The Knowledge, Attitudes and Practices of Nurses Toward Management of Hospital-acquired Infections in the University Clinical Center of Kosovo

Abdullah Gruda¹, Idriz Sopjani²

ABSTRACT

Background: Hospital Acquired Infections (HAIs) are called those infections that were not present at the time of patient's hospitalization in a hospital or other medical institutions and have been acquired after hospitalization. Aim: The aim of this paper was to investigate the level of knowledge, attitudes, and practices of nurses about preventing the spread and management of HAIs at University Clinical Center of Kosovo (UCCK). Methods: The questionnaire was used as a tool for data collection in 6 clinics of UCCK during the November-December 2016. Out of 350 nurses, only 331 returned the questionnaire completed. Data were analyzed with descriptive and inferential statistics using Statistical Package-SPSS, version 22. Results: The age of participants was 37.9 ± 9.3 years by the mean. The general level of knowledge of nurses about the spread of HAIs was 90%, about the attitudes was 84.4% and about the nurses' practices was 76.2%. The work experience had a significant impact on the nurses' knowledge about management of HAIs OR = 2.18 (95% CI 1.01-4.71), the attitudes of nurses OR = 3.99 (95% CI 2.14-7.45) and the nurses' practices OR = 2.87 (95% CI 1.65-4.99). The impact of the level of education in the knowledge OR = 0.22 (95% CI 0.10-0.48) was significant (p <0.05), while its impact in the nurses' attitudes OR = 0.59 (95% CI 0.32-1.09) and the nurses' practices OR = 0.8 (95% CI 0.46-1.38) was not statistically significant (p >0.05). Conclusion: Nurses stated that they had the necessary competencies to practice safe patient care. However, there are necessary joint efforts of policymakers and managers of UCCK to implement intervention strategies in order to reduce HAIs.

Keywords: nurses, knowledge, attitudes, practices.

1. INTRODUCTION

Hospital Acquired Infections (HAIs) are called those infections that were not present at the time of patient’s hospitalization in a hospital or other medical institutions and have been acquired after hospitalization (1). The timeframe definition of an infection as a HAI is at least 48-72 hours after hospitalization, 3 days after leaving the hospital, 30 days after surgery or 1 year after the implant. Numerous epidemiological studies have reported that HAIs are caused by pathogens which are present everywhere, such as bacteria (2), viruses (3) and fungi (4). In 2003, it was published the first article in Kosovo in the field of HAIs, which reported a mortality rate of 31% among newborns (5). The prevalence of hospital infections in UCCK was 17.4%, (5). In 2010, a data report for HAIs cases among 2,473 hospitals showed an increased number of infections associated with the use of medical equipment, most of which were displayed in surgical units (6). Also, other researchers reported that patients who underwent surgical procedures had a greater chance of developing HAIs, compared to other patients (2, 7). Infection Control is the responsibility of the care nurses and represents an integral element of patient safety programs (8). This program includes the processes and activities that identify and reduce the risk of transmission of infections between individuals. Education about infection prevention and control is known as one of the main objectives of infection control programs (9, 10, 11). A study assessed the knowledge of 324 Health Care Workers (HCWs) about infection control practices and found that 65% of HCWs had high condescension to control infections, such as hand hygiene (HH), the infected individuals isolation and to minimize the possibility of pathogens transmitted by air...
Demographic information of participants: A total of 331 nurses fulfilled the questionnaire relevantly. The participants’ age was $37.9 \pm 9.3$ years by mean. The Table 1 summarizes further demographic information.

| Demographic variables | n  | %   |
|-----------------------|----|-----|
| **Age**              |    |     |
| 21-30 years          | 56 | 16.9|
| 31-40 years          | 170| 51.4|
| 41-50 years          | 60 | 18.1|
| 51-60 years          | 45 | 13.6|
| **Gender**           |    |     |
| Female               | 274| 82.8|
| Male                 | 57 | 17.2|
| **Education**        |    |     |
| High School          | 234| 70.7|
| Bachelor             | 74 | 22.4|
| Master               | 23 | 6.9 |
| **Clinics**          |    |     |
| Clinic of Anesthesia and intensive treatment center | 77 | 23.3 |
| Clinic of Neonatology | 54 | 16.3 |
| Surgery clinic       | 37 | 11.1|
| Obstetric clinic     | 93 | 28.1|
| Clinic of Infectious diseases | 26 | 7.9 |
| Clinic of Neurology  | 44 | 13.3|
| **Work experience**  |    |     |
| 1-5 years            | 81 | 24.5|
| 6-40 years           | 250| 75.5|

Table 1. Demographic information of participants

Knowledge, attitudes and practices of nurses regarding the prevention and management of HAIs: The knowledge level of nurses in preventing the spread of HAIs was 90%. In terms of attitudes, the overall result was 84.4%, while as regards nurses’practices the overall result was 76.2%. In the Table 2 were summarized the results of nurses’ knowledge about the spread of HAIs, while in the Table 3 and 4 the results as regards attitudes and practices of nurses.

To identify the relationship between the study’s variables was used the binary logistic regression model. In this case, knowledge, attitudes and practices of nurses were taken as dependent variables and the level of education and work experience as independent variables. Odds ratio is the ratio between the variable marked with 1 and variable with 0. The greater odds ratio, the greater is the effect of the independent variable on the dependent variable. Table 5 showed that only work experience impacts on knowledge, attitudes and practices of nurses. Work experience affects significantly the nurses’ knowledge OR=2.18 (95% CI 1.01-4.71) which means that with the growth of work experience, also the nurses’ knowledge increases. Work experience also affects nurses’ attitudes OR=3.99 (95% CI 2.14-7.45) and nurses’ practices OR=2.87 (95% CI 1.65-4.99). The impact of the level of education in the knowledge OR=0.22 (95% CI 0.10-0.48) was signifi-
The link between nursing education and patient outcomes. Thus, in one study it was explored knowledge that means higher possibility for proper clinical edge was significant (p<0.05). Also, other studies reported a significant relation between the education level and the nurses' knowledge about preventing the spread of HAIs was 90%.

In terms of nurses' attitudes, the overall result was about 86% and showed that patients in the surgery clinic had better outcomes when they were treated by nurses with higher education (university degree) (20). An increase by 10% of nurses with university degree reduced the mortality risk by 5% and 2% for HH after direct contact with the healthy skin and the contact with the healthy skin respectively, which were less manageable in the proper use of their knowledge (22, 23). In this context, nursing education should serve as a platform for continuous learning throughout life (22, 23).

The spread of patho-gens through HCWs was not statistically significant. An increase by 10% of nurses with university degree reduced the mortality risk by 5% and 2% for HH after direct contact with the healthy skin and the contact with the healthy skin respectively, which were less manageable in the proper use of their knowledge (22, 23). In this context, nursing education should serve as a platform for continuous learning throughout life (22, 23).

Table 2. Nurses knowledge about the prevention of spreading of HAIs

| Attitudes                                      | Completely disagree | Disagree | Neutral | Agree | Completely agree |
|------------------------------------------------|---------------------|----------|---------|-------|-----------------|
| Increase of the hospitalization days, mortality and costs | 1.5%                | 11%      | 2.7%    | 20%   | 86.4%           |
| The nurse can spread infections                | 2.7%                | 23%      | 6%      | 28%   | 80.1%           |
| Negative reaction when a colleague doesn’t act as recommended | 6.3%                | 52%      | 15.7%   | 18%   | 177%            |
| The training of new employees                  | 4.8%                | 43%      | 13%     | 27%   | 51.4%           |
| The nurse as an example for HH                  | 4.2%                | 11%      | 3.4%    | 7%    | 84.9%           |
| Unrealistic expectations that nurses clean their hands after any contact | 12.6%               | 17%      | 5.2%    | 11%   | 79.2%           |
| The punishment for non-adherence to protocols  | 9.4%                | 31%      | 15.1%   | 18%   | 164%            |
| Remuneration for adherence to protocols         | 0.6%                | 2%       | 1.5%    | 5%    | 87.6%           |

Table 3. Nurses' attitudes as regards the prevention of spreading of HAIs

| Variables                                      | Odds Ratio | P value | 95% Lower CI | 95% Higher CI |
|------------------------------------------------|------------|---------|---------------|---------------|
| Nurses' Knowledge                              | 0.12       | 2.18    | 0.000         | 0.10          |
| Nurses' Education Work experience              | 0.59       | 3.99    | 0.093         | 0.32          |
| Nurses' Attitudes                              | 0.8        | 2.87    | 0.415         | 0.46          |

Table 4. Nurses’ practices toward the prevention of spreading of HAIs

Table 5. Binary logistic regression analysis

and showed that patients in the surgery clinic had better outcomes when they were treated by nurses with higher education (university degree) (20). An increase by 10% of nurses with university degree reduced the mortality risk by 5% and 2% for HH after direct contact with the healthy skin and the contact with the healthy skin respectively, which were less manageable in the proper use of their knowledge (22, 23). In this context, nursing education should serve as a platform for continuous learning throughout life (22, 23). This paper found that with the growth of work experience, the nurses' knowledge increases, the attitudes and practices improve by transforming into models for younger employees (p<0.05). The literature has shown that HCWs imitated the behavior of their colleagues who had higher work experience (24). Findings revealed that when HCWs with higher work experience failed to apply cognitive powers, younger workers were less manageable in the proper use of their knowledge they had acquired during their academic journey or during their continuing education (24). One study found that HCWs did not perform HH as recommended when others with higher...
position as doctors or nurses also didn’t practice HH during patient care activities (25). Findings from this study suggested that behavior is influenced by environment and organizational support factors such as the presence of the infection control team, supply of disinfectants within and out the patient’s room, the presence of visible leaflets and posters about the spread of HAIs that puts HCWs into reminder about the threats and the impact of HAIs in line with the health beliefs model, increasing “willingness to act” (26).

5. CONCLUSION
Nurses had high knowledge, positive attitudes and practices towards reducing HAIs. Proper nursing practices in preventing the spread of HAIs and their management contribute to promoting and creating an appropriate environment which prevents new infections and controls the existing ones. Nurses stated they had the necessary competences to practice safe patient care. Staff support for continuing professional education didn’t lack from the management authority. However, there are necessary joint efforts of policymakers and managers of UCCK to implement intervention strategies in order to reduce HAIs. A limitation of this study was the sample. A larger sample would be more representative. A prospective study about knowledge, attitudes and practices of nurses may consist on adopting another research design relying more into observation than self-administered questionnaire.

REFERENCES
1. Abrutyn E, Goldmann DA, Scheckler W. (Eds.). Saunders infection control reference service: the experts’ guide to the guidelines. WB Saunders, 2003.
2. Lepelletier D, Perron S, Bizouarn P, Caillon J, Drugeon H, Michaud JL, Duveau D. Surgical Site Infection after Cardiac Surgery: Incidence, Microbiology and Risk Factors. Infection Control and Epidemiology. 2005; 25(5): 466-72. doi: 10.1086/925659.
3. De Oliveira AM, White KL, Leschinsky DP, Beecham BD, Vogt TM, Moolenaar RL, Perron JF, Safranek TJ. An outbreak of Hepatitis C Virus infections among patients at a hematology/oncology clinic. Annals of Internal Medicine. 2005; 142(11): 989-902. doi: http://annals.org/aim/article/718429/outbreak-hepatitis-c-virus-infections-among-outpatients-hematology-oncology-clinic
4. Trick WE, Vernon MO, Hayes RA, Nathan C, Rice TW, Peterson BL, et al. Impact of ring wearing on hand contamination and comparison of hand hygiene agents in a hospital. Clinical infectious diseases. 2003; 36(11): 1383-90. doi: https://doi.org/10.1086/374852.
5. Raka L, Mulliqi GJ, Dedushaj I, Pittet D, Biniši R, Ahmeti S. Nosocomial bacteremia among paediatric patients in Kosovo. Clin Microbiol Infect. 2003; 9: 192.
6. Dudek AM, Horan CT, Peterson DK, Allen-Bridson K, Morrell G, Pollock AD, et al. National Healthcare Safety Network (NHSN) Report, data summary for 2010, device-associated module. Am J Infect Control. 2011; 39: 798-816. doi: 10.1016/j.ajic.2011.10.001.
7. Moro LM, Morsillo F, Tangenti M, Mongardi M, Pirazzini CM, Ragni P. Rates of surgical-site infection: An international comparison. Infection Control and Hospital Epidemiology. 2005; 25(5): 442-8. doi: https://doi.org/10.1086/502565.
8. Royal College of Nursing. Essential practice for infection prevention and control Guidance for nursing staff. London. RCN, 2012. Publication code: 004 166.
9. Rasslan O. Infection Prevention and Control Education in Egypt: Professional Diploma in Infection Control (PDIC). International Journal of Infection Control. 2010; 7(2). doi: 10.3396/ijic.