Research note on recognition of medical safety by nurses using a four-layered model: Individuals, team and organization

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Purpose

Medical safety is crucial for maintaining patients' health and it is also related to nurses' health. According to our previous survey (Hyodo, Sacoda, and Tanaka, 2007), high stress recognized by nurses was significantly related to the number of medical incidents reported by them. These results suggested that a difficult working environment is a potential cause of both stress and medical incidents, and that there might be composite relations between them.

In this study, we surveyed nurses about their recognized way to prevent medical accidents, in order to identify intervention points for developing a safety culture and to examine the influence of a healthy working environment on workers.

Method

1. Participants

In this study, 1,307 questionnaires concerning medical safety were distributed to nurses who worked in X prefectures in Japan, and 523 were returned (return rate = 41.0%) by mail. Two hundred and thirty-five described responses to the question about "any method to prevent medical accidents" were analyzed through content analysis.

2. Procedure

Depend on the four layers provision to medical error (Figure1), we hypothesized the three layers model of achieving level of medical safety culture. In the three-layer model, the contents were categorized at the individual, team, and organization level. After summarizing these categories, we applied Hayashi's quantification III and the mixed-method, with

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Note 1. We really appreciate to participants of X prefecture.

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3. This study was presented at the 1st Global Congress for Qalitative Health Research, Seoul, Korea, 2011.

quantitative and qualitative data in an attempt to explain and discuss the data."

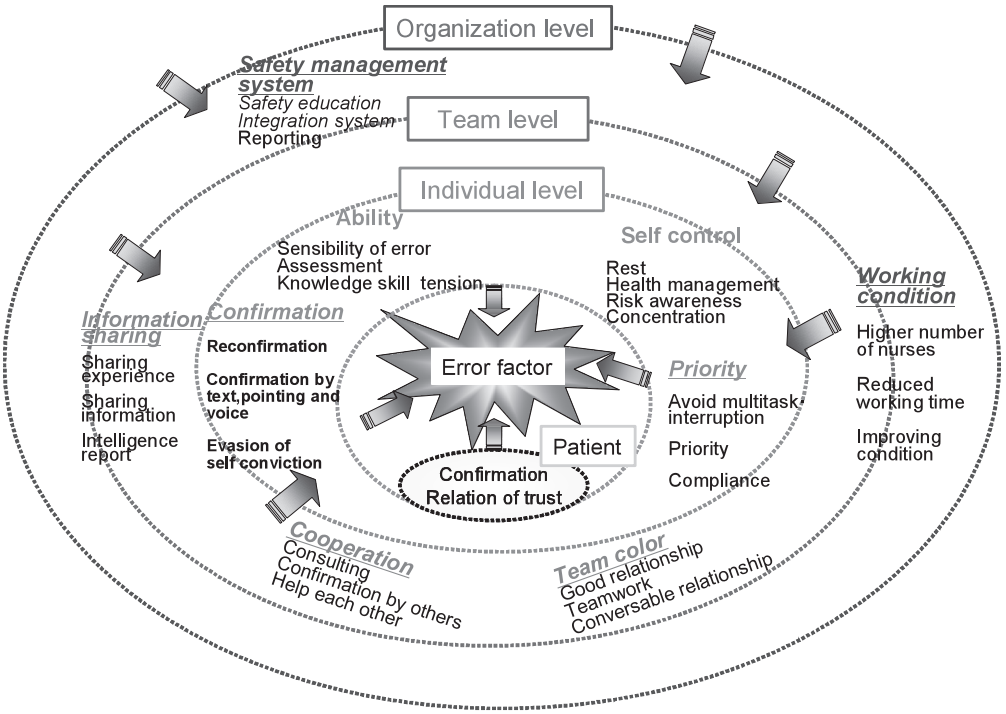

Fig.1 4 layers provision to medical error

Results

1. Organization level

At the organization level, the following improvements in working conditions are recommended: higher number of nurses, reduced working time, and developing a safety management system that incorporates safety education and integration of various reporting systems.

2. Team level

At the team level, practices to raise the morale of nurses and to improve functional teamwork, like communication, information sharing, and cooperation with colleagues are required.

3. Individual level

At the individual level, nurses should follow confirmatory procedures like double-checking, become proficient in various techniques, control their levels of fatigue by taking adequate rest, and avoid multitasking.

4. Classification of the way to prevent medical accidents

Using explanatory axes in Hayashi's quantification III method (Figure2), we named the

first axis as "Calm execution - Thorough provision" and the second axis as "Immediate act - Environmental protection".

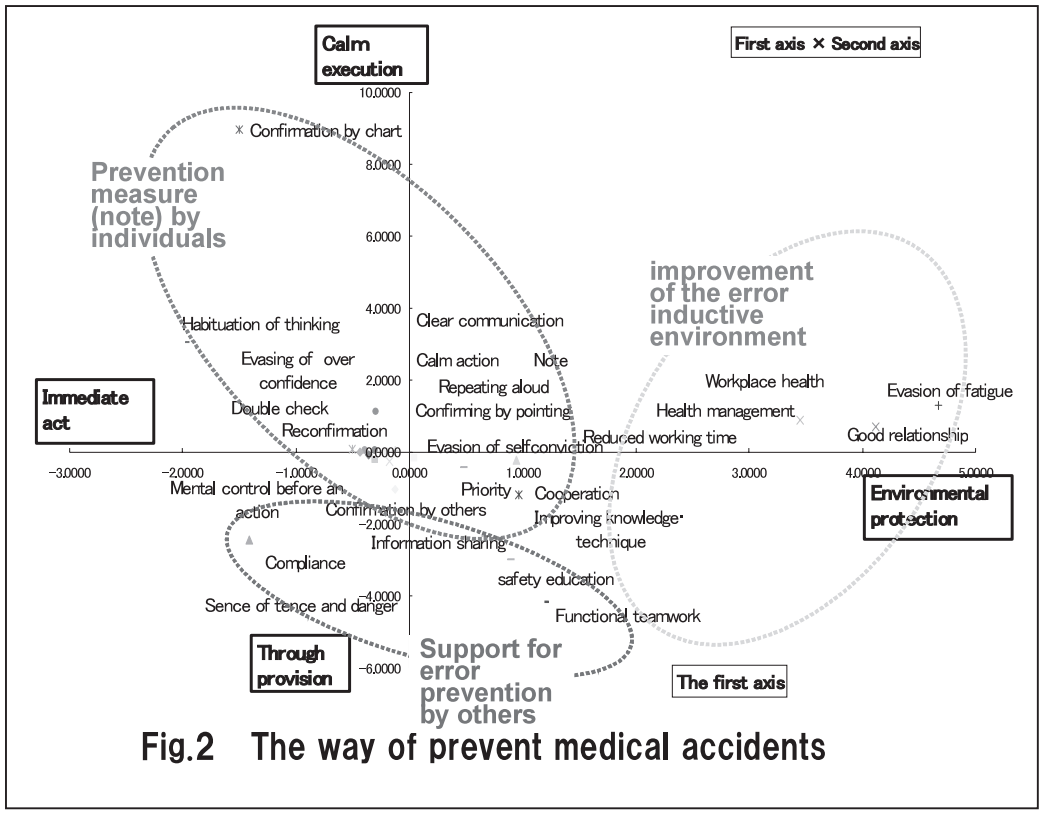

Fig.2 The way of prevent medical accidents

"Reconfirmation" as individual prevention measures, i.e. "Evasion of self-conviction", "Repeating aloud", "Confirmation by pointing", and "Clear communication", etc. are highly ranked in the center of the graph as a majority. "Confirmation by others" and "Cooperation" have been also ranked for the error prevention.

As a result of the grouping analysis, it is found that 1: the prevention measures by individuals, 2: the support for error prevention by others, and 3: An improvement of the error inductive environment, are necessary to reduce medical accidents.

Discussion

We identified mainly improvements in nurses' ability, concentration, and adherence to confirmatory procedures as prerequisites for medical safety. Beyond the individual level, we recommend increasing positive factors like providing social support to nurses and reducing negative factors like overwork, which are general conditions for a healthy environment. We suggest that a comfortable working environment is conductive to both health and safety.

Moreover, these results support the finding of CRM (Crew Resource Management) by

Salas, Wilson, Burke and Wightman (2001), and suggest that the importance of individual (awareness), team (practice and feedback), and organizations '(continuous reinforcement) training are essential.

References

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Salas, E., Wilson, K. A., Burke, C. S. and Wightman, D. C. 2001. Does crew resource management training work? An update, an extension, and some critical needs. *Human Factors*, **48(2)**, 392-412.