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# The Relationship between Post-traumatic Stress and Quality of Life in 119 ambulance workers

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**Abstract**
This study was conducted with survey on 151 of the 119 ambulance workers at J-do in G Metropolis from February 1st to 28th, 2015 in order to identify the relationship between post-traumatic stress and quality of life. As for collection of data, we have visited fire station, explained about the objective of the study, distributed survey papers to those that agreed to participate in the study, and collected them after they filled the questionnaires. Items of the survey included 10 questions about general characteristics, 22 questions about Korean version of accident impact criteria related to PTS, and 26 questions of WHOQOL-BREF criteria for estimation of life quality. Collected data were analyzed by using t-test, ANOVA, and multiple regressions. As a result of the investigation, the life of quality of 119 ambulance workers had the lowest score on environmental area, and health condition of them influenced on the quality of life. In addition, PTS was also investigated to influence on the quality oflife.

**Keywords**: 119 ambulance workers, Post-Traumatic Stress,Quality of Life

## 1. Introduction

119 Ambulance workers at the field of accident tend to feel the threat on their lives while performing their duties while witnessing the death or those with a significant damage. Seen in this perspective, they are exposed to the accidents causing injury and hence experience post-traumatic stress (PTS) [1]. The post-traumatic stress disorder rate of 119 ambulance workers in Korea was known to be 15.3%~55.2% [2-3], and it was known to 22.2% in America and 17.3% in Canada that caused PTSD according to the report [4]. When experiencing such PTS, it causes deteriorated performance of their duties as well as negative results such as disease and early retirement [5], and stress tends to be increased due to deteriorated work performance that significantly influences on health conditions (physical and mental) [6]. In addition, it is assumed that stress might influence on old ages after retirement as well as the quality of life when they are economically active. Therefore, this study is intended to contribute to prevent PTS of 119 ambulance workers and develop the coping techniques by identifying whether PTS influences on the quality of life of 119 ambulance workers and ultimately to improve the quality of life.

## 2. Methodology

### 2.1. Subject of Study & Collect Data

Subjects were 119 ambulance workers at J-do in G Metropolis. Visiting the fire station from February 1st to 28th in 2015, we have explained the objective of the study and guarantee about anonymity and distributed survey copies to those that agreed to participate in the study and collected them after they filled the questionnaires. Among 200 of the distributed copies of the survey, 151 of them were used for the final analysis.

### 2.2.Research Tool

As for general characteristics of subjects, there were 10 items including gender, age, academic backgrounds, marital status, religion, qualification, years of work, clinical experience, actual amount of salary, and subjective health conditions. As for PTS, accident impact criterion was used. As for accident impact criterion, Impact of Event Scale-Revised (IES-R:1997) [7] developed by Weiss and Marmar was referred, and Impact of Event Scale-Revised Korean Version, IES-R-K; 2005 verified by Hunjung Eun [8] from IES-R was used. IES-R-K consists of 22 questions in the four sub-areas (excessive aroused condition – 6 questions, avoidance – 6 questions, invasion – 6 questions, and sleeping disorder and emotional paralysis – 5 questions) and also 5-score Likert criterion ranging from 0 to 88. Score of more than 25 was classified to the post-traumatic stress.Korean version of WHOQOL-BREF developed by Sunggil Min et al. according to the situations in Korea [9] based on WHOQOL BREF criteria originally developed by WHO (World Health Organization) for the estimation of quality of life was used. WHOQOL-BREF criteria consist of 26 questions in the four sub-categories (physical area – 7 questions, mental areas – 6 questions, social area – 3 questions, life environment area – 8 questions, and quality of life and general health recognition – 2 questions). 5-score Likert criterion was used, and negatively related questions had the scores calculated in opposite manner in the range from 26 to 130. Original scores were used indicating that the higher the score was, the higher the quality of life was turned out to be.

### 2.3. Data Analysis

Collected data were analyzed by using SPSS 20.0. General characteristics were suggested with frequency and percentage, and quality of life and post-traumatic stress were suggested with average and standard deviation. In order to compare the quality of life between general characteristics and post-traumatic stress, t-test and ANOVA were performed. Multiple-regression analysis was performed on two of the models on significant items in the simple analysis. Model I was about general features, and Model II included post-traumatic stress on top of Model I.

## 3.Results of the Study

### 3.1. General Characteristics of Subjects

Subjects consisted of 84.1% of males and 15.9% of females in the table 1. As for the age, the one aged from 30 to 39 was turned out to have the highest frequency as 58.3%. As for the academic background, community college graduates were turned out to be recorded with highest frequency of 55.6%. 61.6% of subjects were married, and 23.2 of them were Christians. As for qualification, level 1st EMTs were 53.0%, and 46.4% of them were turned out to be experienced works for less than 3 years. 50.3% of them were turned out not to have clinical experience, and 41.7% of them had actual salary worth 2.49 million Won. 50.3% of subjects were turned out to have normal level of subjective health condition.

### 3.2 Quality of Life of Subjects

As for quality of life of subjects shown in table 2, 3.35±0.55 average score was recorded on the physical area followed by 3.38±0.58 for psychological area, 3.36±0.60 for social area, and 3.10±0.58 for environmental area. The average score of four areas was 3.30±0.50.

### 3.3 Quality of Life from General Characteristics

As for quality of life from general characteristics shown in table 3, the score recorded in those aged less than 29 was 3.53±0.50 followed by 3.24±0.46 in those aged from 30 to 39, and 3.21±0.50 in those aged more than 40 (F=4.45, p=0.013). As for years of employment, those with more than 3 years had the score of 3.41±0.49 followed by 3.22±0.47 for those with 3 to 5 years of experience, and 3.18±0.5 for those with more than 5 years of experience. There was a significant difference (F=3.69, p=0.027). As for actual salary amount, the one give less than 2.49 million Won had score of 3.43±0.51 followed by 3.19±0.48 in those with 2.5 to 2.99 million Won and 3.22±0.47 in those with more than 3 million Won (F=3.87, p=0.023). As for subjective health conditions, those responding to have healthy condition had score of 3.49±0.50 followed by 3.16±0.45 for those responding to have normal condition and 3.12±0.49 for those responding to have poor condition. There was a significant difference (F=8.75, p<0.001). There was no significant correlation of gender, academic background, marital status, religion, qualification, and duration of career with the quality of life.

**Table 1.** General characteristics of 119 rescue workers.

| Characteristics | Category | N | % | Characteristics | Category | N | % |
|---|---|---|---|---|---|---|---|
| Gender | Male | 127 | 84.1 | License (" Emergency Medical Technician) | Level 1st EMT" | 80 | 53.0 |
| | Female | 24 | 15.9 | | Level 2st EMT | 34 | 22.5 |
| Age (year) | ≤29 | 31 | 20.5 | | Nurse | 16 | 10.6 |
| | 30-39 | 88 | 58.3 | | Unqualified | 21 | 13.9 |
| | ≥40 | 32 | 21.2 | Duration of career (year) | 〉3 | 70 | 46.4 |
| Education level | High school | 15 | 9.9 | | 3-<5 | 26 | 17.2 |
| | College | 84 | 55.6 | | ≥5 | 55 | 36.4 |
| | University | 52 | 34.4 | Duration of clinical career (year) | No | 76 | 50.3 |
| Marriage | Single | 58 | 38.4 | | 〈3 | 57 | 37.7 |
| | Married | 93 | 61.6 | | ≥3 | 18 | 11.9 |
| Religion | Christianity | 35 | 23.2 | Monthly income (10,000won) | ≤249 | 63 | 41.7 |
| | Buddhism | 14 | 9.3 | | 250-299 | 51 | 33.8 |
| | Roman Catholicism | 12 | 7.9 | | ≥300 | 37 | 24.5 |
| | other | 90 | 59.6 | Self-rated health status | Good | 64 | 42.4 |
| | | | | | Fair | 76 | 50.3 |
| | | | | | Poor | 11 | 7.3 |

### 3.4 Relationship between Post-Traumatic Stress and Life of Subjects

The average PTS score of subjects in table 4 was 12.92±10.59, and there were 125 (82.8%) subjects in the normal PTS group with average score of 9.65±7.89. There were 26 (17.2%) subjects in the PTSD group with average score of 28.65±7.34. The average score of quality of life was 3.30±0.50, and the one in the normal group was3.41±0.45. The average score in PTSD group was 2.75±0.36 that there was a significant difference between two groups (t=7.92, p<0.001).

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**Table 2.** Quality of life of the 119 rescue works

| Category | M±SD |
|---|---|
| Physical | 3.35±0.55 |
| Mentality | 3.38±0.58 |
| Social | 3.36±0.60 |
| Life environment | 3.10±0.58 |
| Total | 3.30±0.50 |

### 3.5 Elements Influencing on Quality of Life

Table 6 indicates the result of multiple-regression to identify the elements influencing on the quality of life. In Model I, the case of subjects responding to have healthy condition was significantly higher than the ones for normal health condition (β=-0.285, p=0.001) and the ones with poor conditions (β=-

0.356, p=0.026). $R^2$ in the Model I was 16.8% (F=3.576, p=0.001). As for the elements influencing on the quality of life in Model II, the subjective health conditions that were significant in the Model I influenced on the quality of life. As for PTS added on the Model II, PTSD group (β=-0.578, p<0.001) was significantly lower than the normal group. $R^2$ in the Model II was 34.2% (F=8.144, p<0.001).

**Table 3.** Quality of life by general characteristics.

| Characteristics | tegory | SD | or | p | Characteristics | Category | M±SD | t or F | p |
|---|---|---|---|---|---|---|---|---|---|
| Gender | ale | ±0.52 | .11 | 0.267 | License | Level 1st EMT* | 3.35±0.53 | 1.40 | 0.243 |
| | male | ±0.33 | | | | Level 2st EMT | 3.26±0.45 | | |
| Age (year) | 9 | ±0.50 | 45 | 0.013 | | Nurse | 3.34±0.39 | | |
| | -39 | ±0.46 | | | | Unqualified | 3.11±0.51 | | |
| | 0 | ±0.50 | | | Duration of career (year) | 〉3 | 3.41±0.49 | 3.69 | 0.027 |
| Education level | gh sc-hool | ±0.46 | 54 | 0.583 | | 3-<5 | 3.22±0.47 | | |
| | llege | ±0.53 | | | | ≥5 | 3.18±0.50 | | |
| | niversity | ±0.50 | | | | No | 3.33±0.54 | 0.42 | 0658 |
| Marriage | ngle | ±0.56 | 70 | 0.091 | Duration of clinical career (year) | 〈3 | 3.28±0.45 | | |
| | arried | ±0.45 | | | | ≥3 | 3.21±0.47 | | |
| Religion | ristian-ity | ±0.46 | 95 | 0.414 | Monthly income (10,000won) | ≤249 | 3.43±0.51 | 3.87 | 0.023 |
| | ddhism | ±0.33 | | | | 250-299 | 3.19±0.48 | | |
| | man | ±0.61 | | | | ≥300 | 3.22±0.47 | | |
| | tholici-sm | | | | | | | | |
| | her | ±0.52 | | | Self-rated health status | Good | 3.49±0.50 | 8.75 | <0.001 |
| License | vel 1st MT* | ±0.53 | 40 | 0.243 | | Fair | 3.16±0.45 | | |
| | vel 2st EMT | ±0.45 | | | | Poor | 3.12±0.49 | | |
| | urse | ±0.39 | | | | | | | |
| | nqualified | ±0.51 | | | | | | | |

**Table 4.** Quality of life score according to PTSD.

| | PTS | | Quality of life | | |
|---|---|---|---|---|---|
| | N (%) | M±SD | M±SD | t-test | p |
| total | | 12.92±10.59 | 3.30±0.50 | | |
| Non PTSD (≤24) | 125 (82.8) | 9.65± 7.89 | 3.41±0.45 | 7.92 | <0.001 |
| PTSD (≥25) | 26 (17.2) | 28.65± 7.34 | 2.75±0.36 | | |

**Table 6.** Factors influencing Quality of life by multiple-regression analysis.

| Characteristics | Category | Modell | | Model Ⅱ | |
|---|---|---|---|---|---|
| | | β | p-value | β | p-value |
| Age (year) (/≤29) | 30-39 | -0.123 | 0.274 | -0.130 | 0.197 |
| | ≥40 | -0.137 | 0.336 | -0.147 | 0.248 |
| Duration of career (year) (/〉3) | 3-5 | -0.140 | 0.225 | -0.108 | 0.292 |
| | 〉5 | -0.149 | 0.137 | -0.056 | 0.533 |
| Monthly income (10,000won) (/≤249) | 250-299 | -0.081 | 0.432 | -0.103 | 0.268 |
| | ≥300 | -0.067 | 0.588 | -0.133 | 0.234 |
| Self-rated health status (/good) | Fair | -0.285 | 0.001 | -0.185 | 0.016 |
| | Poor | -0.356 | 0.026 | -0.239 | 0.097 |
| PTS (/no) | | | | -0.578 | <0.001 |
| F (p-value) | | 3.576 (0.001) | | 8.144 (<0.001) | |
| $R^2$ | | 0.168 | | 0.342 | |

## 4. Consideration

This study was conducted to identify the influence of stress on the quality of life and also the PTS of 119 ambulance workers.Average score of PTS among 119 ambulance workers was 12.92±10.59. Among them, the one of PTSD was 28.65±7.34, and the prevalence rate was 17.2%. The average score of PTS in Seoul derived by using the same tools in this study was 12.40±17.02, and prevalence rate of PTSD was 20% that were the similar with the results in the previous study [10]. The reason why PTSD prevalence rate of 119 ambulance workers was higher than the one of regular people (PTSD prevalence rate of 1 to 3%) was reported that 119 ambulance workers frequently dealt with direct and indirect traumatic events including the fear on threat of their lives while saving a life and also observation of patients in devastated conditions [11]. Therefore, PTSD was seemed to negatively influence on physical and mental health [6] and also on the quality of life. On the other hand, the average score of quality of life among 119 ambulance workers was 3.30±0.50. Therefore, the quality of life was investigated to be in a normal level, while the quality of life in the environmental area was turned out to be the lowest. The reason behind this result was how ambulance workers are always required to standby for fulfilling their duties and exposed to fire or dangerous situations including social circumstances [12].

As for variables that influenced on the quality of life among 119 ambulance workers, there were health conditions and PTS. The quality of life was turned out to be lower among those responding to have normal condition (Mll: β=-0.185, p=0.016) than those responding to have healthy conditions. If one is not healthy, he/she tends to easily feel fatigue and experience a feeling of helplessness and exhaustion due to high level work stress. Therefore, it influences on the duties and lowers performance [13] that ultimately effects on the quality of life. As for PTS, the quality of life was lower in the PTSD group (β=-0.578, p<0.001) than the normal group. As for PTS, short-term period tends to cause fatigue or anorexia as a part of inconvenience in daily life. However, if it becomes a chronic phenomenon, it might cause serious errors while performing the duties due to lowered concentration level and physical abnormal conditions and also lead to various severe diseases, alcoholism, medical poisoning, and suicide [14]. Due to such vicious cycle, it is assumed to ultimately influence on the quality of life.

As for limitations of this study, it was difficult to generalize the results of the study conducted on 119 ambulance workers only in several areas instead of the entire regions. In addition, this study only dealt with a single case that did not have injury along with limitation on self-filling method on the survey. However, this study is meaningful in that it identified causes of PTS among 119 ambulance workers influencing on the quality of life and suggested grounds for improving the quality of lives among 119 ambulance workers.

As a result of this study, the quality of lives of 119 ambulance workers was influenced by mental status and PTS of ambulance workers. It is needed to make an effort to maintain physical and mental health in a good condition to improve the quality of lives among 119 ambulance workers. It is also recommended to seek for a solution for dealing with PTS from life-saving activities.

## 5. Conclusions

This study was conducted to analyze the relationship between PTS and quality of lives of 151 of 119 ambulance workers at

J-do in G Metropolis from February 1st to 28th, 2015 preparing for an ability of dealing with PTS among 119 ambulance works and solution for improving situations and also fundamental data for enhancing the quality of life. Collected data were analyzed by t-test, ANOVA, and multiple-regression analysis suggesting the elements related to the quality of life. As a result of result, the quality of life of 119 ambulance workers was turned out to have the lowest score in environmental area, and health condition influenced on the quality of life. In addition, PTS was influenced on the quality of life as well. In conclusion, it is needed to make an effort for maintaining physical and mental conditions in order to improve quality of lives among 119 ambulance workers, and measures for dealing with PTS and program solutions are seemed to be needed.

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