

Study of the Conditions Surrounding Fatigue That Are Common to Medical Professionals Working in Emergency and Critical Care Centers in Japan

Natsuko Makino

Department of Nursing, School of Health Sciences, Sapporo Medical University, Sapporo, Japan
Email: sky0122@sapmed.ac.jp

How to cite this paper: Makino, N. (2020) Study of the Conditions Surrounding Fatigue That Are Common to Medical Professionals Working in Emergency and Critical Care Centers in Japan. *Health*, 12, 27-37.
<https://doi.org/10.4236/health.2020.121003>

Received: December 11, 2019

Accepted: January 6, 2020

Published: January 9, 2020

Copyright © 2020 by author(s) and Scientific Research Publishing Inc.
This work is licensed under the Creative Commons Attribution International License (CC BY 4.0).
<http://creativecommons.org/licenses/by/4.0/>



Open Access

Abstract

This study aimed to clarify the conditions surrounding fatigue that are common to medical professionals working in emergency and critical care centers in Japan. Semi-structured interviews were conducted with eight professionals ranging from doctors, nurses and pharmacists to clinical engineering technologists and radiation technologists. Their narratives were analyzed using the qualitative descriptive approach to determine fatigue common to all professionals and the reasons behind it. The five categories that emerged as the reasons for fatigue common to the subjects were [playing one's role in treatment and procedures for emergency and critical patients], [accommodating the patient's background and coming to terms with the outcome], [difficulties in liaising with other professionals], [feeling pressure as a responsible professional in emergency care] and [loss of sense of time caused by variable working hours]. The results revealed that fatigue common to all of the subjects was related to dealing with patients, coordinating with other professionals, having professional responsibilities and the working environment. This study suggests that arrangements to improve the working environment, ensure adequate staffing, and provide mental health support for the well-being of medical professionals working in emergency and critical care centers are necessary.

Keywords

Fatigue, Medical Professionals, Emergency and Critical Care Centers

1. Introduction

As the differentiation of functions progresses at hospitals, it is predicted that the

length of hospital stays will decrease and the severity of patients' symptoms will increase throughout hospitals. While patients and their families seek safe and reassuring care, an increase in workload as medicine advances in sophistication and complexity is resulting in fatigue in medical professional in clinical practice settings, and the ideal state of medicine itself is being called into question. In the field of medicine in Japan, focus is being placed on multidisciplinary cooperation aimed at providing high quality care and utilizing the expertise of each type of professional. Multidisciplinary cooperation is based on the premise of a diverse range of highly specialized medical professionals who share goals and information, divide duties, and collaborate and support each other in order to provide medical care that accurately meets patients' specific needs [1].

Meanwhile, problems have been pointed out that make it difficult to follow through with team-based medical care, such as a lack of understanding about the work duties of other types of professionals resulting in inadequate collaboration and mutual support and early job turnover of different types of professionals preventing the building of knowledge from experience. In particular, the medical professionals in medical care teams at emergency and critical care centers include not only doctors and nurses, but also clinical engineers, pharmacists, and many other types of professionals. As a result, dividing authority and delegating tasks in cooperation among professionals are complicated, and there have been reports of different kinds of conflict concerning the expertise and specialist techniques of the various types of professionals [2]. Furthermore, the nature of emergency care causes burnout and early job turnover in medical staff and there is difficulty securing members to provide smooth team-based medical care [3].

Numerous studies have been conducted on burnout and factors affecting job turnover among nurses working at emergency and critical care centers [4], and fatigue was found to be one relevant factor [5]. We therefore focused on fatigue and hypothesized that it is one of the factors affecting multidisciplinary cooperation. Although fatigue in nurses working at emergency and critical care centers has been investigated previously [6] [7], no studies have investigated medical professionals other than nurses.

We conducted a preliminary study to test our hypothesis and attempted to clarify the conditions surrounding fatigue that may hinder multidisciplinary cooperation by medical professionals in various positions working at emergency and critical care centers. We interviewed medical professionals in various positions working at an emergency and critical care center to determine if they experience fatigue and to extract the factors affecting fatigue. To obtain strategies for preventing medical professionals from quitting their jobs, we clarified the conditions surrounding fatigue that were common to the medical professionals.

2. Purpose

This study aimed to clarify the conditions of fatigue common to medical professionals working in emergency and critical care centers in Japan.

3. Methods

3.1. Definitions of Terms

In the present study, “fatigue” was defined as a decrease in activity level and capacity to live life caused by an excessive mental and physical burden.

3.2. Design

This study applied a qualitative descriptive design to the data analysis. Qualitative descriptive designs are used in qualitative research for studies that are descriptive in nature, particularly for examining health care and nursing-related phenomena.

3.3. Inclusion Criteria

A total of 10 individuals were recommended by the center director as study subjects, comprising two doctors, two nurses, two pharmacists, two clinical engineers, and two radiological technologists working at an emergency and critical care center.

This study used maximum variation sampling. Maximum variation sampling is a method to increase the differences in a sample to make it more likely that data are representative when random sampling is not possible.

3.4. Data Collection Period

Data were collected from March 2013 to the end of May 2013.

3.5. Data Collection and Analysis

One center was selected from a list of centers on the Japanese Association for Acute Medicine website. At the time of the survey, there were 245 emergency and critical care centers in Japan. Pharmacists, clinical engineers and radiological technologists often worked at multiple facilities.

The director of that center provided consent to participate in the study after receiving an explanation of the intent and purpose of the study. The director was asked to recommend two of each of the following professionals: doctors, nurses, pharmacists, clinical engineers, and radiological technologists. Using interview guidelines, the subjects who provided consent were given semi-structured interviews on 1) whether they were experiencing fatigue at work and 2) the factors affecting fatigue.

The data were analyzed by qualitative descriptive analysis, which comprised an analysis by subject and an overall analysis. First, a verbatim transcript was prepared from the interview data, and the transcript was read repeatedly and carefully to gain an overview of the content. Next, contextual units were extracted from the verbatim transcript for inclusion in the analysis by subject, focusing on fatigue in medical professionals working in emergency and critical care centers. An initial summary was prepared in a manner that preserved the semantic content of the individual contextual units. The level of abstraction of

the expressions that reflected that description was then increased to prepare a code with a particular focus on fatigue common to the medical professionals. In the overall analysis, the codes obtained for all of the subjects were classified based on their similarities and commonalities, and subcategories and categories were formulated and labeled.

3.6. Reliability Assurance

To examine the rigor and accuracy of the analysis results, a trial interview was conducted with one nurse who met the inclusion requirements. This resulted in improvements in the interviewer's interviewing skills and the accuracy of the interview guide.

An investigator who specialized in emergency nursing and was experienced in qualitative research provided supervision with regard to the analysis results.

3.7. Ethical Considerations

The study was approved by the ethics committee of the institution with which the investigators are affiliated. The participating institution and subjects were given written and oral explanations of aspects of the study such as the following: the intent and purpose of the study; that study participation was voluntary; that they could decline to participate without any disadvantage; that anonymity and confidentiality would be maintained; that rigorous methods of data handling, retention, and disposal would be employed; and how the results would be published. Written informed consent to participate was obtained from all subjects.

4. Results

Subjects were a total of eight individuals who provided informed consent: two doctors, one nurse, one pharmacist, two clinical engineers, and two radiological technologists. All subjects had been working at the emergency and critical care center for at least 5 years. The doctors, nurse, and pharmacist worked at the emergency and critical care center full-time, while the clinical engineers and radiological technologists also worked for another department in addition to the emergency and critical care center.

All subjects responded that they felt fatigue resulting from their current work duties. Five categories of factors causing fatigue common to all subjects were found: [playing one's role in treatment and procedures for emergency and critical patients], [accommodating the patient's background and coming to terms with the outcome], [difficulties in liaising with other professionals], [feeling pressure as a responsible professional in emergency care], and [loss of sense of time caused by variable working hours] (**Table 1**).

The categories are explained below. Categories, subcategories, and codes are enclosed in [], (), and {}, respectively.

1) [Playing one's role in treatment and procedures for emergency and critical patients]

Table 1. Reasons for feeling fatigued.

Code	Sub-category	Category
There are times when I cannot keep up with the speed of procedures	feeling unable to keep up with the speed of procedures	
It takes a lot of time and effort to treat critical patients and this makes me feel nervous		
I have to be particularly careful about instructions to change medication for critical patients	caring for critical patients requiring time and effort	
It is stressful if there is a continuous flow of patients requiring a heart-lung machine		playing one's role in treatment and procedures for emergency and critical patients
I have to take so many images if there are many extremely critical patients at the same time		
Symptoms of walk-in patients can deteriorate suddenly	sudden deterioration of non-critical patients	
One cannot really anticipate what is going to happen in emergency care		
There is a sense of tension because we have to deal with patients brought in by air ambulance	tension due to the unpredictable nature of emergency care	
There is nothing steady and predictable in emergency care		
I have to deal with non-critical patients who I suspect do not need emergency care	dealing with non-critical patients who use emergency centers as a convenient place to get care, as well as criminals	
People use emergency and critical care centers as a convenient and quick place to get medical care		
Even if the patient is a criminal, I have to use my best knowledge and skills to care him		accommodating the patient's background and coming to terms with the outcome
My emotions vary considerably depending on the outcome		
It is extremely sad and hard when the patient's life was not saved	unbearable outcome and death of critical patients	
It is unbearable and mentally demanding to watch someone die		
I become mentally drained when a patient died		
Whether to accept a patient or not is determined by his condition and availability of nurses		
When I receive a hotline call, I have to understand the seriousness of the patient's condition and arrange for nurses to be positioned appropriately	making arrangements depending on the seriousness of the patient's condition and availability of staff	
I have to take images as quickly as possible if the patient has a trauma or is intubated		
I cannot focus on critical patients when I have a lot of non-critical patients in my care	multiple burden when a number of patients are brought in at the same time	difficulties in liaising with other professionals
Things do not go well if there are no beds available for arriving patients		
I become exhausted with giving procedures when many critical patients are admitted at the same time		
I have to provide extra/additional care to those patients who are in a more serious condition than others	situations where a nurse cannot cope alone	
There are times when I struggle to care a critical patient by myself; it is difficult to predict nursing requirements		

Continued

I have to persuade the doctor to change the prescription when his instruction is different from mine	there are cases in which my opinion is different from the treatment strategy	
I have to order an examination which I think is necessary but the radiography department disagrees		
I get caught in the middle when doctors from different departments have different ideas on treatment	getting caught in the middle	difficulties in liaising with other professionals
Doctors from the same department ask me to take images without regard for my convenience or workload	being inundated with orders at the same time	
I have to liaise with other professionals such as doctors and nurses	communicating with other disciplines	
There is a time lag between the time when the doctor has finished his treatment and the time when the nurse has completed her nursing work	work completion time variances among different professionals	
A pharmacist has to obtain information about emergency patients and deal with medication changes without outside help	having to work without help	
I feel pressure when I have to deal with many patients by myself, being fully aware that there are many patients waiting for their turn to have images taken	knowing many patients are waiting for their turn	feeling pressure as a responsible professional in emergency care
It is the doctor who makes the final decision	doctor making the final decision	
Nurses are solely responsible for primary care	responsibility for primary care rests on nurses	
It is physically tough to work on shifts		
I feel dull and physically tired after a night shift	unpredictable inflow of patients gives no time to nap	
During a night shift, there is a continuous flow of walk-in patients, giving me no time to take a rest		
When I am on night shift, my sense of time is disturbed	losing sense of time after working long hours on each shift on an ongoing basis	
I always have to work overtime and I cannot take days off		
I have to work long hours at weekends and on night shift		loss of sense of time caused by variable working hours
I have to deal with various types of patients at weekends and in the night when other hospitals are closed		
It is just hustle and bustle when we are extremely busy with arriving patients		
There is uncertainty about the inflow of patients and we cannot secure a nap-time in the night	dealing with arriving patients without taking a rest through the night	
A lot of examinations have to be carried out of emergency patients when I am on night shift		
I have no time to take even a little rest when I am on night shift		

This category comprised four subcategories and described participation in treatment and procedures for critical patients requiring urgent care. In particular, the subcategory (feeling unable to keep up with the speed of procedures) included the code {there are times when I cannot keep up with the speed of procedures}. (Caring for critical patients requires time and effort) was commonly described because each type of professional carried out their respective tasks as the severity of the patient’s condition increased.

2) [Accommodating the patient's background and coming terms with the outcome]

This category comprised two subcategories and described the patient's background ranging from non-critical patients to criminals and the outcome of patients dying despite the medical team's best efforts. In particular, regarding (Dealing with non-critical patients who use emergency centers as a convenient place to get care, as well as criminals), subjects gave such comments as {I have to deal with non-critical patients who I suspect do not need emergency care} and {People use emergency and critical care centers as a convenient and quick place to get medical care}, describing social issues concerning emergency care. Regarding (unbearable outcome and death of critical patients), subjects gave comments such as {my emotions vary considerably depending on the outcome} and {it is unbearable and mentally demanding to watch someone die}, describing despair among medical professionals.

3) [Difficulties in liaising with other professionals]

This category comprised eight subcategories and described the difficulties and harmful influences sensed in the coordinating of professionals in various disciplines involved in care for critical patients. This category highlights the need for each medical profession to adjust their viewpoint, and the difficulties experienced in performing their respective duties.

In particular, regarding (making arrangements depending on the seriousness of the patient's condition and availability of staff), nurses gave comments such as {whether to accept a patient or not is determined by his condition and the availability of nurses} and radiological technologists gave comments such as {I have to take images as quickly as possible if the patient has trauma or is intubated}.

The subcategory (multiple burdens when a number of patients are brought in at the same time) suggests that professionals have multiple duties that must be handled at the same time as patient care. Nurses' narratives revealed the subcategory (situations where a nurse cannot cope alone), and radiological technologists' narratives revealed the subcategory (being inundated with orders at the same time), which are characteristics of the job. Moreover, comments such as {doctors from the same department ask me to take images without regard for my convenience or workload} described the roles of each professional.

4) [Feeling pressure as a responsible professional in emergency care]

This category comprised four subcategories and described the pressure from being responsible as a professional. In the subcategory (doctors make the final decision), subjects gave comments such as {it is the doctor who makes the final decision}. In the subcategory (responsibility for primary care rests on nurses), subjects gave comments such as {nurses are solely responsible for primary care}. In the subcategory (having to work without help), subjects gave comments such as {a pharmacist has to obtain information about emergency patients and deal with medication changes without outside help}.

Narratives of radiological technologist revealed {I feel pressure when I have to deal with many patients by myself, being fully aware that there are many patients

waiting for their turn to have images taken}, showing they felt pressure to care for many patients alone.

5) [Loss of sense of time caused by variable working hours]

This category comprised three subcategories and described the loss of sense of time associated with the work environment of emergency care that continues day and night. In the subcategory (unpredictable inflow of patients gives no time to nap), subjects gave comments such as {it is physically tough to work on shifts} and {during a night shift, there is a continuous flow of walk-in patients, giving me no time to take a rest}. In the subcategory (losing sense of time after working long hours on each shift on an ongoing basis), subjects gave comments such as {when I am on night shift, my sense of time is disturbed}. In the subcategory (dealing with arriving patients without taking a rest through the night), subjects gave comments such as {it is just hustle and bustle when we are extremely busy with arriving patients} and {I have no time to take even a little rest when I am on night shift}.

5. Discussion

Fatigue is felt by medical professionals working at emergency and critical care centers, regardless of their type of job, and factors affecting fatigue were treating critical patients requiring urgent care, patient background, and patient outcome. These findings are similar to the results of a study on the difficulties faced by nurses working at emergency and critical care centers [8]. Regardless of the type of job, treating critical patients who need urgent care requires highly advanced clinical judgement skills that lead to quick diagnosis of the symptoms, the acquisition of broad-ranging knowledge and skills, and the ability to initiate appropriate procedures and treatment [9]. This may result in medical staff experiencing strong feelings of nervousness and fatigue. Moreover, boarding an ambulance is free in Japan and patients can receive public assistance, which has led to the social issue of non-critical patients using ambulances [10]. Inappropriate use of medical resources by patients leads to fatigue in medical professionals, suggesting the need to educate the public about what to do in the event of sudden changes in condition. In addition, emergency and critical care centers are places where the outcome for many patients is death, and this has been reported to lead to burnout in medical staff. As noted in the subcategory (unbearable outcome and death of critical patients), adjustment of the work environment and provision of mental health support for medical staff may be needed.

Regarding multidisciplinary coordination, subjects described the difficulties and harmful influences in the coordination of the various tasks of each type of professional alongside one another. Several studies have been conducted on coordinating nurses in emergency and critical care [11]. It was reported that nurses are expected to be able to provide multidisciplinary care and take the initiative in coordinating care [12], and therefore coordination is an important role. Despite this, even expert nurses in critical care reportedly find coordination

difficult [13]. In the present study, not only nurses, but also radiological technologists described (being inundated with orders at the same time) and one pharmacist commented, {I get caught in the middle when doctors from different departments have different ideas on treatment}. On the other hand, narratives that were characteristic of clinical engineers were not seen. Clinical engineers utilize equipment that allows them to see only one patient at a time, whereas pharmacists and radiological technologists can see multiple patients at the same time. Therefore, clinical engineers concentrate on one patient at a time, and patient treatment is often decided depending on the situation, as revealed in the subcategory (there are cases in which my opinion is different from the treatment strategy).

This finding has not been reported in previous studies and is novel. This suggests that different types of medical professionals need to understand each other's roles and duties and be considerate to one another. It has also been reported that high work demand and discretionary power affects psychological stress [14]. Emergency and critical care centers are fast-paced and bustling and may be highly demanding on medical professionals. It may be necessary to facilitate smooth communication among different professionals to actively eliminate difficulties and harmful influences.

The present study revealed that subjects are not only aware of the specificity of their roles, but also feel pressure to carry out duties by themselves. The fact that such fatigue-related factors were observed even among these subjects who had been working at an emergency and critical care center for at least 5 years also points to the high demand from other medical professionals mentioned above. On the other hand, the category [difficulties in liaising with other professionals] did not include the narratives of clinical engineers, indicating that the role expectations of each type of medical profession found in emergency and critical care centers are different. This study aimed to clarify the conditions of fatigue common to medical professionals working in emergency and critical care centers and further studies are needed to determine differences in and characteristics of fatigue in medical professionals.

The expertise of each type of medical professional is increasing, and expectations for those roles may also be high. It may be useful to hold team conferences so that members can learn the circumstances of the other medical professionals within the team and take measures to eliminate conflict.

Lastly, fatigue from the work environment was the result of characteristics of the work system of the medical professionals. In particular, patients are frequently brought in and their condition changes rapidly, and our study showed that subjects felt a loss of the sense of time from their work. Nakada *et al.* [15] carried out an online survey on work-life balance in professionals at emergency and critical care centers. They found that professionals worked overtime almost every day, that they could not complete their work during working hours, and that appropriate work management is needed. This suggests that there is a need

to optimize the work environment by reviewing appropriate personnel allocation and work hours and adjusting the work system.

6. Limitations of the Study

The present study only examined medical professionals working at one center. Also, the sample was small and the sex and work schedule of subjects varied. The factors revealed in the study may therefore only represent some of the various factors affecting fatigue. Secondly, we extracted factors of fatigue that all subjects had in common from each subject's individual tasks, and an investigation of each type of profession is needed to alleviate the unique types of fatigue they face. Further studies are needed to determine differences in and characteristics of fatigue in medical professionals working at emergency and critical care centers.

7. Conclusion

The following five categories were identified as conditions of fatigue that are common to medical professionals working in emergency and critical care centers in Japan: [playing one's role in treatment and procedures for emergency and critical patients], [accommodating the patient's background and coming to terms with the outcome], [difficulties in liaising with other professionals], [feeling pressure as a responsible professional in emergency care] and [loss of sense of time caused by variable working hours]. These findings suggested the need to improve the working environment, ensure adequate staffing, and provide mental support for the well-being of medical professionals working in emergency and critical care.

Acknowledgements

The author is grateful to the A Emergency and Critical Care Center and medical professionals working at the institution that participated in this study.

Conflicts of Interest

The author declares no conflicts of interest regarding the publication of this paper.

References

- [1] Kouseiroudousho (2010). Chimuiryounosuisinnitsuite: chimuiryounosuishinnikansurukentoukai houkokusho. <http://www.mhlw.go.jp/shingi/2010/03/dl/s0319-9a.pdf>
- [2] Rose, L. (2011) Interprofessional Collaboration in the ICU: How to Define? *Nursing in Critical Care*, **16**, 5-10. <https://doi.org/10.1111/j.1478-5153.2010.00398.x>
- [3] Adriaenssens, J., Gucht, D.V. and Maes, S. (2015) Association of Goal Orientation with Work Engagement and Burnout in Emergency Nurses. *Journal of Occupational Health*, **57**, 151-160. <https://doi.org/10.1539/joh.14-0069-OA>
- [4] Torihara, M. and Nakanishi, M. (2008) The Interrelationship between Nurses' De-

- sire to Resign; Job Satisfaction and Organizational Commitment in Medical Emergency Centers. *Bulletin of International University of Health and Welfare*, **13**, 16-24.
- [5] Gershon, R.M., Stone, P.W., Zeltser, M., Faucett, J., Macdavitt, K. and Chou, S. (2007) Organizational Climate and Nurse Health Outcomes in the United States: A Systematic Review. *Industrial Health*, **45**, 622-636. <https://doi.org/10.2486/indhealth.45.622>
- [6] Nakai, N. and Momma, M. (2014) Cross-Sectional Research on Cumulative Fatigue of Nurses Working in Emergency and Critical Care Centers in Hokkaido. *Journal of Japanese Society for Emergency Medicine*, **17**, 1-10.
- [7] Nakai, N., Tahira, C., Momma, M., Inami, K. and Hosokai, K. (2014) Fact-Finding Survey on Cumulative Fatigue of Nurses by Job Displacement in Emergency and Critical Care Centers. *Journal of Regional Emergency and Disaster Medicine Research*, **13**, 21-26.
- [8] Shiromaru, M., Haruna, J., Makino, N., Uchida, H., Minagawa, Y., Kanda, N., Taguchi, Y., Tsugawa, H. and Momma, M. (2019) Condition of Difficulties for Emergency Nurses in a Rural City in Hokkaido. *Sapporo Journal of Health Sciences*, **8**, 6-12.
- [9] Nakamura, K. (2008) Management of Emergency and Severe Care. Nakayama Shobo., Ltd., Tokyo.
- [10] Ishii, T., Ohida, T., Fujisaki, K., Takemura, S., Sone, T. and Hayashi, K. (2001) Study of Factors That Influence the Use of Ambulance in Japanese Prefectures. *Japan Society of Public Health*, **48**, 109-120.
- [11] Ishimaru, T. (2016) Management Skills of Nurses in Emergency Room Considered from Narratives of Practice: Through a Narrative from Nurses in a Emergency Medical Care Center. *Journal of Japanese Association for Emergency Nursing*, **18**, 37-44.
- [12] Tagima, M., Tanaka, N., Oike, M. and Arai, N. (2009) Behavior of a Management for Nurses Working in Emergency Units. *Journal of Japanese Association for Emergency Nursing*, **11**, 124.
- [13] Makino, N., Nakamura, K., Ishikawa, K. and Sugawara, M. (2019) Difficulties Experienced in Trauma Nursing Practice by Expert Emergency Nurses in Japan. *Open Journal of Nursing*, **9**, 1073-1087. <https://doi.org/10.4236/ojn.2019.910079>
- [14] Ozaki, H. (2007) Manual of Occupational Mental Health. Nakayama Shobo., Ltd., Tokyo, 24-26.
- [15] Nakada, T., Matsushima, A. and Oda, S. (2019) Questionnaire Survey for the Session on Work-Life Balance in the 45th Annual Meeting of the Japanese Society of Intensive Care Medicine. *Japan Society Intensive Care Medicine*, **26**, 127-137. https://doi.org/10.3918/jsicm.26_127