Kurdistan Journal of Applied Research (KJAR)
Print-ISSN: 2411-7684 | Electronic-ISSN: 2411-7706

Website: Kjar.spu.edu.iq| Email: kjar@spu.edu.iq

Nurses' Knowledge Regarding Food-Drug Interaction in the Intensive Care and Emergency Hospitals

Samir Y. Lafi
Adult Nursing Department
College of Nursing
University of Raparin
Rania, Iraq
prof.dr.samir@uor.edu.krd

Aram Salih Mohammed Amin Kamali
Garmian Administrative Planning Department
Ministry of Health
Directory of Health
Kalar, Iraq
aramkamali.86@gmail.com

Bayan Omar Sharif
Health Development and Training Center
Ministry of Health
Slemani, Iraq
omerbayan82@gmail.com

Volume 4 - Issue 2
December 2019

DOI:
10.24017/science.2019.2.6

Received:
27 July 2019

Accepted:
14 October 2019

Abstract

Usually supplement is essential and fundamental components for ensure and creating the human body, also drugs seem survey the life of each individuals and ensure the wellbeing for a long life aimed most of illness, but in case nourishment sedate interaction ignored since of information shortage almost it or any reason may be lead to futile of medicine for the patients or cause life threatening condition because of that, one of the most significant ethical point in every health care setting in the world is patient's safety; and the care for patients must be improve in every countries to prevent complication of interaction between food and drug. The main objective of this cross-sectional study has been conducted to assess the nurses' knowledge regarding food-drug interaction (FDI) at the intensive care in both of Shar and emergency hospitals in the Slemani city, the data were collected during the period of October up to the end of December. Non-probability, (purposive sample) of 78 nurses at both hospitals, a questionnaire was designed according literatures and books regarding FDI which contained 25 items, 8 items for demographic characteristics, and 17 items concerning FDI. The validity of the questionnaire was given to a panel of 7 experts, a pilot study was carried out to check the reliability of the questionnaire which determined through the use of stability reliability (test-retest) approach which was estimated as r = 0.81. The data were collected through the interviewing of the study sample and analyzed through the using of the Statistical Package for Social Sciences SPSS, version 23, and analyzed through the application of descriptive and inferential statistical

analysis. The findings of the present study conclude that more than half of nurses had low knowledge and none of them had high level of knowledge, also there is no significant association between the levels of knowledge with age, gender, educational level, years of experience and working place. The study suggested extends the knowledge of nurses regarding the FDI, by training courses from clinical pharmacologists.

Keywords: Food-Drug Interaction, Nurse, knowledge, Intensive Care Unit, Shar and Emergency Hospital

1. INTRODUCTION

To administer medication these three professionals of physician, nurses staff and pharmacist need to have the knowledge regarding the description of different medications because the administration of medication is a complex process [1]. Food-Drug Interactions (FDI) happens once particular nutrients in foods act with medicine if eaten concurrently. The bioavailability, pharmacodynamics, and therapeutic effectuality of the drug may be resulted in changes in FDI[2].One of the most complications of FDI is medical error [3], in addition the medical error has a low risk rate for the patient by those nurses who has an experience five years and more [4]. Institute of Medicine recorded simply nearly 100 thousand deaths occur every year by medical errors just in United State of America.[5]. As well as, geriatric patients at high risk for FDI particularly who use quite two types of medications for their chronic diseases such as high blood pressure, diabetes, cholesterolemia, and cardiovascular disease, thus these clients should be helped and recommended frequently for food and drug interactions[6].One of a major significant cause of complication and death worldwide is Adverse drug reactions [7], because of that that nurses staff who administer drugs and pharmacists have very significant roles to play in ADR monitoring and documenting[8]. On other hands adverse Drug Reactions ADRs indicate the most important health problem among clients because of requiring immediate tackle, for instant, spinach or broccoli are some food that have been shown to cause a pharmacodynamics antagonism with some medication such as warfarin or inhibiting an enzyme that is participated in the metabolism of many medications by grapefruit juice which contains a bioflavonoid, thus, interactions between the food and drugs could have esoteric or deep outcome on the obedience and achievement of drug treatment[9].

2. LITERATURE REVIEW

Every unit at the hospital needs some key skills in order to directly perform patient care, in this regard; Intensive Care Unit (ICU) is one of the most important areas to assess the nurses in a wide-range of field. The result of the patient is linked to higher nursing skill according to implication of studies. Some of the active ways to lessen medication error such as subsequent drug direction or administration rules, a correct dosage computation, and resonance knowledge of pharmacology [10]. According to IOM the nursing vocation is playing a significant role in patient protection and recognizing the client's problems[11]. For achieving a safer level of nursing care, implementing the theoretical knowledge of nursing is very essential to become a strong experience for their practice[12].Nurses must be attentive in monitoring for possible interaction FDI in counseling clients on about it to stay away when used a certain drugs and foods together. One of the main nurse's roles is demonstrating information concerning FDI for patients to prevent occurring problems[13].Harmful effect of drug is associated with low therapeutic index when they interact with food [14]. One of the main categories that increase the life threatening is a medication error during the administration of medication process, so health care worker specially pharmacists has a critical role to reducing these errors by making a suitable interference at each step and by

explaining the information for nurse's staff who administer medications[15]. Many elderly patients who admitted ICU has more than two medications but they are always deprived from instructions regarding food-drug interaction, some may be taken advantage, but more frequently drug interactions lead to avoidable adverse events. More familiar with probable drug interactions might facilitate nurses predict a patient's response to medications, because of that one of the major roles of a nurse leader is management of medication in any health care setting [16]. Food-drug interaction are more possible to create a significant harmful effect for the patients [17].The alertness about food drug interaction appeared publication in the beginning of forties. FDI can occur frequently specially if neglected or no resolved immediately because may be lead to adverse reactions or therapeutic failure can occur [18]. The most people who exposed to this interaction are the elderly patient because most of them have more than two drugs and in can lead to serious situation for them [19]. Several numbers of prescribed medication to patients is usually high in Intensive care units; and most of them supplied food by naso gastric tube because they cannot take food by mouth, in the same time they have drugs too and can lead to serious changes such as problems of incompatibility between food and medication or toxicity can be occur. The best method for decreasing the complication or preventing of FDI is awareness of nurse's staff about FDI, reading patient information leaflet about their own medications and understand the patients about interactions and any adverse reactions of the medication[20]. The present study was successful in assessing the knowledge of both nurse's staff who are working in two different hospitals concerning FDI. The issues about food drug interaction is so difficult and complex dilemma to perfectly find out the effects of foods on a particular medication, because of this the researcher's purpose in the present study is to assess the health care workers specially nurses, who administer the drugs and to become more knowledgeable about food drug interactions.

3. METHODS AND MATERIALS

Quantitative design, cross-sectional descriptive study was conducted to assess the nurses' knowledge concerning interaction between food and drug at intensive care in both Shar and emergency hospitals in the Slemani City, and to determine some socio-demographic characteristic of the participants in the study sample. Letter of permission therefore was sent to both hospitals from Slemani general directorate of health before conducting this study.Non-probability, (purposive sample) of 78 nurses at both hospitals 37 nurses from Emergency hospital and 41 nurses from Shar hospital. For the purpose of data collection, the study tool was constructed and based on extensive review of related literature and studies which contained 25 items, 8items for demographic characteristics, and 17 items were regarding food and Drug Interaction. Then the questionnaire was given to a panel of 7experts to check the validity. A pilot study was carried out to check the reliability of the questionnaire which determined through the use of stability reliability (test – retest) approach, which was estimated as r = 0.81. As well as, just both adult males and females of nurses who were administered medications in both ICU participated in the present study. The data was collected during the beginning of October to end of December; 2017by the interviewing technique and it was analyzed through of using the statistical package for social sciences (SPSS, V. 23).*Chi-square test of association was used to compare proportions.* Fisher's exact test was used too. A p-value of ≤ 0.05 was considered statistically significant.

4. RESULTS

Seventy eight nurses participated in the study. Their mean age ($\pm$ SD) was 28.38 $\pm$ 3.67 years, ranging from 21 to 39 years. Table 1 shows that the majority (78.2%) of the nurses was within group 25-34 years, and only 7.7% aged 35 years or more. No significant differences in the age distribution were detected between the two settings (p = 0.180). The males constituted 59% of the sample. No significant difference was detected in the gender distribution (p = 0.401). Around two thirds (64.1%) of the sample were married, and the majority (93.6%) were diploma holder. Again, the differences between the two groups regarding the marital status

and educational levels were not significant. It is evident in the table that 95.1% of nurses of the Shar ICU believe that their income is insufficient compared with 59.5% of nurses of the emergency ICU ($p < 0.001$). The years of experience was less than 5 years among 44.9% of the sample, and only 10.3% of the nurses had 10 or more years of experience. The difference between the two settings was not significant. Figure 1 indicated that more than half (55.1%) of nurses had low knowledge and none of them had high level of knowledge. Table 2 showed that there are no significant association between the levels of knowledge with age gender, educational level, years of experience, and working place.

Table 1: Socio-demographic characteristics of the study sample of both settings

Settings	**Emergency Hospital**		**Shar Hospital**		**Total**		
Items	**No.**	**(%)**	**No.**	**(%)**	**No.**	**(%)**	**p**
Age							
< 25	8	21.6	3	7.3	11	14.1	0.180*
25-34	26	70.3	35	85.4	61	78.2	
≥ 35	3	8.1	3	7.3	6	7.7	
Total	37	100	41	100	78	100	
Gender							
Male	20	54.1	26	63.4	46	59.0	0.401
Female	17	45.9	15	36.6	32	41.0	
Total	37	100	41	100	78	100	
Marital status							
Single	13	35.1	15	36.6	28	35.9	0.894
Married	24	64.9	26	63.4	50	64.1	
Total	37	100	41	100	78	100	
Level of education							
Diploma	33	89.2	40	97.6	73	93.6	0.184*
B.Sc.	4	10.8	1	2.4	5	6.4	
Total	37	100	41	100	78	100	
Monthly income							
Sufficient	2	5.4	0	0	2	2.6	<0.001*
Barely sufficient	13	35.1	2	4.9	15	19.2	
Insufficient	22	59.5	39	95.1	61	78.2	
Total	37	100	41	100	78	100	
Years of employment							
< 5	16	43.2	19	46.3	35	44.9	0.296*
5-9	15	40.5	20	48.8	35	44.9	

≥ 10	6	16.2	2	4.9	8	10.3
Total	37	100	41	100	78	100

Figure 1: level of nurse's knowledge regarding food drug interaction

Table 2: Association between levels of knowledge with socio-demographic characteristics

	Levels of Knowledge						
	Low		**Medium**		**Total**		
	No.	**(%)**	**No.**	**(%)**	**No.**	**(%)**	**P**
Age							
< 25	7	(63.6)	4	(36.4)	11	(100.0)	0.846*
25-34	33	(54.1)	28	(45.9)	61	(100.0)	
≥ 35	3	(50.0)	3	(50.0)	6	(100.0)	
Gender							
Male	26	(56.5)	20	(43.5)	46	(100.0)	0.767
Female	17	(53.1)	15	(46.9)	32	(100.0)	
Educational level							
Diploma	39	(53.4)	34	(46.6)	73	(100.0)	0.372*
B.Sc.	4	(80.0)	1	(20.0)	5	(100.0)	
Years of experience							
< 5	21	(60.0)	14	(40.0)	35	(100.0)	0.208*
5-9	20	(57.1)	15	(42.9)	35	(100.0)	
≥ 10	2	(25.0)	6	(75.0)	8	(100.0)	
Working place							
Emergency ICU	20	(54.1)	17	(45.9)	37	(100.0)	0.856
Shar ICU	23	(56.1)	18	(43.9)	41	(100.0)	
Total	43	(55.1)	35	(44.9)	78	(100.0)	

5. DISCUSSION

This study has chosen the nurses who administered medications in both ICU in Shar and Emergency hospital in Slemani city. The current study was chosen 78 nurses in both ICU of

(Shar and Emergency hospital) in Slemani city. The finding of the present study indicated that most participants' age in both emergency and Shar hospital was in group 25-34 years, in both hospital number of male was more than female, more than half of nurses in both area were married but the married nurses in emergency hospital was slightly higher. Regarding the educational level, the most participant was graduated from medical institute but the majority of the nurses were in emergency hospital and they had a same degree but number of academic nurses in both setting was very little, however this place is a very critical area and need to nurses with a high quality of certificate. Concerning monthly income, the nurse's staff who worked in Shar hospital had an insufficient economic status whereas the nurses in emergency hospital were slightly better. The final item in the socio demographic data is described years of experience, which indicated that, most number of nurses in both hospitals was between the 5-9 years of experience; moreover nearly half of nurses in both ICU have less than five years of experience, but a little number of them had ten or more years of experience.

The finding of the study in figure 1 demonstrated that more than half 55.1% of nurses had low knowledge, 44.9% had a moderate level of knowledge and none of them had high level of knowledge, this outcome was agree with the studies done by Enwerem and Okunji, 2015 in Columbia[21] and Jyoti et al., 2012 which showed that all nurses who participated in their study has scored low level of knowledge concerning FDI and they mentioned that impossible timing of foods and medications are lead to failure of the treatment [22].Also the outcome of the current study is supported by the results of the study that done by Moradi, et al, 2016 in Iran that mentioned the mean scores of the FDI tool were at a low level[23]. Also Walumbwa, et al, 2008 detected in their study that the level of knowledge about FDI in nurse's staff is not at an adequate level[24].

Table 2 showed that there are no significant association between the levels of knowledge with age $p = 0.846$, gender $p = 0.767$, educational level $p = 0.372$, years of experience $p = 0.208$, and working place ($p = 0.856$), this result come along with the study done in Palestine by Radwan, et al., 2018 which reported that there are no significant association between participant's knowledge scores and some socio demographic such as age, gender, level of education and years of expert. Also they mentioned that the pharmacist is responsible for counseling clients regarding the types of nutrient to prevent eating particular drugs with it, so incorrect patient counseling occur resulting in adverse medical outcomes. Insufficient knowledge of FDIs may lead to Integration of knowledge. Clinically important of FDIs among pharmacists is necessary for the helpfulness of the therapeutic process[25].

Nazari and his colleague in (2011) delineated that the effect of the drug action are influenced by several foods, so the clinical pharmacists is responsible to control and reduce the events of food drug interaction by educating the nurse's staff especially nurses who work in the intensive care unit [26]. Both of food and medication are required for a healthy life, but some food with a specific drug make a side effect when used together. Thus the FDI must be recognized very well. Decrease in the medication's bioavailability is lead to the effect of food on drugs, so the clinical pharmacists is responsible of monitoring for potential FDI and explaining patients concerning foods to prevent when using certain drugs[27].However there are few researches regarding the impact of nurse learning in avoidance or improvement of FDI; but a study believe that, educating the nurse's staff has an important point to decrease or prevent FDI because nurses stay with the patients for a long time much more than physicians and the pharmacists because training course regarding this vital tool is very important. Moreover they choose direct learning technique by clinical pharmacist for their nurses concerning food interactions. It has been revealed that FDI reduced by nearly a quarter percent after nurse's education[26].

Medications are described many times for cure from several diseases, and sick people can achieve a healthy and prolong a period of life by using drugs regularly but they must use the drugs by caution specially if used with some foods because FDI can contribute a main reason for interaction, moreover, neglecting this critical issue related to less knowledge about it[27].

Drug food interaction is a condition that activity of the drug is affected by the food; for instance, lead to increase or decrease, or produce a new impact of the drug[28].

There are many risk factor that affect the interaction between food and drug such as age, gender, co-morbidities of the drug, composition of the body and status of nutrition, because the pharmacologist and nurses has an awareness about it to avoid any occurring any complication[29]. Finally medical errors is considered as a serious and complex health problem in a community because lead to big disaster such as death FDI[30].

6. CONCLUSION

The outcome of the current study indicated that, the nurses in both setting had a low level of knowledge regarding food drug interaction. As well as, there are no significant association between the levels of knowledge with age, gender, educational level, years of experience, and working place. In this regard, the researchers recommended training course from clinical pharmacist for nurses especially those who administer medications in ICU and much more study is required for recognition of this critical issue.

REFERENCE

[1] M. L. S. Mota, I. V. Barbosa, R. M. B. Studart, E. M. Melo, F. E. T. Lima, and F. A. J. R. l.-a. d. e. Mariano, "Evaluation of intensivist-nurses knowledge concerning medication administration through nasogastric and enteral tubes," vol. 18, no. 5, pp. 888-894, 2010.

[2] C. Andrade, "Fruit juice, organic anion transporting polypeptides, and drug interactions in psychiatry," *The Journal of clinical psychiatry*, vol. 75, no. 11, pp. 1323-1325, 2014.

[3] R. Bushra, N. Aslam, and A. Y. Khan, "Food-drug interactions," *Oman medical journal*, vol. 26, no. 2, p. 77, 2011.

[4] M. A. Getnet, B. B. J. N. r. Bifftu, and practice, "Work Interruption Experienced by Nurses during Medication Administration Process and Associated Factors, Northwest Ethiopia," vol. 2017, 2017.

[5] L. Kohn, J. Corrigan, and M. Donaldson, "Committee on Quality of Health Care in America.(2000)," *To err is human: Building a safer health system*.

[6] S. Mouly, M. Morgand, A. Lopes, C. Lloret-Linares, and J. Bergmann, "Drug-food interactions in internal medicine: What physicians should know?," *La Revue de medecine interne/fondee... par la Societe nationale francaise de medecine interne*, vol. 36, no. 8, pp. 530-539, 2015.

[7] M. D. McHugh, E. T. J. R. i. n. Lake, and health, "Understanding clinical expertise: nurse education, experience, and the hospital context," vol. 33, no. 4, pp. 276-287, 2010.

[8] J. W. Lee, J. K. Morris, and N. J. J. T. A. j. o. m. Wald, "Grapefruit juice and statins," vol. 129, no. 1, pp. 26-29, 2016.

[9] M. J. Hanley, P. Cancalon, W. W. Widmer, and D. J. Greenblatt, "The effect of grapefruit juice on drug disposition," *Expert opinion on drug metabolism & toxicology*, vol. 7, no. 3, pp. 267-286, 2011.

[10] N. M. Enwerem and P. O. Okunji, "Knowledge of Food and Drug Interactions among Nurses: Assessment Strategy for Continuing Education," *International Journal of Higher Education*, vol. 6, no. 1, p. 122, 2016.

[11] M. D. McHugh and E. T. Lake, "Understanding clinical expertise: nurse education, experience, and the hospital context," *Research in nursing & health*, vol. 33, no. 4, pp. 276-287, 2010.

[12] K. Hill, "Improving quality and patient safety by retaining nursing expertise," *Online Journal of Issues in Nursing*, vol. 15, no. 3, 2010.

[13] S. Valente, L. Murray, and D. J. J. o. n. c. q. Fisher, "Nurses improve medication safety with medication allergy and adverse drug reports," vol. 22, no. 4, pp. 322-327, 2007.

[14] P. J. P. o. t. N. S. Mason, "Important drug–nutrient interactions," vol. 69, no. 4, pp. 551-557, 2010.

[15] T. L. Rodziewicz and J. E. Hipskind, "Medical error prevention," in *StatPearls [Internet]*: StatPearls Publishing, 2019.

[16] R. E. F. Lima and S. H. D. B. J. R. l.-a. d. e. Cassiani, "Potential drug interactions in intensive care patients at a teaching hospital," vol. 17, no. 2, pp. 222-227, 2009.

[17] A. Khandeparkar and P. V. J. P. i. c. r. Rataboli, "A study of harmful drug–drug interactions due to polypharmacy in hospitalized patients in Goa Medical College," vol. 8, no. 4, p. 180, 2017.

[18] S. S. Martínez, J. A. M. Rodríguez, and E. R. J. F. H. Carreño, "Oral chemotherapy: food-drug interactions," vol. 39, no. 4, pp. 203-209, 2015.

[19] E. M. Segal *et al.*, "Oral chemotherapy food and drug interactions: a comprehensive review of the literature," vol. 10, no. 4, pp. e255-e268, 2014.

[20] C. J. I. F. Mestres Miralles, Nutrition and Metabolism, vol. 4, núm. 4, p. 1-3, "Current situation on nutrient-drug interactions in health care practice," 2017.

[21] N. M. Enwerem and P. J. I. J. N. Okunji, "Knowledge, attitudes and awareness of food and drug interactions among nurses with different levels of experience," vol. 2, no. 1, pp. 1-9, 2015.

[22] J. Benni, M. Jayanthi, B. Tubaki, and M. J. I. J. P. C. S. Renuka, "Knowledge and awareness of food and drug interactions (FDI): a survey among health care professionals," vol. 1, no. 4, pp. 97-105, 2012.

[23] Y. Moradi *et al.*, "Nurses' pharmacology knowledge of food-drug interactions in Ayatollah Taleghani Hospital of Orumieh, Iran," vol. 9, no. 3, pp. 1083-1087, 2016.

[24] F. O. Walumbwa, C. Wu, and B. J. T. l. q. Orwa, "Contingent reward transactional leadership, work attitudes, and organizational citizenship behavior: The role of procedural justice climate perceptions and strength," vol. 19, no. 3, pp. 251-265, 2008.
[25] A. Radwan, A. Sweileh, A. Hroub, J. Elaraj, and N. J. I. j. o. c. p. Shraim, "Evaluation of community pharmacists' knowledge and awareness of food–drug interactions in Palestine," vol. 40, no. 3, pp. 668-675, 2018.
[26] M. A. Nazari, J. Salamzadeh, G. Hajebi, and B. J. I. j. o. p. r. I. Gilbert, "The role of clinical pharmacists in educating nurses to reduce drug-food interactions (absorption phase) in hospitalized patients," vol. 10, no. 1, p. 173, 2011.
[27] S. Otles and A. J. A. S. P. T. A. Senturk, "Food and drug interactions: a general review," vol. 13, no. 1, pp. 89-102, 2014.
[28] C. Owens, T. Toone, M. J. J. o. N. Steed-Ivie, and F. Sciences, "A survey of dietary supplement knowledge, attitudes, and use in a rural population," vol. 4, no. 5, p. 1, 2014.
[29] S. A. Sajid, R. Sultana, M. Masaratunnisa, S. Naaz, and M. S. Adil, "A Questionnaire Study of Food–Drug Interactions to Assess Knowledge of People from Diverse Backgrounds," 2017.
[30] F. J. M. P. Oyebode and Practice, "Clinical errors and medical negligence," vol. 22, no. 4, pp. 323-333, 2013.