Examining the Effect of Infection Prevention and Control Awareness among Nurses on Patient and Family Education: A Cross-sectional Study

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Introduction

Healthcare-associated infections (HAIs) are major health issues recognized globally [1]. Though HAIs' prevention approaches are mainly concentrated on the care delivered by healthcare workers, the significance of patient engagement in infection prevention and control (IPC) remains to be stressed as a means of preventing HAIs and improving patient safety [2].

Objectives

This study aimed to determine the level of nurses' awareness of IPC measures, assess patient and family education on IPC measures from the nurses' perspective, and examine the effect of nurses' IPC awareness on implementing patient and family education.

Methods

- A cross-sectional study was conducted among seven hospitals in Hungary using a convenience sampling.
- Nurses in the inpatient units were eligible to participate.
- Data were collected between February 2020 and April 2021.
- The required sample size was 381 nurses [3].
- The Infection Control Standardized Questionnaire [4] was used to assess nurses' awareness in HAIs, hand hygiene (HH), and standard precautions (SPs). Additionally, IPC patient and family education was assessed using developed questions [5].
- A continuous variable of IPC awareness score was constructed with a maximum score of 23.
- The cut-off level for acceptable awareness score was set at 70%.
- Variance analysis was performed for the total awareness using non-parametric tests and for IPC patient and family education using Chi-Square test.
- A logistic regression analysis was performed to identify independent predictors of acceptable awareness for each IPC area.
- Cronbach's alpha: the awareness part = 0.76 and the education part = 0.704.

Results

Demographics

- 566 nurses were included with a response rate of 73.7%.
- 91.7% were females.
- The mean age (±SD) was 42.07 ± 10.205 years.
- 16.6% had a university nursing degree.
- 21.2% worked in the medicine unit.
- 60.2% had been working in the hospital for more than 10 years.
- 98.4% of nurses were trained on IPC measures, whereas 75.8% attended the training during the last year.

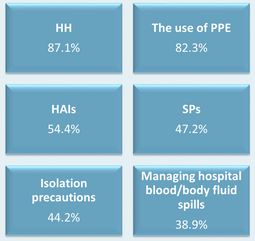

Figure 1. IPC training attended by nurses (N= 566).

IPC awareness

- Acceptable scores were reached in the total IPC awareness and SPs only.

Variance analysis

- The total IPC awareness differed across educational degrees, nursing units, and years of service, where the highest mean ranks were achieved by university degree holders (p< 0.001), ICU nurses (p= 0.029), and those who had been working in the hospital for more than 10 years (p= 0.026).

Regression analysis

- Educational degrees had a significant association with having an acceptable level of awareness in all IPC areas.

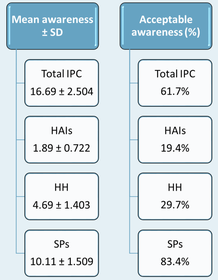

Figure 2. IPC awareness results of nurses (N= 566). The 70% cut-off for an acceptable awareness is equivalent to a score ≥ 2.1 for HAIs, ≥ 5.6 for HH, ≥ 8.4 for SPs, and ≥ 16.1 for the total awareness.

Table 1. Logistic regression analysis of factors associated with acceptable awareness of each IPC area (N= 566)

	IPC total awareness		HAIs		HH		SPs	
Predictors	**OR**	**95% CI**	**OR**	**95% CI**	**OR**	**95% CI**	**OR**	**95% CI**
University degree	Reference							
Vocational nursing (OKJ)	0.281	0.156-0.507***	0.661	0.393-1.110	0.543	0.339-0.868*	0.271	0.106-0.695**
Secondary school	0.179	0.092-0.351***	0.275	0.125-0.608**	0.488	0.268-0.889*	0.171	0.063-0.466**

*p< 0.05, **p< 0.01, ***p< 0.001.

IPC patient and family education

- The highest percentages of education were on HH and respiratory hygiene.
- Concerning the barriers to educating patients and family members, the shortage of nurses (67.3%), time limits (62.5%), and stress (17.3%) were the most mentioned barriers.

Variance analysis

- Education on the reason for isolation (p= 0.003) and the use of PPE (p= 0.001) were the highest among nurses working at the university hospital, while education on HH (p< 0.001), respiratory hygiene (p= 0.002), and HAIs (p< 0.001) were the highest among those working at county hospitals.
- Education on the reason for isolation was the highest among nurses holding a university degree (p= 0.029) and those with more than 10 years of service (p= 0.033).
- Education on HAIs was the highest among nurses working in the hematology, NICU-PICU, and oncology units (p< 0.001).

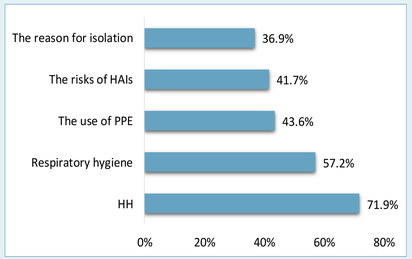

Figure 3. Patient and family education on IPC measures (N= 566).

The effect of IPC awareness on patient and family education

- Nurses with acceptable awareness educated patients more than those with non-acceptable awareness but, the differences were only significant for respiratory hygiene and the reason for isolation .

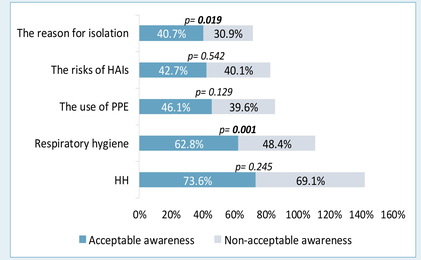

Figure 4. Patient and family education on IPC among different awareness groups of nurses (N= 566).

Conclusion

This study shows acceptable scores of IPC total and SP awareness as well as non-acceptable scores of HAI and HH awareness among nurses in Hungary. Even with regular IPC training, gaps have been identified in the awareness of nurses. Perhaps the manner of communication of information could be an issue. This underscores the need for creating standardized communication plans to disseminate essential information to nurses in a timely and organized manner. We further recommend hospitals to motivate and encourage nurses to acquire high levels of IPC knowledge by engaging them in a performance feedback process. The study also highlights a low level of patient and family education on IPC that might be improved by improving nurses' awareness of IPC and at the top management level by building and enhancing the culture that is based on the partnership between nurses and their patients.

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