize that the method we used in the hospital did not work there when confronting the large numbers of casualties ... We had to make a great effort to maintain order while undertaking triage.”

A6 -

Patient and Work Challenge

The work load in the field of disaster may be vary. This can be inclusive from exceeding number of patients to no patient come to be helped, from insufficient medical equipment to a need of sharing logistic from nearest medical station, from difficulties of doing triage and assessment to only giving an open arm to make patient calm, and from worry of basic survival resources to worry of the effectiveness from treatment that already delivered.

While number of patients would increase in disaster event in common such as those in Taiwan, Haiti, and China, nurses experiencing helping a terrorist attack in USA announced that they had a moment of no patients coming for hours, and that made them frustrated. Table V provides the overall stories about patient and challenge faced by nurses in disaster areas.

TABLE V. CODES AND NARRATIVES OF NURSES WORKING ON DISASTER – PATIENT AND CHALLENGE

<table>
<thead>
<tr>
<th>Code</th>
<th>Narratives</th>
</tr>
</thead>
<tbody>
<tr>
<td>A1</td>
<td>“We have like a red box... [Which is the hospital’s] emergency box and in it... for example, let’s say the power goes off. There’s something in there to tell them everything they need to do... It is... a disaster thing... You go in and it’s kind of like the recipe of what to do.”</td>
</tr>
<tr>
<td>A2</td>
<td>Since we needed to help victims in four or five places in the mountains, and the traveling was difficult, we were only able to stay at each stop for about 1 to 2 h.. We took turns going into the mountains, but this meant that the leaders repeatedly had to teach new people every day. I mean, the nurses weren’t able to accumulate mountain rescue experience. Instead, I think we should only visit 2 to 3 places per day, and it would be better not to change helpers every day. In this way, we could accumulate mountain rescue experience. “There were many patients with hypertension or diabetes there. They were frightened, and some of their health conditions deteriorated, and many of them ran out of medication, so they turned to our station.</td>
</tr>
</tbody>
</table>
| A3   | “We’re doing a lot of social worky stuff, because we don’t have the social workers so
we’re doing a lot of that sort of thing.”
“I had to come in at seven in the morning because we had no registered nurses to do the medications. We had enrolled nurses, but given the complexity of the hospital level patient that we had, I felt it was important that I needed to be there.”

“There would be hundreds of patients already waiting outside for us …then it would start and it would just be patient after patient pretty much up until … we finish.”
“The minute you walked in [to] the time you left, and you’d walk in and there’d be 140 …200 patients that we’d be seeing between 3 of us. Um so it was really intense …you just worked really hard.”
“I was the only nurse for like 20 patients, so pretty much …worked worked worked worked worked, ran my butt off for 12 hours until the next shift came back in to take over …I was pretty much just working up until about 20 minutes before I [went] back to the airport.”

“I would pick two syringes a day for the patients and tape them to the end of the bed and those were their syringes for the day …and we would use them over and over for that patient because we didn’t have, you know, and I was always thinking I hope this okay, I hope is okay, I hope this is safe. We didn’t even have enough needless to change the needless all the time so I’d alcohol of something and use it but we had to keep that for the patient because we just didn’t have enough to, to just to do work the way we would normally work.”

Pediatric nurse “We had one inhaler [in the clinic] … and there weren’t spacers or anything like that so I quickly grabbed a water bottle someone had and cut a hole in the bottom to kind of make this spacer and just started giving him inhaler treatments …like two puffs every 2,3 minutes just kind of trying to simulate a nebulizer.”

“The patient were all dusty …I can remember saying they all looked the same, no matter what nationality they were. Because they were all covered in that thin layer of dust do they all looked … It was difficult to assess their skin color to see if they were in hypoxia and that, because they were all that same dusty color.” “…in significant orthopedic injuries. Lots of major wounds, you know, like head wounds that I used …I figure that the best thing to use on those was staple gun.”

“So we got a team together and we made sure that ICU had the bed at the top of the stairs. And we wheeled the ED trolley to the stairs and we lifted him. The mattress have handles on them, and we lifted him up. And I was the smallest person …they were all guys, so they were lifting. There were three people either side. So an anesthetist stayed at his airway holding the ET tube, and I bagged him”

“Our rescue team was the earliest arrival and we found Yinxiu town totally destroyed. There was no running water, no electricity and lo local medical services. We were soon surrounded by a large crowd who were desperately seeking medical assistance. Although we knew our first priority was triage, we recognize that the method we used in the hospital did not work there when confronting the large numbers of casualties …We had to make a great effort to maintain order while undertaking triage.”

“...that was where the frustration came, when the patients didn’t come, that you
realized how this is really bad. We’re not getting patients, you know but you still kind of say, well, they haven’t gotten to them yet. That’s why we haven’t gotten them. They’ll get to them and when they do, we’ll be busy. The hours progresses and kind of realized, we all had this sinking feeling, that it was a lot worse than we had even imagined.”

“Everything was in place by 10:30 AM and we got one patient up until 1:30 AM. We got scared then. There was a lot of death. At that point we got the body bags.”

Psychological Distress

Many of these experiences on disaster areas produced psychological consequences. Nurse reflected a broad range of emotions including scare, nervous, stress, exhausting, frustrating, fear and confused. Those stories in Table VI indicated that many put their own fears and concern to the side of focus on situation at hand, and for many, the act of keeping busy and focusing on others had helped them get through the experience. An experience of nurse survivor and also local inhabitants stressed an ethical issues between taking priority of family and keep doing medical assistance for patient. This then proved a need for concern in comprehensive discussion.

<table>
<thead>
<tr>
<th>Code</th>
<th>Narratives</th>
</tr>
</thead>
<tbody>
<tr>
<td>A1</td>
<td>“Well, it’s so hard for me to describe it,” or “I don’t know how to say that”</td>
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<tr>
<td></td>
<td>“I was so scared when saw 7-8 bodies lying there and these families crying all day. I never felt so close to death. Everything looked so sad and hopeless for them and myself. I appreciate that I learned some positive things from my rescue experience, but I still need to admit that I have felt uncomfortable about the sad feeling which I didn’t expect to still have. And, you know, we are nurses, we have obligations to help vulnerable persons without any complaint.”</td>
</tr>
<tr>
<td>A2</td>
<td>“… I had little experience with hypertension care, and I truly felt sorry for myself and for them.”</td>
</tr>
<tr>
<td></td>
<td>“I’m majoring in pediatric care, so I’m not familiar with adult medical and surgical problems. So, whenever I needed to do wound care, I felt so stressed.”</td>
</tr>
<tr>
<td>A3</td>
<td>“Sleep was hard to come by at that moment ‘cause there was still lots of earthquakes and everybody was nervous or ratified.”</td>
</tr>
<tr>
<td></td>
<td>“I guess like a lot of people in Christchurch, you just felt on edge of time.”</td>
</tr>
<tr>
<td></td>
<td>“I was becoming incredibly stressed and I needed to move out of that environment.”</td>
</tr>
<tr>
<td>A4</td>
<td>“Physically, mentally and emotionally exhausting”</td>
</tr>
</tbody>
</table>
Working on disaster – Psychological Distress

“a little frustrating to see kids with scabies and not really have anything to offer the family”

“That was really frustrating ...[there were] a lot of cases in which we couldn’t do anything and we knew that there is nothing to be done, where in United States ...we would’ve been able to fix those problems ...but in Haiti there was just no way to fix it.”

“It was just do poignant what he was saying to me and so I felt so awful for him ...I’m worried about him. Even now, I think about him now and I think about a few other people who had similar stories too that they don’t have a mental health care there that they need ...they don’t have medical care period.”

“I don’t want to leave my husband at home by himself. And I don’t want to be in that building ...I think the fear that I had just before stepping into the building ...I thought that was the worst fear imaginable.”

“Even though we had patients here, people here, all you could think about was your family ...make sure that your family is okay, that’s the first thing. I guess it could be selfish in some ways, not thinking about patients first. But it was ...I thought we were going to die, because of the way the building shook. Plus, we are on the ground floor and you know, if things happen, we’ll be the ones to die first.”

“I watched a girl die half-way through digging her out from the building. Her small hand was in my hand and she talked to me ...These horrible deaths always came to me at night and I could not sleep for a quite a long period after I returned from the rescue.”

‘On the way to Yinxiu, we witnessed tragic life losses and brutal damages. ...Be honest, when rocks fell during the aftershocks, I had a fear of dying in the scene.”

“The city was shut down. The city that normally transports thousands to work was compromised and failed ...You couldn’t get pas police barricades ...Nurse had to hitch rides with police vehicles, or were left frustrated trying to get work.”

“...that was where the frustration came, when the patients didn’t come, that you realized how this is really bad. ... The hours progresses and kind of realized, we all had this sinking feeling, that it was a lot worse than we had even imagined.”

“the smell of death was everywhere”

A. Coping

This coping challenge sat aside difficulties of facing working environment. Some narratives asserted nurses used problem focused coping to overcome problems such as language barrier, insufficient medical equipment, and personal psychological disturbance in each team members. Moreover, prevailing narratives portrayed that nurses could do coping
naturally as a result of adaptation in new environment such as learning from patients, substituting unavailable tools with providing tools surround, and cooperating with nearest medical station. Another explanatory text expressed emotional focused coping such as emotional relief, self-reflection and cognitively known the meaning of helping and empathy. A comprehensive stories are recorded in Table VII.

<table>
<thead>
<tr>
<th>Coping on disaster</th>
<th>Narratives</th>
</tr>
</thead>
</table>
| **A1** | “My triage abilities came in handy when I could say I’ve asked this patient enough questions…”  
“What saved me is 33 years of nursing and common sense of what to do ...I could still assess [victims] whether you direct me or not.” |
| **A2** | When I arrived there and saw that the mountains had changed shape. I was shocked. Then, I said to myself ‘If I am not in a dream, then what else cannot be changed in this mortal world?”  
“...and I told myself that I needed to lead a more purposeful life from now on”  
“A 15 year-old boy lost his self-control when his parents’ bodies were dug out. He screamed and cried. No one knew how to comfort him. I was the only nurse there, and people looked to me. Then I held him in my arms, and did my best to comfort him... there were tears on my face also. I forget how long it was before he calmed down, and then I fed him with milk and he fell asleep on my breast like my younger brother.” |
| **A3** | “We were without water for three weeks, but we have a creek at the bottom of the garden and my partner’s dad is a plumber and a drain layer, and we had a pump so we pumped water and boiled it.”  
“I can’t actually control what the earth’s going to do so I am just going to deal with it does do.”  
“Because I was so busy working and concentrating and supporting staff and patients ...I didn’t actually realize half of the things that actually occurred in the earthquake.”  
“I was so busy, so intense work, I didn’t have time to think about it till much later.”  
“I was sort of in that coping mechanism mode. Certainly there were no tears during any of that time, it’s after, like I find now.”  
“We counseled each other, I think, at work.”  
“While we have that duty of care and we need to care for our patients, we also need to care for ourselves and each other.” |
Coping on disaster

“We had enrolled nurses, but given the complexity of the hospital level patient that we had, I felt it was important that I needed to be there”

“The other role I have stepped away from is supporting other nurses ...emotionally, I don’t think I’ve got too much more to give in terms of supporting.”

“Right then, nothing, I was working, I had to keep working. I mean in all these you had to keep working.”

“There’s gonna be some things that you don’t ever want to see but you know you’re there ...doing good for these people and without your emotional stability you’re worthless to the people there.”

“I think they’re long and exhausting days, but I don’t think you feel tired during the day ...I sort of don’t feel it’s hard work.”

“There really isn’t anything that you would need to read or know to go and work. You just have to go and work, and you know how to do that.”

“We didn’t even have enough needless to change the needless all the time so I’d alcohol of something and use it but we had to keep that for the patient because we just didn’t have enough to”

“We had one inhaler [in the clinic] ... and there weren’t spacers or anything like that so I quickly grabbed a water bottle someone had and cut a hole in the bottom to kind of make this spacer and just started giving him inhaler treatments...like two puffs every 2,3 minutes just kind of trying to simulate a nebulizer.”

“You have to block it out of your mind that you’re doing something and it’s not unethical but that it’s out of the standard of practice that we use in the States because this little bit’s gonna help this person ...So you block out the things [from your mind] ...you basically say I’m bettering this patient with what we have right now ...So you try to use ...common sense ... sometimes you had to do what you had to do just to save one person.”

“The patient was on a metal cot ...We put sterile disposable sheets under him ...there were 10 cots lined up on either side of this tent ...the cot on either side of him was within arms distance. I mean very close so certainly not the type of sterile technique that we used here [in the hospital]. It was as clean as it could be given the situation ... you had flies and everything flying all over the place ...and neighbors and family members being right there.”

“One of the translator I worked with really didn’t speak English, he was an English teacher in local school ...His English was very rudimentary ...medical English was just more than he could handle and yet I don’t speak French nor Creole. One of the
### Coping on disaster

**Physician** that I was with had gone to medical school in Cuba and he spoke Spanish so it was, you know we’d have French to Creole and then to Spanish and to my English [-] laugh you know this kind of polyglot of languages um and there were times I, I just hoped I was getting it right and- from all those disparate sources that I called it right ...so that was very difficult.”

“I just came in to work and sort of managed that initial response ...there were some minor injuries at that time, and there was sort of one major casualty who went to intensive care and did very well, actually, in the end. But it was an ad-hoc approach and we learned a few lessons from that.”

“...and I knew it was significant, but you don’t realize how significant. Because everything came off the shelves ...The computers went everywhere. Bookcases fell down. So we knew it was pretty significant. But we were okay and we got out and then we go out the front of the hospital. And then we sort of ...Even then I don’t think... Then the ground was going like this, and that glass overhang was going like that. There were some patients in wheelchairs so we got them out after that ...”

“I do remember from the September one ... there were no deaths, so I found that a miracle. And this time I did realize that ...somehow, I realized that it was bad. So I was actually expecting the worst. So that’s probably why I started crying initially. I walked out initially from the patient just for a few second because I didn’t want to make it worse for the patient...”

“I thought, ‘Oh my God. Is the Hospital okay? It can’t be that good if they’re evacuating the hospital.’ But we hadn’t heard anything about the town. So I hopped on my bike and went to cycle...”

“Equipment and supplies for operating theatre in the tent were unavailable due to transport problems ...We had to use whatever was available. We used mineral drinking water to clean instruments and iodine to disinfect the instruments instead of high-pressure sterilization. I still question myself if the practice was right, although it saved lives in that situation.”

“We identified large number of victims with urinary retention. The urinary catheters we brought in were insufficient, so we cut the tube from intravenous infusion sets and fires the ends slightly ...”

“I knew we must have knowledge and skills to treat patients with gas gangrene. I had not had experience in this area so I reviewed relevant documents a few hours before departure. I even brought a photocopy of the documents to the field and set a standard to guide our practice.”

“We noticed many rescue worker (non-medical rescue worker had a fever and diarrhea and we began to plan and implement infection control measures. We educated all rescue workers to use whatever they could to protect them from direct..."
Coping on disaster

contact from sources of infection, such as corpses. We also instructed them how to avoid consuming contaminated food and water.”

“As local medical services were paralyzed, we took charge of medical supplies from different medical stations and negotiated with other rescue teams for sharing resources and supplies in the town …”

“We could not gain any assistance from local healthcare professionals and we had to learn local knowledge about residents, water and food sources from our patients and relatives …”

A7

“No time for anger, you’re waiting to help, wanting to help.”

“Some people to go to the bar [to medicate the feelings] but you can deal with it now or deal with it later.”

B. Learning

All of the nurses talked about many kinds of hardship when delivering assistance during disaster. However, those calamity would not always bring detrimental effect, conversely, they would always followed by positivity. As two sides of the same coin, a great adversity could stick at positive lessons.

Nurses perspectives reflected that they are not only giving well-being for those injured people, they also get a way to personal well-being otherwise. Nurses are aware of gratefulness, personal strength, pride, reducing selfishness, accepting others help, care and even experienced the spirit of nursing from Florence Nightingale, social reformer and founder of modern nursing. Some narratives had proved that adversity can guide to a positivity. An overall narratives in Table VIII present that most of them suggest to gain this experience, and for those who already did it, they still thinking and still want to back and re-experience of helping during disaster.

<table>
<thead>
<tr>
<th>Code</th>
<th>Narratives</th>
</tr>
</thead>
<tbody>
<tr>
<td>A1</td>
<td>“You can take a brand new nurse into [a disaster]...situation and [they] ... would learn a ton of things. But ...take...some-body who is a little bit experienced, and they do what I call grow, which is where you really learn.”</td>
</tr>
<tr>
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<td>“I really think that at least one time in every nurse’s life [they] ...should try to [work in a disaster response] ...because you just learn from it ...grow from [the experience,] ...and... learn how to appreciate ...the [response in the field or the] other side of the fence.”</td>
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<tr>
<td>A2</td>
<td>“I started to learn to show my appreciation to others, including my colleagues, families and friends around me; and I felt so lucky not only to survive the earthquake, but also to have happy and healthy life, compared to I used to do when do things independently and deemed myself superior to others.”</td>
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Learned from disaster

“I learned that it was impossible for me to do everything by myself, and I also needed other’s help.”

“I was really able to break down my psychological barriers, accept others’ help, and collaborate with others.”

“I was regarded as a selfish girl. I used to believe that everyone worked and asked for all the best for themselves. But my beliefs have changed since that [disaster] time.”

“I am glad that I was able to have those rescue experiences in Chi-Chi; and some villages in the mountain areas, although it was dangerous to work there.”

“After all of this, I felt that I had more confidence in my problem solving competence.”

“I’m willing to lead a more purposeful life from now on.”

“We [nurses on duty] wanted to learn more about better care in the future.”

“I decided to go back to school to learn advanced nursing knowledge and skills in order to provide better care”

“I told the head nurse that I wanted to extend my specialty to emergency care while I was still young.”

“In the future, I’d like to spend time in school to learn more about multiple organ, trauma, disasters and disasters and psychological care.”

“Many people questioned why I, as a man, wanted to be a nurse. Nor did I regard it as my life-long career until those days on a mountain in Nantou province. I realized that people trusted a nurse, rather than me as a person, so much. It was a very rewarding to be a nurse as helper.”

“I think I’m stronger.”

“I’m up for new challenges now. I think I could do just about anything.”

“I’ll never forget the people I saw and worked with and took care of”

“I don’t think a day’s gone by since I’ve been there I haven’t thought about people that I met ...you think about them constantly ...only thing you wanna do is go back”

“One way I can feel I’m doing good is telling the story to other people back here, just spreading the message of how much they need help, how the world is not all as good as it is here”
### Learned from disaster

| A5   | “There is just an immediate sense of a connection, like oh Haiti, ... that’s part of me and it breaks my heart ...a connection that will be there and a sense of responsibility even partly to stay connected and do whatever else I can.”
|      | “I really wish I can go back”
|      | “The people that were leading did an amazing job, and the people that were working on the floor did an equally amazing job of not trying to take over ...it just all flowed. Everyone had their job and everyone did their job unbelievably well. The team work that night was ...it almost brought you to tears. It was such an amazing feeling to be part of that ...”
|      | “The organizing was excellent. So it was a chaos and people kept coming in. And when you think of it initially you would be backing up and saying, ‘Oh my God,’ but everybody seemed to know what they are doing”
| A6   | “We received on-site psychological counseling services from professional counselor who joined our rescue team a few days later and worked side-by-side with us ...They distributed information booklets that establish how to cope with trauma situations. They also organized group discussions to help us identify and report early signs and symptoms of post-traumatic stress disorder”
|      | “We were offered a psychological support package after the on-site rescue. Services included a series of sessions of group discussions facilitated by professional counselors and a week’s retreat where we had a quiet and relaxing time ...We also had opportunities to meet other rescue workers with whom to share experiences in coping with the stress via therapeutic sessions.”
|      | “When I observed patients at night in the field using torches and kneeling on the wet ground, I felt that I was the Lantern Goddes guarding the wounded. I recognize I was doing what Ningtingale spirit in a hospital setting ...After the rescue experience I become less caring about personal gain and loss in the Hospital. Caring for others makes me feel meaningful in my life.”
|      | “Due to the interruption of telecommunications we lost contact with our families for quite a long period, and we even did not know if we could survive when we were threatened by aftershocks. We totally depended on the team support in such an uncertain period. We felt became close and cared for each other.”
| A7   | “It was just wonderful that we were able to do something and feel like we had a place to go and not just sit home and listen to the radio at the time”
|      | “I felt lucky to be a nurse because I could help and did not have a find a way to do that”
|      | “We were able to provide comfort, hot food, and emotional support for these people. That was pretty much priceless in my book.”
IV. Discussion

Different answer about necessity of training to prepare nurses in disaster indicates that the suit preparedness way has not been designed. In general, nurses from developed countries said that they had enough certification but unfortunately that is not enough for medical community response during disaster. Some of them stated the best solution is depend on nurses’ adaptation skill in disaster area. For this data, then, the training focus should be broadened training practical skill and add aspect for encouraging nurses to adapt on unpredictable event. While some nurses asked to be participated in training another colleagues in Indonesia also asked for re-training after long time training passed. An empirical evidence of knowledge gaining from refreshing material will help them a lot is already reported in nurses in Aceh, Indonesia, after pacific Tsunami 2004[29]. The challenge is stand for an organizational concern because expert nurses during disaster required an adequate skill. An examination from Li in China proved that nurses found themselves thrust in “terrible” scenes of destruction, experienced personal danger, and ethical dilemmas, and tried the best they could to help survivors, communities and themselves, with limited resources and confronting personal work[30]. This can also be a consideration to implement disaster nursing education and program[31]. Concern for nurses’ adaptation also relates to the challenge and patient during calamity. One that can be done is that involving nursing student in a mandatory community service learning. A result shows that participatory community learning equips student with public health skills, knowledge, and enhanced understanding of communities[32].

Furthermore, while circumstances following disaster may be changing rapidly, the one should be highlighted is nurse mentality. As they are mentally strong enough, nurse could own key professional resources of nursing role[33] in disaster area. Particularly, that is what commonly forgotten about health care providers support. With the challenged in field of duty, they also need some psychological intervention[18] from mental health nurse[34] which can be organized by nursing organization in collaboration with psychological association.

The narratives reveal that successful coping in performing duties are greatly specified to a valuable lesson. Thus, given the fact that helping others in disaster area not only for injured people but also bring merit for medical provider instead. A concern for promoting medical corps well-being is also essential to be considered. It can be arranged under careful disaster preparedness that would be possible delivered by nursing organization or health authority.

For local nurse-survivor, the problems are closely engaged with ethics in which they have to take priority of injured people in common or standing aside to help their family. As sure, crisis of health care personnel in the Pacific Tsunami and Earthquake 2004 Indonesia [35].

This problem could be possibly overcome if there is good disaster management occurred. As an instance, nursing organization joins collaboration with media that concern to inform updates information from medical station. In this way, family will be far more certain that their nurse family in duty is alright. Conversely, nurses also needs working out of worry if there is a guarantee of family’s safety from local authority.

Finally, the noted from this framework should emphasize for long term impact of issue among nurse before, during and after disaster event. Including ways to provide practical training for nurse in real environment, helping nurse survivor in duty and make sure their family safety.
V. Conclusion

The following disaster points can generally note a need of improving skill for nurse adaptation aside of betterment to provide training for local nurses. Local nurses – and – a successful coping with problem in charge will bring nurses some valuable lesson. In order to enhance this positive outcomes, contribution from nurses organization and local authority are highly recommended.

VI. Limitation

Review has limitation on those studies that has been written in English and Bahasa Indonesia while there are some related articles, in Japanese for example, cannot be examine. Therefore, it is also needed a narrowing categorization for demographic data such as gender, length of service, and nurses origin place of study to capture a more specific view on nurse survivors during disaster.

References


