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Effectiveness of an educational program on nurse's knowledge concerning danger of mixing Medications in Al- Hussein Teaching Hospital in Al-Muthana Governorate

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Abstract: Mixing treatments is defined as the process of mixing two or more treatments before, during, or after giving together, or one treatment with food or herbs etc, and it is either directly as mixing two treatments in one syringe, or indirectly as in taking two treatments at the same time orally. Mixing medication from unhealthy habits that are widespread in the country, and some may have become addicted to believing that they benefit or are more effective than if the treatments were separate.

Keywords: *Nursing; Education program, Medication administration, Danger of mixing medication.*

I. INTRODUCTION:

Medication administration is a complex multistep process that includes prescribing, dispensing, administering drugs and monitoring patient response. Errors can occur at any stage. Although many errors arise at the prescribing stage, some can occur due to pharmacists, nurses, or other staff. Administration of medicines by nurses is not solely a mechanistic task to be performed in strict compliance with the written prescription of a medical practitioner.(1) The appropriateness of a medication requires the basic knowledge of actions, interactions, side effects, dose, route and approved use of the drug being administered. Medication errors are a serious threat to patient safety in all settings. (2) Nurses may not always adhere to the 5 R's. They may also lack the knowledge about the pharmacology of the medication, which may lead to medication errors.(3) It is a well-known fact that no drug is entirely safe and therefore, nurses who administer medications need to have a thorough and broad knowledge of the drugs and its mode of administration in the effective treatment of patients.(4) mixing medication is one form of the most cause patient complication and may be lead to live threating

The study aims to find out the effectiveness of the educational program in nurses' knowledge related to the danger of mixing treatments.

II. METHODOLOGY:

A quasi-experimental study conducted at Al-Hussein Teaching Hospital in Al-Muthanna Governorate. It started at 10th of October 2019 to 30 March 2020, and (80) nurses were randomly selected from those giving treatment to the patient. They were divided into two (40) nurses for the control group and (40) nurses for the study sample. Data were collected using the questionnaire prepared for this purpose, which consists of (65) items related to the behaviors of their practices and their knowledge of treatments and the risks of mixing them. The validity of the questionnaire was measured by using the Cronbach's Alpha scale and equal to 0.76. Descriptive and inferential analysis was used for the purpose of data analysis.

Results

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The response rate was 100%. Table(4-1): represent that nurses' practical behaviors about mixing medication in pre and post education program for case group which of the practical behaviors about not mixing medication was improved from (**34.0%**) in pretest case to (**47.0**) in posttest case group while the control revealed that no effective change in their practical behavior at posttest Figure (4-1) . Nurses' Knowledge about action of drugs at Pre and posttest for case group which of the knowledge was improved the correct answer from **25.3%** in pretest for **70%** at posttest table (4-2)

No.	Behaviors	Pretest case						Posttest case					
		Yes		Sometime		No		Yes		Sometime		NO	
		f.	%	f.	%	f.	%	f.	%	f.	%	f.	%
1	Agree with mixing drugs	26	65.0	2	5.0	12	30.0	3	7.5	5	12.5	32	80
2	You mixing two or more drugs previous	21	52.5	8	20.0	11	27.5	14	35	12	30	14	35
3	You have problems as result of mixing drugs	16	40.0	11	27.5	13	32.5	16	40	8	20	16	40
4	Having problems with anyone of your partner as a result of mixing drugs	16	40.0	21	52.5	3	7.5	12	30	20	50	8	20
5	The patient ask to mixing drugs	7	17.5	28	70.0	5	12.5	7	17.5	24	60	9	22.5
6	You mixing drug at private clinical	5	12.5	27	67.5	8	20.0	5	12.5	27	67.5	8	20
7	Orders from the specialist doctor or pharmacist to mix the drugs	3	7.5	30	75.0	7	17.5	14	35	15	37.5	11	27.5
8	Receiving a training course about this subject	2	5.0	9	22.5	29	72.5	2	5	2	5	36	90
9	You have the adequate information about the drug	5	12.5	9	22.5	26	65.0	5	12.5	9	22.5	26	65
10	Reading some source that related to drugs and their categories	8	20.0	10	25.0	22	55.0	6	15	6	15	28	70
	Total		27.25		38.75		34.0		21.0		32.0		47.0

but that simple improved in their correct answer about action of drugs which as 23.8% in pretest to 28.2% at post test for control group Figure (4-2) . Table (4-3) shows the nurse knowledge about the danger of mixing medication for case group at pre- and posttest which of the knowledge was improve the correct answer from 25.o% in pretest for 75.0 at posttest although the control group was not improve at pre and posttest in which of the correct answer 25.7% at pretest and 24.8% at posttest Figure(4-3) .

		Correct		Not shore		Incorrect		Correct		Not shore		Incorrect	
		f.	%	f.	%	f.	%	f.	%	f.	%	f.	%
1	Methods of giving drug are different depended on the drug properties (solubility) and its ionizing .	3	7.5	14	35.0	23	57.5	26	65	11	27.5	3	7.5
2	Methods of giving drugs are different depended on the treatment goals that hope (speed of effect or the need to prolong the period of its exist and its effect inside the body.	17	42.5	11	27.5	12	30.0	25	62.5	11	27.5	4	10
3	The toxic and overdoses that giving by oral can inhibit the absorption so avoid their harm effect.	16	40.0	9	22.5	15	37.5	32	80	3	7.5	5	12.5
4	Sublingual or buccal methods is one of method of giving drug by GIT.	13	32.5	13	32.5	14	32.0	33	82.5	4	10	3	7.3
5	Angisid gives sublingual to give fast effect.	5	12.5	12	30.0	23	57.5	26	65	8	20	6	15
6	Most drugs excrete by kidney after convert to water soluble by metabolism process so the liver has important role in excretion process.	7	17.5	19	47.5	14	35.5	30	75	6	15	4	10
7	Elimination half-life is the time needed to excrete 50% of drug.	10	25.0	17	42.5	13	32.5	32	80	4	10	4	10
8	Limon increase of drug effect.	10	25.0	16	40.0	14	35.0	34	85	3	7.5	3	7.5
9	The doctors recommended to take drug with grape juice.	7	17.5	18	45.0	15	37.5	29	72.5	6	15	5	12.5
10	Punic acid is found in pomegranate .	10	25.0	18	45.0	12	30.0	30	75	5	12.5	5	12.5
11	Pomegranate is necessary to patient when take the drug.	11	27.5	13	32.5	16	40.0	27	67.5	7	17.5	6	15
12	Drinking tea is effect on panadol tablets.	9	22.5	17	42.5	14	35.0	29	72.5	6	15	5	12.5
13	The patient is warning to eat banana with hypertension and heart drugs .	12	30.0	15	37.5	13	32.5	31	77.5	6	15	3	7.5
14	Depression patient recommended to drinking energy drinks with their drugs.	10	25.0	14	35.0	16	40.0	27	67.5	12	30	1	2.5
15	Avoid taking antibiotic (tetracycline) with antacid.	12	30.0	10	25.0	18	45.0	29	72.5	9	22.5	2	5
16	Mixing zantac with antifungal (ketoconazole) result of reduce solubility of antifungal result to decrease PH and increase	9	22.5	14	35.0	17	42.5	30	75	2	5	8	20

	acidity .												
17	Warfarin is one of drugs that exclusively interaction so not recommended to take other drugs with it .	13	32.5	12	30	15	37.5	31	77.5	5	12.5	4	10
18	Bronchodilator (theophylline) is effected when take it with cimetidine.	9	22.5	12	30.0	19	47.5	29	72.5	6	15	5	12.5
19	Can't put any drugs in manitol .	8	20.0	8	22.5	23	57.5	31	77.5	7	17.5	2	5
20	Can't put garamycine in flagyl vial.	5	12.5	17	42.5	18	45.0	31	77.5	5	12.5	4	10
21	Ceftriaxone must dissolve in ringer.	12	30.0	13	32.5	15	37.5	28	70	4	10	8	20
22	Plasil and zantac must put in the chemotherapy solution for cancer patient .	12	30.0 10	10	25.0	18	45.0	27	67.5	3	7.5	10	25
23	Distal water must use instead of the water that excited in drugs powder box.	7	17.5	13	32.5	20	50.0	32	80	5	12.5	3	7.5
24	Plasil must put in the solution that contain cardaron or dopamine to avoid nausea .	12	30.0	12	30.0	16	40.0	28	70	8	20	4	10
25	In scabies situation can't use dermodine ointment with permethrin creams.	9	22.5	15	37.5	16	40.0	33	82.5	2	5	5	12.5
26	Zinc oxide is used by mixing it with nistacort compounds in skin rash situation.	8	20.0	12	30.0	20	50.0	33	82.5	4	10	3	7.5
27	Ketorolac is not mixed with spasmocure	8	20.0	15	37.5	17	42.5	26	65	2	5	12	30
28	Samologin drops not mixed with other drops contain ketorolac.	11	27.5	11	27.5	18	45.0	30	75	6	16	4	10
29	Don’t mixed zantac with dospa.	10	25.0	19	47.5	11	27.5	31	77.5	3	7.5	6	15
30	There is no problem in mixing ceftriaxone vial with plasil or voltarin in the same solution but is not in ringer solution.	12	30.0	11	27.5	17	42.5	32	80	6	15	2	5
31	Not mixed unasyan vial with garamycine.	8	20.0	15	37.5	17	42.5	34	85	1	2.5	5	12.5
32	There is no problem in mixing claforan with diclofinac but not diclofinac potassium.	8	20.0	17	42.5	15	37.5	35	87.5	2	5	3	7.5
33	Lidocaine should not mixing with any other drug.	13	32.5	13	32.5	14	35.0	30	75	5	12.5	5	12.5
34	Should not use teething assist with lidocaine.	10	25.0	10	25.0	20	50.0	27	67.5	7	17.5	6	15
35	When giving angisid by oral its will metabolic and convert to inactive form (first-pass metabolism) so that must give sublingual .	9	22.5	16	40.0	15	37.5	25	62.5	8	20	7	17.5

36	The digoxin excretion increase when mixing with hydralazine.	13	32.5	11	27.5	16	40.0	30	75	4	10	6	16
37	Reabsorption of aspirin in kidney is change when taken with antacid.	7	17.5	13	32.5	20	50.0	34	85	3	7.5	3	7.5
38	Recommended to take aspirin with eat to avoid adherence to stomach wall.	12	30.0	13	32.5	15	37.5	31	77.5	5	12.5	4	10
39	When mixing phenobarbital (luminal)60 mg with heparin the clotting time is changing.	7	17.5	11	27.5	22	55.0	33	82.5	4	10	3	7.5
40	Pracetamol is effect when take it with tofranil.	13	32.5	12	30.0	15	37.5	30	75	4	10	6	15
	Total		25.0		33.8		41.2		75.0		13.3		11.7

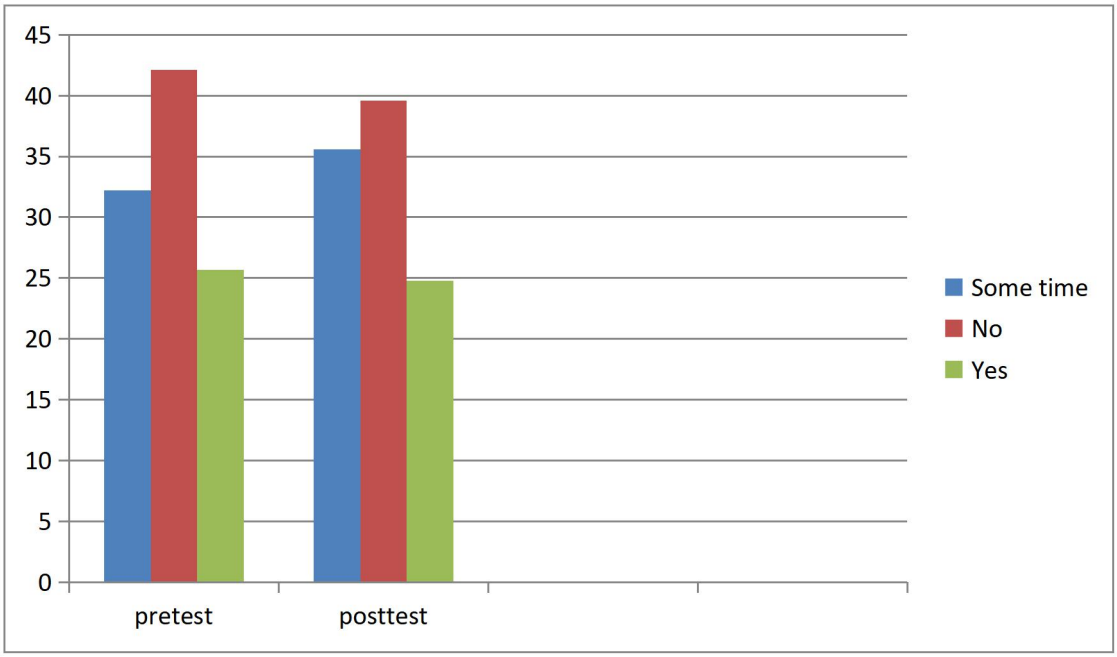

Figure (4-1): Nurses' Practical Behavior about Mixing Medication at pre and Posttest for Control group

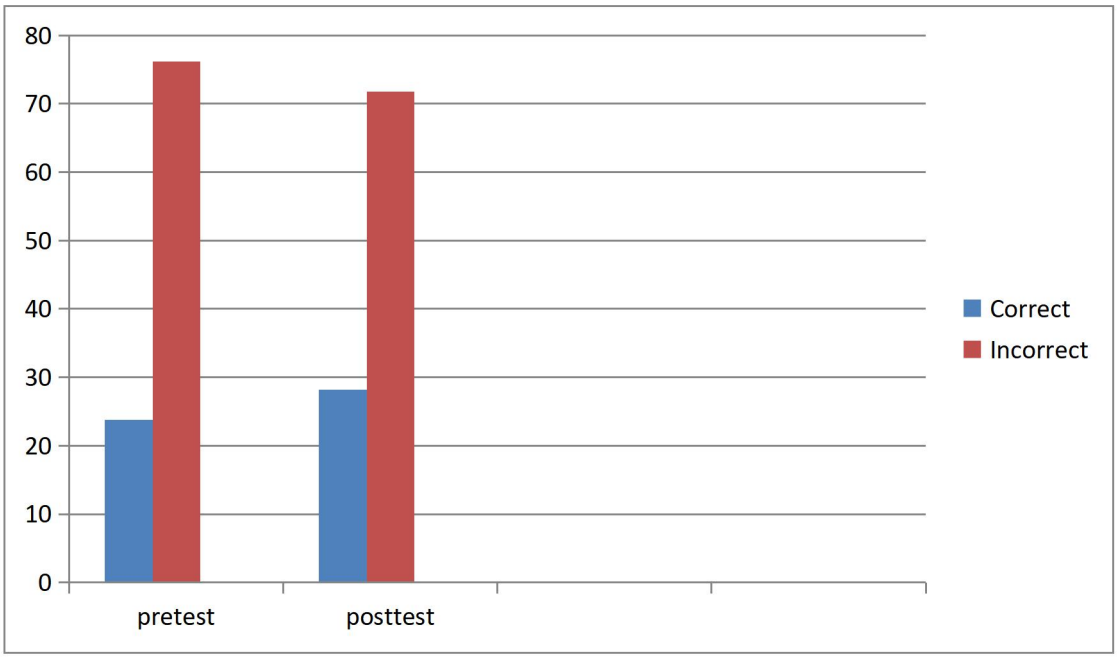

Figure (4-2): Nurses' Knowledge about action of drugs at pre and Posttest for Control group

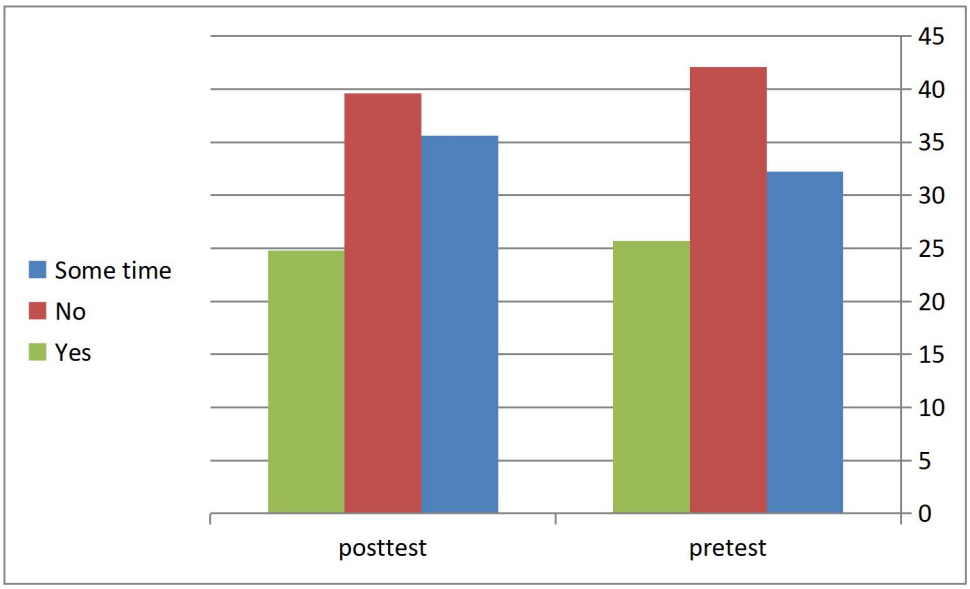

Figure (4-3): Nurses' Knowledge Concerning Drug React and danger of mixing medication at pre and posttest control group

III. DISCUSSION:

Medication administration is a daily basic activity in nursing practice and nurses need to have sufficient knowledge, attitude and competency to perform these tasks. 10 to 18% of all reported hospital injuries have been said to be caused due to medication errors and nurses can be involved in the occurrence of these errors.(5) Our study assessed the knowledge of the pharmacology of mixing medication 80 nurses. Of them, shows that the high percent (52.5%) of the study sample are females more than males in case group, (57.5%) of control group are females more than males, (50%) of case and (57.5) of control groups at age (21-30) years old, the mean and standard deviation of nurses age

was(35.35±12.6) for case group, and (33.3±11.27) for control group, according to the level of education (25%) of case and control groups graduated from Secondary school nursing, 72.5% and 92.5% of case and control groups respectively not participate in training Course related to mixing medication, 47.5% of case and control groups have (1-5years) of experience in nursing care, (30%) of case group is working in the surgical units and (30%) of control group is working in the critical units. The results of this study presented that there were no significant relationship between the effectiveness of education program on case group and their level of education ,training course, years of experience in nursing care, and type of unit at $p \leq 0.05$ level. A descriptive study was random sample comprised of (180) nurses that divided in to two groups, study group consisted of (90) nurses exposed to the nursing educational program and control group consisted of (90) nurses were not exposed to the program to assess nurses' knowledge concerning medication error in Teaching Hospital in AL-Nasiriya City, Iraq . The study revealed that is no statistical significant association between nurses' level of education, years of experience in nursing field, training courses, nurses' work place and their knowledge after educational program(6). The findings of this study showed the education program have significant effect on case group for nurses' practical behavior concerning mixing medication. A quasi-experimental study has been applied in Baquba Teaching Hospital for study the Effectiveness of an Education Program on Nurses Practices Concerning Medication Errors. shows the resulted for the nurse's practices improvements that were occurred due to applying of suggested instructional program. There is a need for additional pharmacology education for nurses in order increase the currency of their knowledge in the field and to prevent medication errors.(7)

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