Endotracheal suctioning manual focusing on infection prophylaxis and compliance of the procedure

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Received 4 January 2011; received in revised form 15 January 2011; accepted March 14 2011

Abstract

We revised an endotracheal suctioning manual to be used with inpatients for the purpose of infection prophylaxis. Furthermore, we studied whether the compliance ratio of the endotracheal suctioning procedure improved. Training including detailed explanations was provided to 17 nurses. Two and four weeks later, the compliance ratio of each nurse was measured. There were seven items of evaluation.

The compliance ratio was 60% ±3.06% (mean±SE), before training; 68±3.057%, after two weeks of training; and 76±3.83%, after four weeks of training. The compliance ratio was significantly improved after four weeks of training as compared with before training ($P < 0.001$). A significant difference was present in the compliance ratio by item, and the compliance ratio was low in hand hygiene in both absorption measures ($p < 0.001$). It was thought that improvement of the compliance ratio of the procedure would require the enlightenment for several weeks or months. By finding the compliance according to the item, it became clear that compliance ratio had a significant difference by an item.

Keywords: endotracheal suctioning manual, infection prophylaxis, compliance ratio, nursing, medical safety measures

Introduction

Carrying out "The hospital infection preventive measures" is an important duty in medical facilities as part of the medical safety measures. Kuroda et al. states that "it is necessary for the infection measures to be aware that all in-hospital people can become the means of transmitting infection, and all the staff must work on implementing infection measures together" [1]. There are many patients in a compromised state in the Tokushima National Hospital, such as long-term tracheostomy patients or respirator-wearing patients. Thirty-six percent of hospitalized patients receive endotracheal suctioning treatment in the third ward. We decided to study the infection management in endotracheal suctioning, which was one of the measures

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involving a higher risk of infection. We noticed that the manual about endotracheal suctioning had deficiencies. Therefore, we attempted to identify the best endotracheal suctioning procedure that accorded with the practice settings in the third ward.

Materials and methods

The research took place from November, 2008 to December, 2009. The subjects were 17 floor nurses from the third Tokushima National Hospital. We revised the endotracheal suctioning manual to be used with inpatients. Using many illustrations, an endotracheal suctioning procedure confirmation list was made. Methods for carrying out the procedure and preventing risk were described in the manual in addition to the rationale of the operation. The procedure was explained to the nurses, and training was provided. Subsequently, compliance was evaluated. The ratio of the compliance was evaluated two weeks and four weeks after the training. The following seven items were considered in the evaluation. 1) preparations for appliance. 2) hand hygiene before the suctioning. 3) wearing of gloves. 4) suctioning operation. 5) washing. 6) Settlement. 7) hand hygiene after suctioning.

The statistical analyses were carried out using a Wilcoxon signed-ranks test, a Mann-Whitney test, a Friedman test and Fisher's exact probability test.

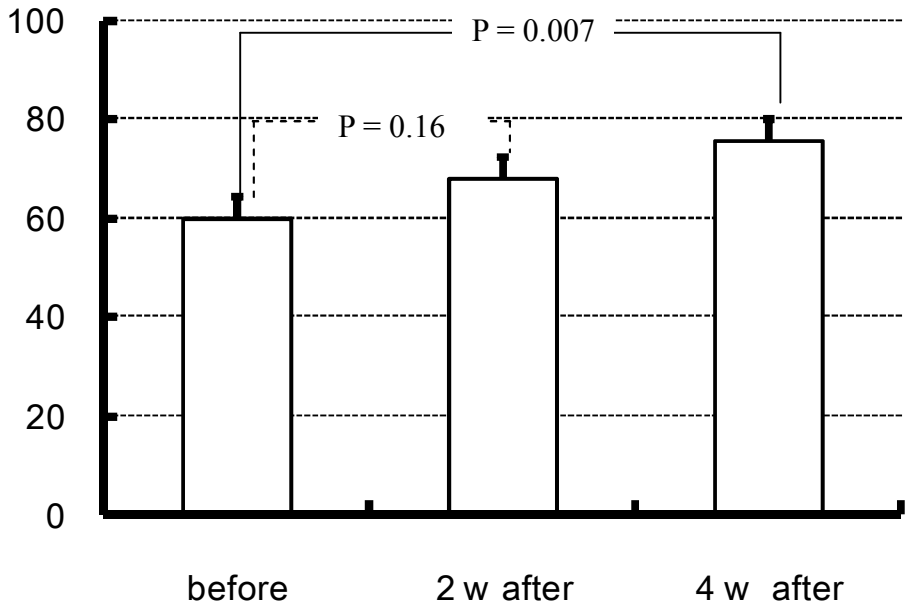

Figure 1. The compliance ratio of the maneuver before and after the training of the endotracheal suctioning manual. The compliance ratio was significantly improved statistically after training for four weeks as compared with before training ($P < 0.001$).

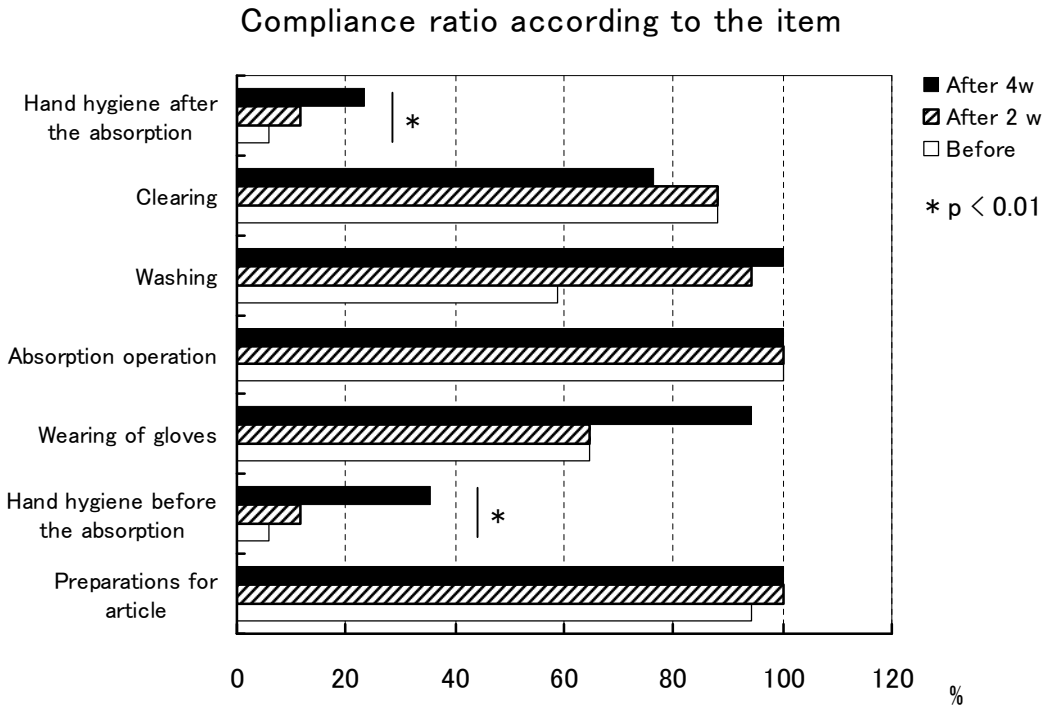

Figure 2. The compliance ratio by item. Compliance ratio was low in hand hygiene in both about absorption measures ($p<0.001$).

Results

In regard to the compliance ratio, ten of the 17 nurses showed a compliance improvement after training. For two nurses, the compliance ratio fell. Three nurses showed no change. The compliance ratio of two nurses decreased two weeks after explanation, but improvement was found four weeks later. The compliance ratio was 60% ±3.06% (mean±SE), before training; 68±3.057%, after two weeks of training; and 76±3.83%, after four weeks of training. The compliance ratio of the maneuver before and after the training of the endotracheal suctioning manual was shown in Figure 1. The compliance ratio was significantly improved statistically after training for four weeks as compared with before training ($P<0.001$). The compliance ratio by item is shown in Figure 2. About the absorption operation, all the subjects was able to be observed in all time about the training. On the other hand, as a result of the Friedman test, a significant difference was found in the compliance ratio by item ($p=0.016$). In these items, compliance was low in hand hygiene in both about absorption measures. The results of Fisher's exact probability test demonstrated that hand hygiene about absorption measures was a manual skill for which compliance ratio was significantly low ($p<0.001$). Throughout the training, the compliance ratio for hand hygiene was significantly low ($p<0.001$). The compliance ratio of hand hygiene rose after training, but a clear significant difference was not found.

Discussion

It is important that understanding of the need for infection measures and accurate knowledge about them are acquired in order to perform these measures appropriately. Keta et al. stated, " The nurse has a duty to protect the contagious patients from infection. Nurses are always interested in prevention of infection, and it is necessary to offer the latest

information and techniques [2]. In the ward where we work, the nurses have different knowledge, techniques, and experience. In the endotracheal suctioning measures that we focused on this time, it was inarticulate, actually, how an endotracheal suctioning procedure was performed. Yoshika et al. stated that, "About the expectoration absorption, the following measures were effective in reducing risk; analysis of the real suctioning of the nurse, the review of the procedure, environmental adjustment, and the unification of the maneuver. It is necessary to decide the procedure of an effective maneuver by security to prevent infection and complications in case of absorption measures [3].

In this study, the mean compliance ratio was 60% before training, 68% after two weeks of training, and 76% after four weeks of training. The compliance ratio was significantly improved statistically after training for four weeks as compared with before training. It is necessary to decide the procedure of safe and effective maneuver to prevent infection and the complications in case of absorption measures. This shows that the enlightenment for several weeks or months is necessary for improvement of the compliance ratio of the procedure. In the compliance ratio by item, the compliance ratio showed a significant difference. It is a problem that the compliance ratio of hand hygiene remained at a low level. It is necessary to take special measures to deal with the items showing poor results for compliance ratio. It may be necessary to revise the manual to increase awareness of the importance of hand hygiene. It is thought that periodic action is needed for continuation / the improvement of the effect. We plan to test whether the development of infection and complications in the case of absorption measures is inhibited by our actions in future.

References

1. Kuroda E et al. Checkpoints of the prevention of infection that only this wants to be held (in Japanese). Nursing Technique. 2008; 54: 68-77.

2. Kita C, Iwasaki M. Be interested in prevention of infection; the use of the questionnaire (in Japanese). Shizuoka Prefectural General Hospital Medical Journal. 2001;16:53-61.

3. Yoshika Y. A risk evaluation of expectoration absorption: from the absorption movement of the nurse (in Japanese). The 38th Nursing Society General Meeting magazine. 2007;109-111.