Utility of Kiken Yochi Training (KYT) in Fall Risk Prediction

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Abstract

Background

It is possible to increase the sensitivity of risk prediction to attempt to prevent medical accidents. Kiken Yochi Training (KYT) is widely used to increase the sensitivity of risk prediction in Japan. This study aims to investigate the utility of KYT in fall risk prediction.

Materials and Methods

The sensitivities of 78 nurses were compared before and after KYT and 1 year after the training was provided. The sensitivity was measured as the number of items reported, that were related to the risk of fall. Analysis of variance and multiple comparison tests were used, and the number of fall-related items reported before and after KYT was evaluated using Pearson's correlation analysis.

Results

The number of items reported after KYT was significantly greater than the number before the intervention (p <0.01). Conversely, the number of items reported one year after KYT was significantly lower than that immediately after the intervention (p <0.05). In addition, a weak significant correlation was observed in the number of items reported before and after KYT.

Conclusion

It was suggested that KYT increased sensitivity to predicting fall risk. It showed sustained effect on risk prediction one year later. Therefore, KYT is considered to be an effective way to increase risk sensitivity.

Keywords: KYT, Fall Risk Prediction

Introduction

Although Kiken Yochi Training (KYT) has been practiced in the industry, in recent years, medical institutions have been undertaking it in Japan [1]. KYT is a technique to discover and solve the risks hidden in the workplace, and it is a training method to improve risk sensitivity and problem-solving ability through repeated training [1]. It has been reported that KYT has certain effects in various areas [2,3].

KYT helps predict risk and is a widespread method used for preventing medical accidents in Japan by increasing the sensitivity of risk prediction in medical practices [4-8]. Previous studies showed that KYT increased medical safety awareness and risk sensitivity [9,10].
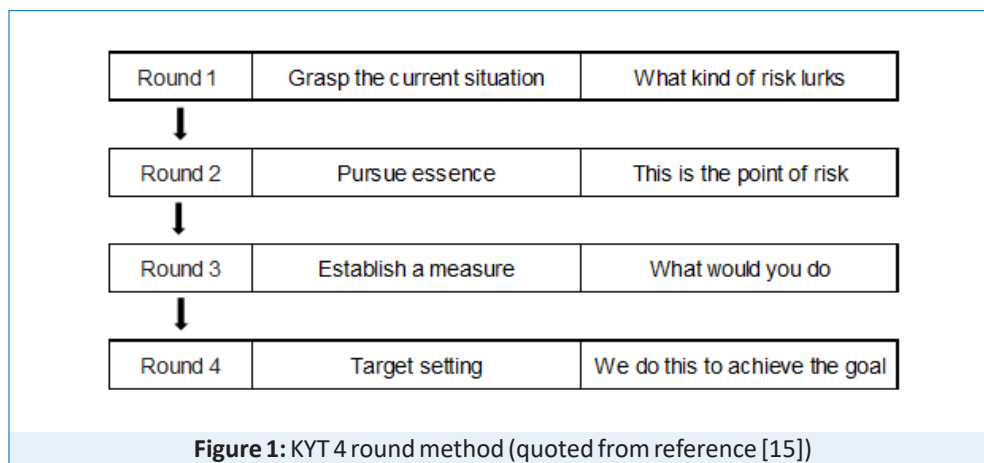
However, there are few studies on the effect of KYT directly on the sensitivity of risk prediction. The number of fall incidents in hospitals or rehabilitation departments is high and is likely to lead to medical accidents such as fractures [11-14]. Recently, KYT has been applied as an integral part of newcomers'

education in medical safety in Japan. The purpose of this study was to investigate the utility of KYT for improving the sensitivity of fall risk prediction.

Methods

In 2015, all 78 first-year nurses without experience of KYT employed at Kanazawa medical university hospital were evaluated. Each nurse examined a slide on fall risk before KYT, and then had to enumerate the factors of risk prediction. Furthermore, using the same procedure, the number of items related to fall risk collected immediately after and one year after KYT were compared with that collected before intervention. In order to study KYT, the subjects were randomly divided into two groups, one in the morning and one in the afternoon; each group received lectures and performed group work for 160 minutes. Group work was conducted according to the KYT basic 4-round method.

The KYT Foundation basic 4-round method is a program applied to increase danger prediction ability, and is composed of 4 stages: appreciate the current situation, pursue its essence, set up counter measures, and set goals (Figure 1) [15]. After the second round, the KYT basic 4-round method focused on the essential pursuit, specifically on the following four steps. First confirmation, observation, and reporting were considered as nurses' actions related to falls. Second, the lack of knowledge, immature skills, and hard work as possible human factors predicting falls were discussed. Third, environmental factors and those mainly focused on facility conditions - walking sticks, patient's clothes and footwear, elevator steps, slips, road surfaces, obstacles, etc. were considered as risk factors related to the facility. Finally, factors such as education, training, mechanism, and rule deficiency were discussed and participants were asked to prioritize those factors associated with high risk.

Round 1	Grasp the current situation	What kind of risk lurks
Round 2	Pursue essence	This is the point of risk
Round 3	Establish a measure	What would you do
Round 4	Target setting	We do this to achieve the goal

Figure 1: KYT 4 round method (quoted from reference [15])

Further, to set up counter measures, we discussed feasible solutions focusing on the extracted fall risk factors.

After seeing the images on the two slides (elevator: Figure 2A and stairs: Figure 2B), which the participants considered as containing a risk of falling, they had to list the factors

they considered to be risky [16]. The number of items of risk prediction before and after KYT intervention was compared. To avoid the order effect of the two slide images and a potential risk prediction difficulty before and after the KYT intervention, in the afternoon group, the order of presenting the images was reversed.

Figure 2A: Elevator (quoted from reference [16])

Figure 2B: Stairs (quoted from reference [16])

Data Analysis

The data was analyzed using SPSS (version 18). The number of items related to fall risk reported before and after KYT were analyzed using a one-way analysis of variance and multiple comparisons. In addition, Pearson's correlation analysis was used to assess the correlation between the number of fall risk prediction items before and after KYT intervention to investigate individual differences.

Results

The number of items related to fall risk reported immediately after KYT and one year later were significantly larger than that obtained before the intervention (p<0.01). Conversely, the number of items collected one year after KYT was significantly lower than the number collected immediately after the intervention (p < 0.05) (Figure 3). A significant weak positive correlation of r = 0.3 was observed between the number of risk prediction items before and after KYT (p <0.05) (Figure 4).
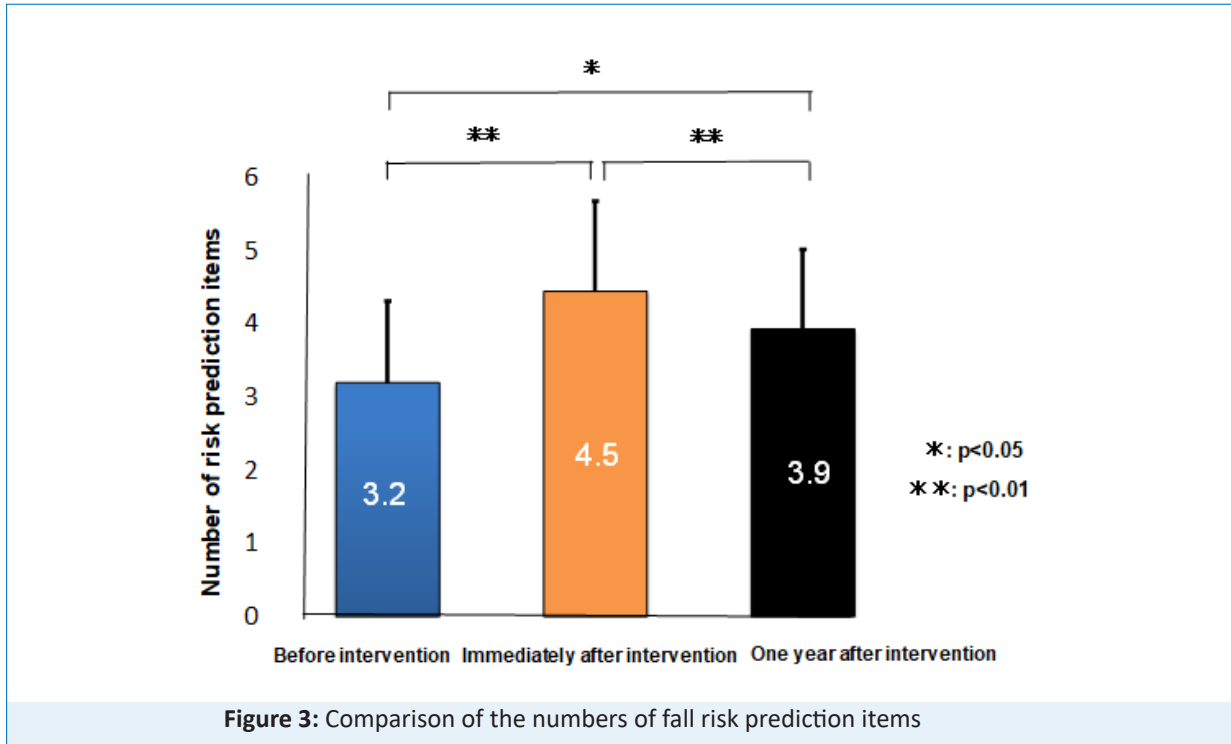
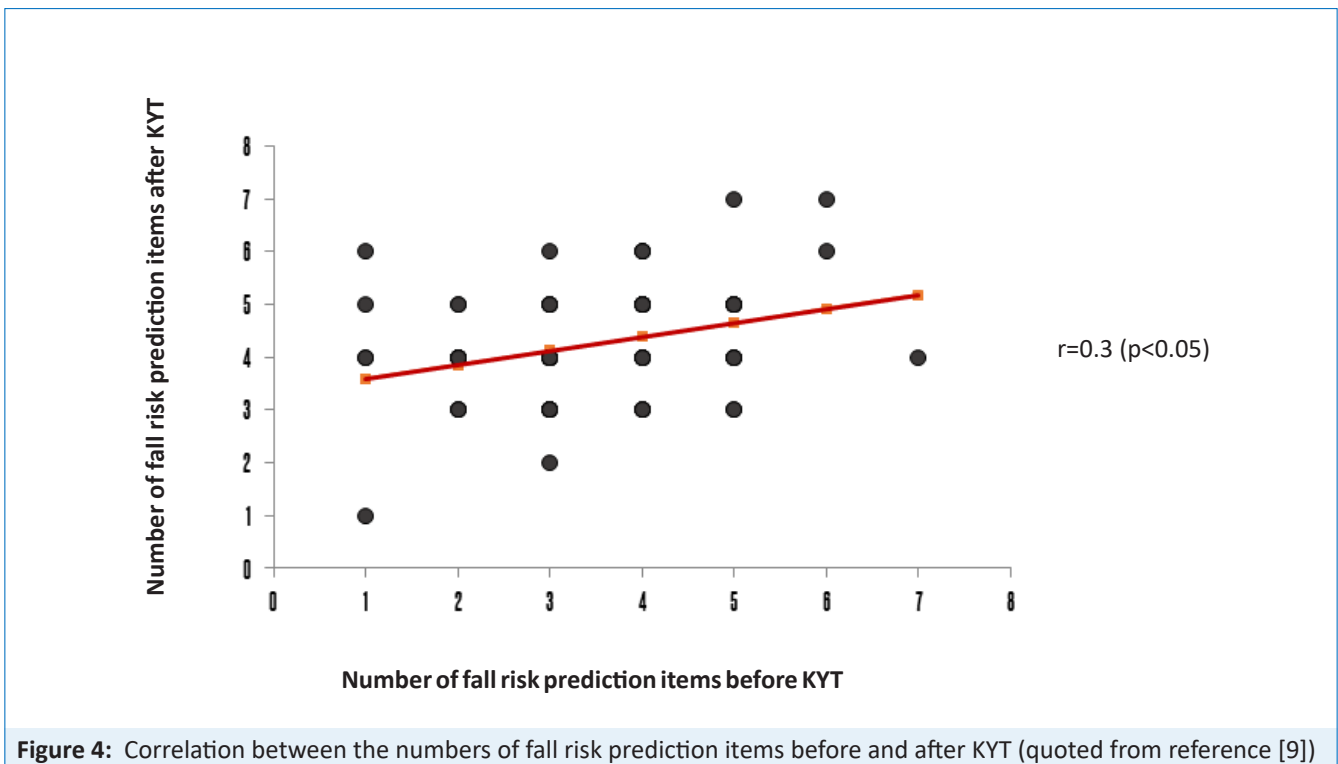

Figure 3: Comparison of the numbers of fall risk prediction items

Figure 4: Correlation between the numbers of fall risk prediction items before and after KYT (quoted from reference [9])

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Discussion

Hospitals and facilities are required to ensure the quality and safety of medical care. The staff is obliged to participate in medical safety training sessions at least twice a year and each division's risk manager is required to participate in monthly incident analysis study meetings. In Japan, KYT is applied as a medical accident prevention measure in many hospitals and facilities. However, its effect on sensitivity to risk has not been sufficiently verified. Based on the results of this study, it could be argued that KYT improves the sensitivity of fall risk prediction immediately after the intervention. Furthermore, considering that the number of risk predictors listed by the participants one year after they underwent KYT was significantly larger than that before the intervention, it could be argued that the sensitivity to risk remains stable. The KYT 4-round method seems to be an effective learning method to improve the sensitivity of risk prediction. KYT could be used in a variety of professions, and sharing the obtained information could lead to improvements in problem solving.

Yoshioka et al. stated that KYT has made significant achievements in prevention of medical accidents, including the basic 4-round method, and reported that the number of falls was reduced compared to before implementation due to the effect of awareness on fall prevention [17]. In addition, Ishiguchi et al. carried out KYT on fall risk for 30 minutes twice a week, and reported that after 5 months of KYT, the fall risk prediction at the facility increased from 6.3% to 93.8% [18].

It is argued that KYT will increase its effectiveness with repeated practice. The first training on KYT could be conducted in many professions as an introduction to risk prevention and problem-solving methods. It is also important to regularly apply KYT in conjunction with incident reports and ward conferences that are normally held at hospitals. However, it is necessary to verify to the frequency of KYT and its duration for it to be effective in the actual clinical setting in the future.

In addition, a weak positive correlation was found between the number of risk prediction items collected before and after KYT. Although this finding suggests the existence of individual differences in the sensitivity to fall risk, it is expected that due to the weak correlation, a person with low initial sensitivity to risk will show increased sensitivity after a KYT intervention. Japan has a developing aging society. Residents in hospitals and facilities are aging annually and considering that elderly people often have dementia, it could be expected that the risk of falls will increase in the future [19].

At hospitals, the incidence of falls is high and may lead to medical accidents, such as bone fractures. It is important to prevent medical accidents; therefore, it will be necessary to investigate the effect of the frequency of KYT intervention on sensitivity to fall risk, and the stability of this effect in future. Furthermore, it is important for medical teams to verify the effect of KYT and prevent medical accidents.

Conclusion

In this study, it was found that KYT increased the sensitivity of risk prediction immediately after the intervention and it was suggested that this effect continued even one year after intervention.

Declaration

Conflict of Interest: The authors declare no conflicts of interest.

Ethical Approval: N.A

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