

Nurses' pharmacology knowledge of food-drug interactions in Ayatollah Taleghani Hospital of Orumieh, Iran

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ABSTRACT

Introduction: Nowadays, patient safety is one of the basic principles in the world and medication fulfillment of orders, an important part of treatment and care is also a major component of nursing performance. With knowledge of the nutritional status of the patient that is an important effect on the appropriate response to drug treatments, can be prevented the risk of many adverse drug reactions including food-drug interactions that it also requires having knowledge of the case. This study aimed to comparison of pharmacology knowledge of food-drug interactions in ICU and general nurses was conducted.

Materials and Methods: This is a descriptive and analytical study. The sample included all nurses in ICU and general ward that their number was 270. All ethical considerations in implementing this research in order to complete the questionnaire and acquiring necessary permits from the Council of the Faculty and maintaining the confidentiality of responses and statistical analysis were observance. Data gathering tool was a researcher made test consisted of two parts: The first part included demographic characteristics and, and the second part consisted of thirty multiple-choice questions to assess pharmacology knowledge of food-drug interactions. The responses were scored as 0 for incorrect and 1 for correct and the total score ranged from 0 to 30. A total number of 230 completed questionnaires were collected from participants and then analyzed by SPSS.19 software. Descriptive and inferential statistics (independent t-test, variance analysis, and χ^2) were applied to the data.

Results: the mean score for all the caring units was found to be 5.87 ± 11.15 which was 6.09 ± 11.15 and 10.34 ± 11.15 for general and intensive care units, respectively. There was no significant difference between the mean scores of different care units.

Conclusion: it was revealed that the obtained mean scores were very low. Thus, it is necessary to take due actions such as developing and in-service training courses to promote nurses' pharmacological knowledge.

KEY WORDS: Drug, food-drug interactions, pharmaceutical knowledge, nurse.

1. INTRODUCTION

In the present century, patient safety is one of the basic principles in the world. Developing countries should also improve the patient care, clinical frequencies, regularly monitoring of clinical processes, and its compliance with international standards (Benni, 2012). Implementing medication orders is as an important part of treatment and care, which considered as the main component of nursing practice. Meanwhile, the patient safety has prominent role (Cauley, 2003). Achieving these goals requires preparation and powerful scientific background, skill in decision making and careful attention to the rule of drug prescription (Dokoohaki, 2008). Pharmacology or knowledge of the construction and use of drugs is one of the most important scientific issues for physicians, nurses, and pharmacists. All three groups should have sufficient knowledge of drug compounding, prescribing and use of medications for patients according to their expertise. Among them, the role of nurses is more important than others, because they are in a position that should complete the efforts of other groups (Rahimi and Seyyed-rasouli, 2004).

Secondly, in line with risk management, following the principles of medication by nurses to protect patients' rights and prevent their complications is very important. So, following them could minimize the incidence of adverse events (Khoshdel, 2015). Although, drugs can be used in the treatment of many health problems, but, the patients must be taught how to use them to ensure that the drugs are safe and effective. Drugs must have a specific impact. Also, they must have predictable effects in all patients. However, such drug is an ideal drug, which has not been discovered yet (Bushra, 2011). Many drugs are potentially contains elements that can interfere with the human body (Anderson and Fox, 2012).

Interference is a situation in which a substance changes the effect of used drugs such as increasing or decreasing the effect of the drug or producing a new effect for the drug (Herr, 1992). In a study conducted in the United States, it was found that 7 percent of drug side-effects was attributed to drug interactions (Phillips, 2001). Drug interactions impose huge costs on the economy. Kwan et al. study is one of several studies that attempted to measure the economic outcomes for preventing drug interactions. In their study, it is estimated that the 1% decrease in the clinically important drug interactions, could reduce by 29250 dollars in indirect costs, annually. Because, any patient experiencing drug interactions, 3 days will be added to the length of his/her stay in hospital, which one day will be spent to identify the drug interactions and two other days are also necessary to decide about the problem and return

the patient to a normal situation (Kwan and Brodie, 2001). In the discussion on drug interactions, mainly drug-drug interactions comes to mind. While, in this regard the role of food-drug interaction is one of the important issues. For achieving the desirable effects of drug and the prevention of their interactions as well as potential side-effects, it is necessary to have knowledge about them (Lasswell, 1995).

Foods and nutrients are the most important and the most variable factors that affect the performance of drugs in the body. This effect is due to the presence of diverse mix of minerals, organic matters, proteins and vitamins in foods as well as the complex formulation of medicine. Also, in many cases their effects can not be predicted. Therefore, the prevention of food-drug interactions is very difficult. Nowadays, a smaller number studies on food-drug interactions have been conducted in comparison with drug-drug interaction studies (Bushra, 2011). Food-Drug Interactions could be occurred due to improper use of drug or lack of knowledge about the medicine's ingredients. Also, food-drug interactions can unexpectedly increase or decrease the effects of drugs. Therapeutic effects and side-effects of medications may affect the nutritional status of patients (Rahimi, 2015). By contrast, the nutritional status of the patient can increase or decrease the effects of drugs (Gandhi, 2003). For example, grapefruit decrease the decomposition of some drugs in the liver, so their half-life and concentration increase in the body, which may have adverse and sometimes dangerous effects. Previous studies suggest that there are few drugs that interact with grapefruit. Whereas, taking more than permissible levels of this fruit by patients under treatment with these drugs (such as lovastatin for decreasing cholesterol) can increase their concentration in patient's body and have serious side-effects (Reif, 2002; Roulet, 2010). Nutritional status has an important role in the life quality and appropriate response to drug treatments (Napolitano, 2009).

In this regard, the level of knowledge of nurses about pharmacology and patient's nutritional status has very important role in the prevention of adverse drug reactions such as food-drug interactions. This requires continuous clinical monitoring in populations with high-risk diets and education of patients (Bailey, 2013). Patient education is one of the main tasks of nurses and nurses are committed to do it. This task depends on their perception of their educational role, having the sufficient knowledge and preparation for patient education and environmental factors (Dehkordi, 2005). Nurses should teach patients about food-drug interactions as much as possible. For example, the patients must be aware that what foods can be included in their daily diet and what foods must be avoided during taking a particular medication. Moreover, the patients should be taught about taking their medications at the exact time (Abbasi Nazari, 2010). The results of a study showed that 49 percent of the drugs prescribed at the time of meals had the potential interactions (Anderson and Fox, 2012).

Results of previous studies indicated that nurse's knowledge of pharmacology is insufficient and they need training (Rahimi and Seyyed-rasouli, 2004; Bernard and Bruera, 2000). Also, there are few studies evaluating the nurse's knowledge of pharmacology in relation to food-drug interactions and how to prevent it. In this regard, in line with improving the quality of drug therapy, patient safety, preventing complications, reducing mortality and treatment costs, the present study was conducted with aim of investigation of nurse's knowledge of pharmacology in relation to food-drug interactions in general and intensive care wards of Taleghani Hospital of Orumieh, Iran.

2. MATERIALS AND METHODS

This study is a cross-sectional study in which the nurses' knowledge of pharmacology in relation to food-drug interactions was studied in general and intensive care wards of Taleghani Hospital of Orumieh, Iran. Totally, 270 nurses working in medical offices of Ayatollah Taleghani Hospital were selected through census sampling. The subjects were assured that their information would remain confidential and are used only for research purposes. A researcher-made questionnaire was used for gathering data in collaboration with specialist clinical pharmacist of Taleghani Hospital. This questionnaire was prepared in two parts. The first part includes demographic data such as age, sex, education level, etc. The second part consists of 30 multiple choice questions related to the nurses' knowledge about food-drug interactions. Content validity was used for data validity. In this regard, the questions were reviewed by five experienced teachers of the School of Nursing and Midwifery and four teachers of Pharmacology department. So, it was edited after receiving comments. The reliability of the questionnaire was studied with ten nurses working in Ayatollah Taleghani Hospital of Orumieh, which had the characteristics of studied subjects. Then, the Kuder-Richardson 20 was used to obtain interclass correlation coefficient. The obtained results were presented with an acceptable level of scientific confidence ($r=0.83$). After confirming the validity and reliability, the questionnaires were distributed among studied individuals and after gathering data from the subjects, the collected data were analyzed using SPSS software (version 19).

3. RESULTS

According to the results, of all participants in the study, 14% were male and 84.7% were female. The mean age of the subjects was 35.53 ± 8.05 . Most participants were married (66 percent). The highest percentage of samples had undergraduate education level (89.4 percent).

Table.1. The frequency of demographic variables of studied nurses working in hospital Ayatollah Taleghani

Parameters		Frequency	Percent	
Sex	Male	33	14	
	Female	199	84.07	
Education level	Resourcefulness and nursing assistants	20	8.5	
	Undergraduate	210	89.4	
	Master	5	2.1	
Marital status	Single / widowed / divorced	77	32.8	
	Married	155	66	
University of education site	Governmental	126	53.6	
	Islamic Azad	108	46	
Location of work	General ward	Internal (men)	12	5.1
		Infectious	23	9.8
		Internal (women)	14	6
		Heart	20	8.5
		Poisoning	12	5.1
	Special ward	Emergency	30	12.8
		ICU	33	14
		CCU	48	20.4
	Dialysis	42	17.9	
Age	Mean and Standard deviation	8.05±35.53		
Work history (year)	Mean and Standard deviation	8±10.52		

Table.2. Average score of the drug-food interaction questionnaire in nurses working in hospital Ayatollah Taleghani

Ward	Average Score	Average	Standard Deviation
General	Internal (man)	9	4.41
	Infectious	10.08	5.81
	Internal (Women)	15.55	4.1
	Heart	10.55	4.97
	Poisoning	5.75	1.35
	Mean and standard deviation total	10.34	5.09
Special	Emergency	6.93	4.17
	ICU	17.06	8.83
	CCU	10.27	2.66
	Dialysis	12.66	4.44
	Mean and standard deviation total	11.59	6.09

Table.3. Comparing the mean scores of drug-food interaction questionnaire among nurses in general and special wards

Ward	Mean	Standard deviation	T test for equality of variances					
			p-value	Upper bound	Lower bound	Average difference	df	T test
General	10.34	5.09	0.12	2.84	0.34	1.25	228	1.54
Special	11.59	6.09						

The results of this study showed that there was a statistically significant difference between the average score of the drug-food interaction and marital status, work location, and sex of studied nurses.

DISCUSSION

The results of the study showed that the mean scores of the drug-food interaction questionnaire were at a low level. In their study reported that the level of food-drug interaction knowledge in health care workers is not at an acceptable level (Walumbwa, 2008).

Moreover, the results of this study showed that there was no significant difference in mean score of nurses in terms of their knowledge about food-drug interactions between special and general wards. This finding indicated

that physicians and nurses consider the food-drug interaction as a less important issue. Therefore, very little effort have been conducted for education and training of personnel about food-drug interactions. So that the average scores were almost in the same limit. Although, the average scores of nurses working in ICU ward was higher than other studied wards. This finding may be due to the presence of a clinical pharmacist in this ward. The increase in the average scores could be affected by this person due to the increase in sensitivity and nursing education about drug-food interaction. These findings are consistent with the results of Abbasi Nazari (2011), on the role of clinical pharmacist in training nurses for decreasing food-drug interactions (Abbasi Nazari, 2010).

Results of our study showed that there was a significant relationship between background variables (marital status, work location, and sex of nurses) and average score of food-drug interactions. In the study of work history as an effective factor in food-drug interaction, there was no significant correlation. This finding is consistent with the results of Enwerem study (Enwerem and Okunji, 2015). In the mentioned study, there was no significant relationship between work history and nurses' knowledge of food-drug interaction. Hill (2010), in their study confirm our result. They reported that continuous learning in professional life is one of the important strategies for increasing the knowledge and skills (Hill, 2010). These findings emphasized the need for conducting periodically training workshops about food-drug interactions to improve nurse's knowledge.

4. CONCLUSION

The level of knowledge of pharmacology of nurses play an important role in the prevention of adverse drug reactions including food-drug interactions. Findings of this study indicate low test scores in drug-food interaction courses among nurses. This issue stressed the importance of holding periodic workshops on food-drug interactions in order to improve knowledge among nurses.

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