

## Individual and Team Level Influences of KYT, the Risk Prospect Training for Medical Safety:

### Investigating Recognitions of General and Managerial Nurses in B Hospital

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#### PURPOSE

Risk-prospect training (*kiken yochi* training in Japanese) is one of the original industrial-safety training programs developed in Japan. It was initiated at a metal-processing factory to predict potential risks in job situations through illustrations aimed at improving individual awareness of risky situations. Although KYT has been used in many practical contexts, a standardized measure of its effect in workplaces has not yet been developed. This study investigated the effects of KYT in hospitals using qualitative surveys and attempted to determine the implications of its use through a precise and evidence-based study.

A safety study of atomic power generation showed that enhancing safety culture involved individual, team, and organizational concerns. The study assumed a top-down method for promoting safety culture within an organization as well as individual intervention (Takano, 2008). At not only the individual but also the interpersonal (colleagues, superiors, and patients) and team levels, KYT might have led change; evidence for these changes has not been shown.

#### STUDY 1

##### Purpose

In a hospital that provides KYT, nurses were surveyed for changes after KYT practice.

##### Method

Hospital B is a medium-size suburban hospital with 100 to 200 beds and initiated its first KYT training five years ago, using a four-step method (Japan Industrial Safety & Health Association, 2003) that has gained popularity. It requires nurses to (1) orally report incidents at staff meetings in the morning, (ex. a patient wearing slippers, not room shoes, walked and al-

most slipped on the floor; (2) discuss the causes of the risk, ex.) lack of explanation to inpatients about putting on shoes, lack of time to prepare shoes after receiving permission to walk, etc.; (3) discuss ways of preventing accidents, ex.) careful explanation about shoes upon hospital admission, confirming shoes are used when patient begins to walk, etc.; and (4) select an effective preventive behavior as the team object of the day voice it together, ex.) "When beginning to walk, confirming that shoes are used, OK?" This meeting took about 10 minutes. The nurses tried to practice preventive behavior when possible and reported their practice at the evening staff meeting. Furthermore, Hospital B conducted general safety-training sessions more than twice a year for medical and co-medical staff. An anonymous questionnaire was conducted with volunteer participants and collected by sealed envelope in November 2008. General-practice nurses, who were the main users of the KYT method in Hospital B, were the respondents. They were asked to describe changes in their performance, team, and attitudes toward patients, colleagues, and superiors after KYT. The study was approved by the ethical committee at Hospital B, and the consent of all participants was received. The response rate was 96.7%. Analysis was conducted by two graduate students and one professor whose profession was nursing. One student was the first author, the professor was the second author of this article, and the other student was a nurse at Hospital B. They used the KJ (Kawakita Jiro) method to analyze the descriptions. Initially, each comment was put on a card without overlapping. Cards were paired with similar ones and gradually gathered and formed into groups depending on the similarities. Each group was given a name reflecting extracted category concepts. In addition, the number of comments in the original descriptions belonging to each category was counted.

#### Results and Discussion

General nurses who had experienced KYT for  $M=15.4$  ( $SD=6.91$ ) months, reported the following positive changes (Table 1): The most frequent category was becoming more "aware about one's behaviors" for medical safety. For example, nurses became to consider safe location of drip-feed routes, medical equipment, and patient nurse calls. "Improvement in ability to handle dangerous prospects" was also remarkable. For example, to confirm a chart, name tag, and/or medicine by calling and pointing was recognized. The nurses tried to explain these points to patients and other nurses. The team changed its working methods: for example, they changed job manuals and smoothly informed each other if any unusual situation developed. Changes were found not only at the individual level but also at the interpersonal and team levels. Less than five out of 116 responses had negative views on KYT; these included mannerism by frequent practice or time required to practice, which were seen as drawbacks of KYT.

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## STUDY 2

**Purpose**

The recognized subjective changes in the working style of general nurses in Study 1 were inspected from managers' evaluative perspective.

**Method**

Semi-structured interviews of five head nurses of wards in Hospital B who had 15 years' experience or more were conducted in January 2009. The ethical procedure was as in Study 1. The head nurses were asked whether they agreed with the descriptions provided in Study 1 and to report any changes in the attitudes of general nurses toward patients, colleagues, and superiors, as well as other changes in the team, after daily KYT practice. These reports were recorded using a voice recorder with the participants' consent, and the content of the verbatim records was analyzed. by the first and the second authors, as in Study 1 by a graduate student who was a nurse at Hospital B but had not participated in Study 1. The narratives were divided by meaning units and classified through discussion. Last, the number of units in every category was counted.

**Results & Discussion**

Each head nurse had worked at Hospital B for more than

five years and often participated in daily KYT practice. The summarized content of the head nurses' reports are shown in Table 1. For an example of categorization, the following narratives belonged to the category "Transmission, confirmation, and change in methods of explanation": "They came to use digital photos to show confirmation points accurately" (to colleagues); "The nurses came to use simpler terms when giving explanations" (to patients). A correspondence between the two groups' results (general and head nurses) was found. Moreover, the head nurses reported individual changes with regard to attitudes and behavior toward patients, colleagues, superiors, and teams. However, the head nurses' perspectives were slightly more synthetic; for example, they focused on the creation of safety manuals across departments.

**COMPREHENSIVE DISCUSSION**

KYT was initiated as training to increase individual risk sensitivity, which could be called its "the basic effect"; however, this study suggests not only individual cognitive change but also individual behavior change, as noted by Yamamoto et al. (2010). Moreover, these results imply that effects include attitudes and behavior toward patients and colleagues. From Study 1, sharing observations and discussing working environment in the hospital as a team helped nurses get a clear grasp of problems of which they had not been aware, and they

**Table 1.** Recognized changes for general and head nurses of wards in Hospital B after KYT.

	General nurses (number of instances)	Head nurses (number of instances)
General nurses	<input type="checkbox"/> Change in confirmation method (32) <input type="checkbox"/> Awareness of one's own behavior (46) <input type="checkbox"/> Consideration of potential mistakes (15)	<input type="checkbox"/> Transmission, confirmation, and change in methods of explanation (12) <input type="checkbox"/> Beginning to understand the other party (3)
Attitude toward patients	<input type="checkbox"/> Change in confirmation method (34) <input type="checkbox"/> Improvement in ability to handle dangerous prospects (39) <input type="checkbox"/> Change in explanation of actions (4) <input type="checkbox"/> Self-introduction (4)	<input type="checkbox"/> Transmission, confirmation, and change in methods of explanation (12) <input type="checkbox"/> Beginning to understand the other party (3)
Attitude toward colleagues and superiors	<input type="checkbox"/> Communication (4) <input type="checkbox"/> Decrease in resistance to consultations and requests (31) <input type="checkbox"/> Using a reasonable approach to explain various actions (3) <input type="checkbox"/> Supportive actions (22) <input type="checkbox"/> Creating a cooperative environment (12) <input type="checkbox"/> Sharing the responsibility for other nurses' behavior (2) <input type="checkbox"/> Understanding all actions (2)	<input type="checkbox"/> Increase in communication (2) <input type="checkbox"/> Creating an environment that is conducive to work (5)
Working in a team	<input type="checkbox"/> Informing the team members of one's whereabouts (2) <input type="checkbox"/> Improvement in the ability to handle dangerous prospects (19) <input type="checkbox"/> Intelligence sharing (26) <input type="checkbox"/> Polite behavior while following the confirmation method (29) <input type="checkbox"/> Improvement of the manual (18)	<input type="checkbox"/> Detailed and quick reporting (5) <input type="checkbox"/> Improvement in the method of sharing information (6) <input type="checkbox"/> Improvement in the manual (1) <input type="checkbox"/> Change in the system of nursing (2) <input type="checkbox"/> Positive cooperation with colleagues from other posts (4)

could share new solutions. Nurses who worked with KYT in a team recognized team effects afterward. KYT brought material and immaterial development to teams and interpersonal relations, including those with patients. KYT in hospitals can lead to the first, second, and third levels of teamwork—that is to say, positive interpersonal relations, team goal sharing, and creative achievement (Furukawa, 2004). Such changes can be called “the extended effect” of KYT. KYT is expected to promote responsibility at the team level, which may prevent team errors by reducing mistakes in “finding, pointing out, and correcting errors.”

Thus, KYT can be used to induce a medical safety culture in hospitals through individual-, interpersonal-, and team-level changes. For future tasks, more systematic analysis of descriptions is desirable. And beyond the subjective reports in this study, longitudinal experimental intervention using objective indicators like number of incidents can be used to test causal relations. Differences in KYT effects on the basis of individual backgrounds such as working experience or details of the individual's the KYT experience should also be analyzed.

#### Notes

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