

Tab. 4. Results of Part 3 of the questionnaire: nurses' experience with medication errors and self-assessment of their knowledge

Items	n	%
Self-estimated knowledge of pharmacology		
Inadequate	19	7.92
Satisfying	212	88.33
Great	9	3.75
Experience of medication error in the workplace		
Yes	69	28.75
No	171	71.25
Factors contributing to medication errors		
Inattention	172	26.88
Increased workload	130	20.31
Inexperienced (new) staff	103	16.09
Lack of knowledge	90	14.06
Understanding physicians' prescription	64	10.00
Other*	80	12.5
Experience of one's own error		
Yes	13	5.42
No	227	94.58
Benefit of a university course of pharmacology for intensive care practise		
Yes	58	67.44
No	28	32.56
Need for further education in the field of pharmacotherapy in intensive care		
Positive	231	95.25
Negative	9	3.75

*other factors included: lack of staff, complicated prescription, frequent staff changes, missing dose of the drug, changing work shifts, incorrectly written prescription

Differences of results of the didactic test between graduates of different levels of nursing education were also tested. As expected, it was found that the results of secondary or higher nursing schools graduates were significantly worse than that of university educated nurses. On the contrary, finishing the specialization course in intensive care nursing didn't affect the results of this test. Recent study by Bülbül et al. (14), focused on knowledge related with drug administration and drug administration errors, unexpectedly showed that undergraduate nurses were more successful in calculating doses. This may indicate that level of education might be less important factor than individual attitude or abilities of nurses.

In questions focused on medication errors, respondents were asked whether any such error occurred at their ICU and whether they made such an error themselves during the last 3 months at their workplace. Less than 23 % of respondents experienced medication error at their workplace and 5 % of the respondents made the error themselves. When we com-

pare the results with those from the study by Kim et al. (15), in which the misconduct admitted 63.6 % of respondents, our result is substantially lower. Unfortunately, it is not possible to ensure that respondents truly accountable to the items in the survey. Nurses are often afraid to report their own mistakes, because of potential consequences (16). Fear of punishment, reputational risk medical devices or nescience in the field of medication errors are the cause of the low number of reported errors in most cases. The solution might be the direct observation, which is the most objective method for error detection. However, this method of data collection was found difficult and costly (17, 18).

Furthermore, the respondents had to choose three factors most contributing to the medication errors from the 9 proposed possibilities. The most frequently reported causes were: inattention (26.88%), increased workload (20.31 %) and inexperienced or new staff (16.09 %). In the study by Tang et al. the same issues were found in the same

order - inattention was reported in 86.10 %, increased workload 37.50 % and new staff in 37.50 % (19).

The major limiting factor of this research was just its focus on the nurses' errors. Establishing cooperation with nurses was not easy; they generally did not feel comfortable with testing on their knowledge. They also did not admit that they could make a mistake that could harm the patient or believed that the reporting of such errors could result in a disciplinary action.

We believe that prevention of medication errors must be implemented in every part of the process of drug use. Registering and publishing cases of medication errors is not enough. It is necessary to discover the cause and determine the severity of these errors (20, 21). Primarily, it is necessary to uncover any risk behavior of the medical staff. Education of nurses in the pharmacology and/or clinical pharmacology is also an important intervention to prevent medication errors. This basic knowledge must be also strengthened by practical training (22). It is advisable to apply a multidisciplinary approach and involve pharmacists in preventing medication errors. Involvement of clinical pharmacists at hospital wards can reduce substantially the incidence of medication errors (23). Good undergraduate and continuous postgraduate education of nurses plays the most important role in preventing of medication errors.

Conclusion

Results of the research were quite satisfactory. Nearly 86 % of nurses achieved sufficient or relatively sufficient rating in the evaluation of their knowledge by the didactic test. The level of knowledge of university-educated nurses was significantly higher than that with secondary or higher education. On the other hand, the results of the didactic test were not different between respondents with or without a specialization in the field of intensive care nursing. The most effective way to avoid medication errors is prevention at all stages of the process of dealing with drugs, from their prescription to the monitoring of the patient's condition after their administration.

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LITERATURE

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