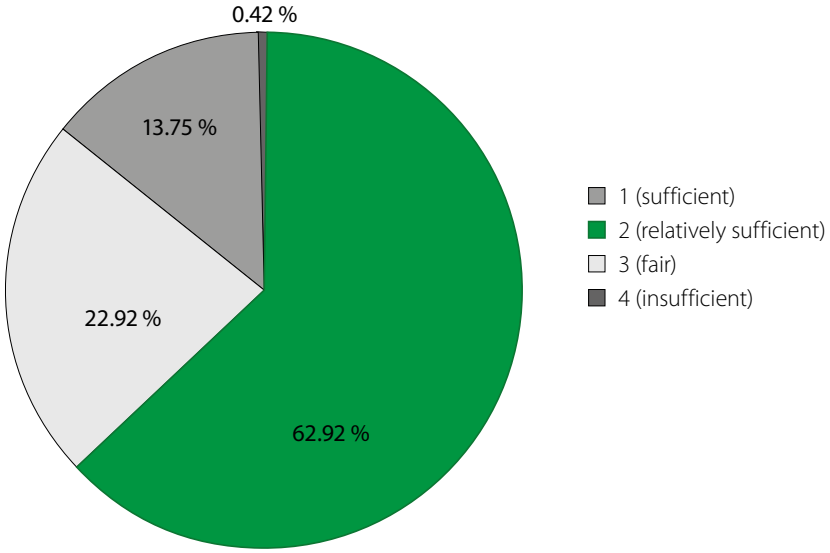
Fig. 1. *Knowledge level based on results of the didactic test*



Tab. 3. *Results of the didactic test by educational attainment*

			Grade of didactic test				Total
			1	2	3	4	
Education level	secondary education	Number	26	59	12	1	98
		% of category	26.53	60.20	12.24	1.02	100.00
		% of total	10.83	24.58	5.00	0.42	40.83
	higher education	Number	15	35	6	0	56
		% of category	26.80	62.50	10.70	0.00	100.00
		% of total	6.20	14.60	2.50	0.00	23.33
	university education	Number	14	57	15	0	86
		% of category	16.28	66.28	17.44	0.00	100.00
		% of total	5.83	23.75	6.25	0.00	35.83
Total		Number	55	151	33	1	240
		% of total	22.92	62.92	13.75	0.42	100.00

between the length of working experience and making medication errors. It was found that the length of work experience didn't play a role in the self-reported incidence of making medication errors (4.3 % vs 6.5 % incidence for those with less than 10 years of experience and those with 10 or more, non-significant). Furthermore, respondents had to choose three factors most contributing to the medication errors from the 9 proposed answers. The factors were most represented: inattention (27 %), increased workload (20 %) and inexperienced / new staff (16 %). Finally, university graduated respondents were asked whether pharmacology courses, which they completed during nursing undergraduate curriculum, have provided a benefit for their practice. Absolute majority (99.00 %) of responses were positive.

Discussion

The study „Medication errors in pediatric nursing: Assessment of nurses' knowledge and analysis of the Consequences of errors" was the model on the methodology of this research (9). However, the model study examined the knowledge and the incidence of medication errors in pediatric intensive care. Our study examined the same issue in adult patients.

A total of 240 respondents participated in the research. Respondents were predominantly female (92.92 %). The age range was from 25 years to 36 years or more. Nearly half of respondents (49.17 %) were older than 36 years of age. The study also focused on the respondents' education level in nursing. Most respondents had secondary education. Nearly a quarter (23.33 %) had higher education and 36 % had a university degree, compared with 39 % in the study by Lan et al. (9). Nurses in the Czech Republic could also have a specialization course in intensive care nursing. There were 55 % nurses in our study which have had finished the course. Also some pediatric nurses (40.50 %) in the abovementioned model study had similar specialization course (2014).

Most respondents had 11 years and more of experience (45.00 %). The least proportion of respondents had experience up to 2 years (13.33 %). Surprisingly, a previous study from Japan has revealed reverse dependence of error making on the length of practice (11). Experienced nurses made more errors than less-experienced nurses in that study. Authors of the study stated that there is the possibility that some medication errors occur due to preoccupation that nurses feel it is less necessary to explain and confirm everything related to medication administrations as their length of service increase. On the contrary, in our study nurses with longer experience didn't make the errors more often than less experienced nurses.

The didactic test was focused on the respondents' knowledge of the high-alert medications used frequently in the intensive care. The List of High-Alert Medications, guidelines issued by World Health Organization (Control of Concentrated electrolyte solutions) and the Summaries of Product Characteristics were used for formulating questions regarding high-alert medication used in critical care. Questions on antibiotics, vasopressors, glucocorticoids sedatives, anticoagulants, anti-ulcer drugs and solutions used for the fluid resuscitation were asked in the test. Most of these drugs are parenterally administered (12).

Results of the test were evaluated using a standardized four-point grading scale: grade 1 (sufficient) reached 22.92 % of respondents, 62.92 % reached grade 2 (relatively sufficient), 13.75 % grade 3 (fair) and 0.42 % grade 4 (insufficient). Pediatric nurses in a study of Lan et al. also achieved similar results (2014). The most difficult question in our questionnaire appeared to be if nurses can apply opioid analgesics into the epidural catheter. In this issue, the rate of incorrect answers was 80.83 %. A possible explanation is that some hospitals have created standards that intensify the competence of personnel, although the national regulations generally reserve this type of administration to medical doctors. Another two items with highest occurrence of errors were focused on the numerical abilities of respondents. In these issues, errors occurred in 8.75 % and 37.50 %, respectively. This type of mistake might have serious consequences during administration of parenteral drugs requiring dilution prior to administration with variable dosage according to the weight of the patient (13).