Experience of Disaster Response Team in Jecheon Sports Center Fire

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Abstract

Purpose : This study aimed to determine the experiences of the disaster response team 9 participants who participated in the disaster after the fire incident occurred in Jecheon Sports Center and their meaning and essence.

Methods : Nine disaster response teams were the subjects of the study, and Individual in-depth interviews were conducted. Data were collected online between January 6 and April 30, 2021, from the software Zoom[TM]. This study was conducted as a qualitative study by applying Giorgi's phenomenological experiential research method, which has an advantage in revealing the essential structure and meaning of experience.

Results : Three major themes were derived from the study results: the stimulus through unfamiliar experiences, the grievances due to work environment and regional characteristics, and dullness resulting from hiding and enduring. The following 17 sub-themes were identified: learning through unfamiliar experiences, frustration due to unexpected circumstances, shock from unfamiliar experiences, doing my best in the present, confidence due to increased experience, disunified system, intervention of various interests, the atmosphere that puts responsibility on others, inactive help, unforgettable regional characteristics, working without time to settle, tolerating it in my own way, memories left in the unconsciousness, sudden suffering from memories that come to mind, movement in anxiety and tension, dullness, work with colleagues in the same situation.

Conclusion : This study is meaningful in that it attempted to provide basic data in preparing a long-term strategy for effective policy direction and institutional protection based on the systematic mental health management of the disaster response team. Additionally, this study's results can be used as primary data for future research among Disaster Response Team.

Ⅰ. Introduction

Social disaster is a disaster that includes both human disasters and paralysis of the social infrastructure (United Nations International Strategy for Disaster Risk, 2015), and it is essential to actively input the disaster response team composed of emergency rescue organizations, that is, the fire department and the disaster medical support team that provides medical support. In the event of a disaster, the disaster response team may suffer physical and mental damage, and in serious cases, it may be difficult to return to the team's original life after the disaster. However, Tedeschi and Calhoun (1996) focused on the aspect of not only recovering to the previous healthy situation after the disaster, but also showing more adaptive and positive changes. Interest has been focused on the fact that not a few of those who have experienced a disaster show positive changes, including qualitative changes beyond the functioning level before the disaster (Choi, 2008; Linley & Joseph, 2004; Park & Helgeson, 2006; Schaefer & Moos, 1992).

At disaster sites, firefighters experience vivid memories and nightmares of disaster situations and their hyper-arousal levels increase as the post-traumatic stress triggers increase according to the level of risk exposure (Kim, 2019), however, they experienced post-traumatic growth as their awareness of themselves grew, they rediscovered the meaning of life, their interpersonal relationships deepened, and they discovered the meaning of their work (Ko & Ha, 2021). In addition, intentional reflection on traumatic experiences, active coping attitudes, organizational support, and self-resilience had the effect on post-traumatic growth (Jeong & Jeon, 2020). In addition, the disaster medical support team, the main human resource of the disaster response team, worked in the relatively constant space called the hospital with a sense of responsibility and mission to care for the subject. Then, when dispatched to the unfamiliar disaster site, despite the fact that the tension and discomfort of the new environment such as division of each zone, securing control lines and movement lines, and media control, etc. may be greater, no detailed investigation has been conducted so far in this regard.

The disaster response team must have a comprehensive understanding of the field experience caused by the fire at the Jecheon Sports Center in order to help the disaster response team and make efforts for efficient management. To reduce health insecurity, which is the blind spot of the disaster response team, a long-term strategic foundation is needed to seek the effective policy directions based on more systematic and universal mental health management and to prevent the problems due to lack of institutional protection.

The purpose of this study is to explore in depth the meaning of the experiences of disaster response team dispatched to the fire site of Jecheon Sports Center through phenomenological approach. The research questions to be addressed in this study are as follows. "What is your experience of participating in the fire incident at Jecheon Sports Center?"

Ⅱ. Research Method

1. Research design

This study used the descriptive phenomenological research design of Giorgi (2009). The Giorgi's (2009) phenomenological method focuses on descriptions of experiences of a given event or phenomenon to comprehend the meaning of that experience from that person's perspective.

2. Research participants

A purposeful sample of participants provided information-rich cases for in-depth study to ensure a broad

range of disaster response team members who experience the Jecheon sports center fire incident. To purposive, snowball sampling was used to recruit participants. We stopped further recruitment when data saturation was deemed reached. During data collection and analysis, there was 1 participant dropout. As a result, 9 participants were participated in this study.

Table 1. Participants' characteristics (n=9)

No.	Age	Career	Gender	Affiliated institution
1	39	12	Male	Fire station
2	36	7	Male	Fire station
3	30	6	Male	Emergency room
4	37	10	Male	Emergency room
5	39	14	Female	Fire station
6	36	12	Male	Emergency room
7	34	8	Male	Fire station
8	28	4	Female	Emergency room
9	42	10	Male	Fire station

3. Data collection

This study was conducted following receipt of approval from the Institutional Review Board of University (IRB No. SMU-2021-01-002). All participants signed consent prior to the interviews. To maintain anonymity, each participant was given a number code. Due to the COVID-19 pandemic, face-to-face interviews with the planned participants were difficult. Data were collected online between January 6 and April 30, 2021 from the software Zoom^{TM}. The software Zoom^{TM} is easy to use, cost-effective, characteristic in information management, and set in security options. Therefore, an online interview was conducted based on a previous study (Archibald et al., 2019) that the reliability of qualitative data collection can be secured.

The research questions to be addressed in this study are as follows. "What is your experience of participating in the fire incident at Jecheon Sports Center?"

4. Data analysis

First, the recorded interview was transcribed. In order to understand the interview content as a whole, all researchers read the transcriptions of the interview several times over and over again. After that, in order to identify important topics, the interview contents were divided into semantic units, and groups of those belonging to the same phenomenon were formed. Finally, each meaning unit was transformed into language that revealed the psychological aspects of the participants' lived experiences in relation to the phenomenon being investigated (Giorgi, 2009).

5. Research reliability

To secure the reliability, the study was conducted by applying the credibility, fittingness, auditability, and confirmability of Lincoln et al. (1985) which are commonly used as standards in qualitative studies, to the evaluation criteria. Throughout the research process, this researcher

maintained epoché, a state of suspended judgement. To address research credibility, the researcher's debriefing took place with 3 peers with clinical and research expertise at regularly scheduled intervals. Additionally, confirmability was conducted during the overall analysis of each study with an expert in phenomenological research.

Ⅲ. Results

The results of the study were derived from three major themes and 17 sub-themes: stimulus through unfamiliar experiences, grievances due to work environment and regional characteristics, and dullness resulting from hiding and enduring (Table 2).

Table 2. Themes descriptions example quotes frequency   (n=9)

Theme	Descriptions	Example quotes	Frequency (%)
Stimulation through unfamiliar experiences	Learning through unfamiliar experiences	"Because I experienced such a big fire for the first time, I think I was thinking a lot about what went wrong and what needed to be improved. In that area, it had a positive effect. I think I can say that I learned more about the disaster." (Participant 9)	4 (44.44)
	Frustration due to unexpected circumstances	"I didn't think there would be so many deaths. I was confused when I thought I couldn't do anything because people just came out as dead." (Participant 1)	6 (66.67)
	Shock from unfamiliar experiences	"I saw a lot of dead patients, but it was completely different. Usually, the deceased patient remained warm when touched by hand. But the corpse had no warmth, the shape being unrecognizable, the smell being different. So it was a sensation that I had never experienced." (Participant 2)	7 (77.78)
	Doing my best in the present	"She or he died after going to the bathroom. I don't know when and what will happen, so I think that the happiness of my family is my top priority, and I think I live harder." (Participant 7)	3 (33.33)
	Confidence due to increased experience	"Since I've experienced it, I can predict it now, so I think I can do better in the future using this incident." (Participant 4)	3 (33.33)
Grievances due to work environment and regional characteristics	Disunified system	"Because it was not unified, I requested a lot of materials. There are documents required by agency, headquarter, prime minister, president, prosecution, and police. Because I have to report so many different things here and there, even reporting in the field causes problems in the on-site response, and even after the incident, I get sick of it." (Participant 5)	5 (55.56)
	Intervention of various interests	"Reporters and lawmakers who enter the off-limits area and take pictures, saying that they need to take pictures so that the site can be seen well. They even interfere with work in the field just because they don't see it properly." (Participant 4)	4 (44.44)
	The atmosphere that puts responsibility on others	"In small attempts, because the number of people is small, we have no choice but to respond in that way, but the media and the fire department's attitude that doesn't cover the firefighters' reporting as if they've done everything is difficult. This is partly because of the limitations on equipment and manpower that occur because the managers did not allocate enough manpower." (Participant 1)	5 (55.56)

Table 2. Themes descriptions example quotes frequency (Continue)   (n=9)

Theme	Descriptions	Example quotes	Frequency (%)
Grievances due to work environment and regional characteristics	Inactive help	"It is said that there are people who receive some help because circumstances are different for each city and province. Whether you're doing a sleep test or supporting outside counseling, you'll have to do it. It was difficult to speak honestly to someone at the fire department where we interact with our boss, with the risk that what we are talking about could go up to the top boss. I just formally ask newcomers to go." (Participant 5)	5 (55.56)
	Unforgettable regional characteristics	"Because it's a small area, we know each other well, so it's hard to forget people because even if someone related to the crew died and I try to forget them, I keep hearing about it." (Participant 2)	3 (33.33)
If you bury it and hold on, it becomes dull	Working without time to settle	"Even though we face such a scary thing, we must be dispatched." (Participant 4)	2 (22.22)
	Tolerating it in my own way	"I quit smoking, but after that I smoked again, and since then, I haven't been drinking, but I drank again." (Participant 2)	7 (77.78)
	Memories left in the unconsciousness	"In everyday life, I don't know it very well. My wife said that I screamed when I was sleeping. I don't know why, but I guess I had something in my mind. I think there is a little gap between my appearance and what's accumulated in my heart." (Participant 2)	3 (33.33)
	Sudden suffering from memories that come to mind	"The whole body is burnt, but the organs in the abdomen are still less burned, so the smoke is still unforgettable and I suddenly remember it. (Participant 9)	7 (77.78)
	Movement in anxiety and tension	"They react very sensitively to small things. They didn't react that way before, but even when a small fire happens, everyone reacts very sensitively. It seems that everyone is mobilizing in the tense state trembling with anxiety." (Participant 4)	2 (22.22)
	Dullness	"I feel like I'm getting over it calmly as I continue to experience it now." (Participant 8)	4 (44.44)
	Work with colleagues in the same situation	"We all went through it together. Actually, I don't think I can say it's difficult." (Participant 3)	3 (33.33)

The characteristics of the experiences revealed in this study are summarized as follows.

The first characteristic was stimulation through unfamiliar experiences. Because most of the disaster response team members participating in this study were working in small and medium-sized cities with relatively few multi-use facilities, the fire incident at the Jecheon Sports Center was the largest one they experienced. Most of the participants were shocked or frustrated as they experienced unexpected situations after arriving at the site because they could not predict the scale of the incident at the time of dispatch.

Participant (9) said, "Because I experienced such a big fire for the first time, I think I was thinking a lot about what went wrong and what needed to be

improved. In that area, it had a positive effect. I think I can say that I learned more about the disaster." ; participant (2) said, "I saw a lot of dead patients, but it was completely different. ...... So it was a sensation that I had never experienced."

On the other hand, that experience was helpful as it provided an opportunity to improve by looking back on what was lacking in the situation of dealing with large-scale fire disasters and handling related tasks. Afterwards, there were some participants who reported that they gained confidence in the field work because it was possible to predict the situation in the large fire unlike previous measures.

Participant (7) said, "I don't know when and what will happen, so I think that the happiness of my family is my top priority, and I think I live harder.", while participant (4) claimed: "Since I've experienced it, I can predict it now, so I think I can do better in the future using this incident".

The second characteristic was the distress caused by work environment and regional characteristics. Participants in this study suffered from the response to the incident and the situation after that due to the work environment and regional characteristics. First of all, it was mentioned that the system was not unified, so the subject and the content to be reported in relation to the incident were different. In particular, it was pointed out that the subject and the content to be reported were different depending on the affiliation of the disaster response team members at the site, which was enough to interfere with the on-site response.

Participant (5) said, "Because it was not unified, I requested a lot of materials. There are documents required by agency, headquarter, prime minister, president, prosecution, and police. Because I have to report so many different things here and there, even reporting in the field causes problems in the

on-site response, and even after the incident, I get sick of it."

Due to the characteristics of the small area, the participants' acquaintances were damaged, so the fire incident was frequently mentioned as the subject of conversations of the surrounding people, and shocking and frustrating memories that they did not want to remember were summoned in daily life. In addition, the attitude of the media and higher-level agencies that blame the firefighters for the responsibility of the incident and the formal counseling system rather than providing practical help were making people suffer even after returning to their daily lives.

Participant (2) said, "Because it's a small area, we know each other well, so it's hard to forget people because even if someone related to the crew died and I try to forget them, I keep hearing about it."

The third characteristic was to endure in the buried state and eventually become dull. Participants in this study had to work without being able to control their minds even if they were shocked and frustrated through unfamiliar experiences. Moreover, even though they were mentally difficult, it could not be said that it was difficult when they thought of their coworkers.

Participant (4) said, "Even though we face such a scary thing, we must be dispatched."

Moreover, even though they were mentally difficult, it could not be said that they were difficult when they thought of their coworkers. The colleagues also continued to work after the traumatic incident, without any time to take care of their minds, and most of the firefighters felt anxiety and tension in the car when they were dispatched differently than before. Most of the participants found their own way to soothe their hard feelings, such as sharing their experiences and feelings with colleagues, or exercising. A

small number of participants soothe their hard feelings by smoking cigarettes or drinking alcohol, and they felt that this method was effective. As finding their own way and endured, they continued to face the disaster, and they gradually became dull.

Participant (8) said, "I feel like I'm getting over it calmly as I continue to experience it now."

Ⅳ. Discussion

Through the structure of experience shown in this study, it was possible to deeply understand what the disaster response team experienced in the Jecheon Sports Center fire incident, and what the meaning and nature of the experience was. Therefore, it is significant that this study was attempted to provide the basic data for preparing a long-term strategy for effective policy direction and institutional protection based on systematic mental health management in the future. The results of the study were derived from three major themes and 17 sub-themes: stimulus through unfamiliar experiences, grievances due to work environment and regional characteristics, and dullness resulting from hiding and enduring.

The first characteristic was stimulation through unfamiliar experiences. Through the fire experience of the Jecheon Sports Center, I think of it as an opportunity to respond to large-scale fire disasters and handle related tasks, identify what is lacking, and come up with a plan for improvement. Positive post-traumatic growth was observed as some participants said that they tried to cope with it, and that they gained 'confidence in how to respond in a disaster situation' through the experience of a large fire. Furthermore, some participants showed a positive psychological change in their lives, such as 'doing your best in the present' in the face of the fact that a disaster could result in death. As mentioned in a previous study (Han et al., 2020) of survivors of the Sewol Ferry Disaster Danwon

High School, post-traumatic growth is a result of development and psychological changes beyond the existing psychological function or adaptation level, and Since it appears in various ways depending on environmental factors, it is necessary to prepare a social intervention support plan that considers individual characteristics.

The second characteristic was the distress caused by work environment and regional characteristics. Participants in this study suffered from the response to the incident and the situation after that due to the work environment and regional characteristics. This study was similar to this study as it was reported as a grievance that has not been resolved for a long time in the study of Cho et al. (2020). In the event of a major disaster, the head of the fire department can request support from the headquarters of each city and province, so the head of the fire department can exercise command and supervision, and the work system has been improved more efficiently.

According to previous studies, the most common symptom of post-traumatic stress disorder experienced by firefighters was depression, followed by alcohol abuse, anxiety, interpersonal sensitivity, and obsessive-compulsive disorder (Kim et al., 2014; Lee et al., 2011; Yoon & Kim, 2014). In many countries, including the United States, the suffering experienced by the response team involved in disaster situations, including firefighters, is recognized as a social problem, not an individual problem, and is systematically managed to prevent and post mental and psychological shocks (Kim, 2019). However, the disaster response team experiencing mental difficulties is deeply hidden, so it is an automatic and invasive rumination or intentional rumination of difficult memories in the unconscious, which is not well known in daily life, while positively reassessing and meaning the pain and promoting post-traumatic growth (Kwak, 2019; Tedeschi & Calhoun, 2004) also occur. Therefore, it is urgently needed to develop and support mental and psychological resilience programs tailored to each individual by approaching from a social dimension.

The third characteristic was to endure in the buried state and eventually become dull. Positive coping methods allow self-overcoming and post-traumatic growth in various ways, but the weaker the emotional approach, the worse the psychological pain, which can lead to an extreme result of suicide (Lee & Kim, 2020). In addition, post-traumatic growth experiences after the suicide of firefighters who are frequently exposed to disaster situations are becoming more sensitive to everything or experiencing emotional bluntness in every way (Kwak, 2019). It can be a hindrance to promoting growth after trauma. Therefore, support systems such as education and intervention programs that focus on a preventive approach that can strengthen an individual's ability to cope before an incident rather than a psychological support approach after a traumatic event should be activated. In addition, it is necessary to improve the quality of life by promoting post-traumatic growth through early crisis intervention by experts.

Ⅴ. Conclusion

Through the structure of experience shown in this study, it was possible to deeply understand what the disaster response team experienced in the Jecheon Sports Center fire incident, and what the meaning and nature of the experience was. Therefore, it is significant that this study was attempted to provide the basic data for preparing a long-term strategy for effective policy direction and institutional protection based on systematic mental health management in the future. Additionally, this study's results can be used as primary data for future research among Disaster Response Team.

Through this study, it was found through specific statements from the study participants that counseling and program were related to the positive life change of the disaster response team who participated in the fire incident at the Jecheon Sports Center. However, it was not clear

how much the method (counseling and program) could lead to a life that restores psychological, emotional, cognitive, physical, and relational balance. Therefore, if follow-up studies focusing on changes in life according to the level of individuals who have experienced post-traumatic stress are conducted, it is believed that more systematic and specific counseling as well as psychotherapeutic interventions will be facilitated. In addition, it is necessary to form the close cooperation system with related organizations such as public health center, Disaster Medical Assistance Team (DMAT), hospital, and fire department. The periodic training system as well as the command and communication system should also be established in preparation for disaster situation.

The limitations of the study and suggestions for follow-up studies can be divided into the following.

First, the disaster response team includes not only firefighters and emergency rescuers, but also nurses and doctors who are members of the disaster medical support team. The meaning and nature of their experiences, as well as their experiences, may differ from those of the study participants in this study. Therefore, in subsequent studies, it is necessary to be able to grasp various experiences of disaster response teams according to various work roles. In particular, through studies on the experiences of disaster medical support team members that have not received much attention in previous studies, it is necessary to prepare a plan for appropriate therapeutic intervention for them.

Second, through research, it was found that members of the disaster response team who participated in the fire incident at the Jecheon Sports Center may experience positive changes in life after the incident. However, it was not clear how much counseling and programs could lead to a life in which a sense of psychological, emotional, cognitive, physical, and relational balance could be restored. Therefore, if the follow-up study focusing on the change in life according to the level of the individual who has experienced post-traumatic stress, etc. is conducted, it will be possible to help not only more systematic and specific

counseling but also psychotherapeutic interventions.

Third, it is necessary to establish the close cooperation system with related institutions such as public health centers, DMAT, hospitals, and fire departments, and to establish the command and communication system in the disaster situation along with the system for regular training.

If this exploration is made, the understanding of recent disaster response team members will be broadened.

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