

Effect of Applying Nursing Intervention Program on Reducing Complications of Blood Transfusion

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Abstract: Blood transfusion complications are common in patients receiving blood transfusion. *The aim* of this study was to evaluate the effect of applying nursing intervention program on reducing complications of blood transfusion. *The study was conducted* in medical departments of Fayoum University Hospitals. *three tools* were used for data collection;(1) patient interview assessment questionnaire.(2)Patient progress notes and (3) Assessment of blood transfusion complications .*The results* of this study indicated that large number of patient in both study and control groups aged between (25:40 yeas) for study group and between (40:60 years) for control group, majority of them were males, and were blood group A and RH positive, liver cirrhosis is the most common medical diagnosis, and majority of patient have red blood cells transfusion, majority of reaction occur after 30 minute of transfusion and after end of transfusion. *The study concluded* Results of the present study were successful in obtaining the hypothesis, in which there was highly statistical significance decrease in the incidence of blood transfusion complications among study group in comparing to control groups. *The study recommended* that application of developed nursing intervention program for blood transfusion in the similar sitting and medical units. The study should be replicated using a strong randomize control of clinical trial with blind assessment of the outcome for more evidence of its positive impact.

Keywords: Nursing intervention program; blood transfusion complications; Blood.

1. INTRODUCTION

Blood is a type of connective tissue that performs three major functions: transportation, regulation, protection. The blood is responsible for the transportation of oxygen, nutrients, hormones, and waste products around the body. Blood also plays a role in the regulation of fluid, electrolytes, and acid-base balance. Finally, the blood has a protective role in its ability to clot and combat infections. There are two major components to blood: plasma and blood cells. Approximately 55% of blood is plasma. Plasma is composed primarily of water, but it also contains proteins, electrolytes, gases, nutrients, and waste. About 45% of blood is composed of formed elements, or blood cells. There are three types of blood cells: erythrocytes (RBCs), leukocytes (WBCs), and thrombocytes (platelets). The primary function of erythrocytes is oxygen transportation. Whereas the leukocytes are involved in protection of the body from infection. Platelets function to promote blood coagulation (1).

Blood transfusion can be a life-saving procedure, but it has risks, including infectious and noninfectious complications. There is debate in the medical literature concerning the appropriate use of blood and blood products. Clinical trials investigating their use suggest that waiting to transfuse at lower hemoglobin levels is beneficial. This review will consider the indications for transfusion of blood and blood products, and will discuss common noninfectious complications associated with transfusion (2) .

In developed countries, blood transfusion and its components is used to support medical and surgical procedures. (3) reports large differences in the amount of blood collected and transfused worldwide. Annual rates of using blood are 46 units per 1000 population in high income countries, 11 units per 1000 population in middle income countries, and 4 units per 1000 people in low income countries. In high income countries 95% of the blood is processed and used as separate components (red cells, platelets, fresh frozen plasma or cryoprecipitate) whereas in low income countries only 25% of donated blood is used as a separate component.

However, like all treatments it may result in many acute or delayed transfusion reactions. Transfusion reactions occur in 7% to 10% of all recipients of blood or blood products. Fortunately, the majority of them are minor reactions. 10% of these reactions are hemolytic and 90% of them are non-hemolytic reactions. Transfusion related acute lung injury, transfusion - associated circulatory overload and hemolytic transfusion reactions were the first, second and third leading causes of death from transfusion (4).

Acute transfusion reactions are adverse responses to the infusion of any blood component, including red cells, white cells, platelets, plasma, cryoprecipitate, or factors. They occur during or up to 24 hours after transfusion. They range from mild allergic reactions that may be treated easily to fatal hemolytic reactions. It is important to recognize that almost all fatal hemolytic reactions are caused by human error. Blood transfusion reactions can be mediated by the immune system or by non-immune factors (5). The recipient's immune system responds to some transfusions by directing an immune response to the proteins in the donor's blood. Non-immune factors are involved when the blood or components are handled, stored, or administered improperly. The most serious reaction is the hemolytic reaction, which occurs when the donor's blood does not have ABO compatibility with the recipient's (6).

Blood transfusion reactions occur while patient receiving blood or immediately after. Transfusion reaction symptoms include back pain, dark urine, chills, fainting or dizziness, fever, flank pain, skin flushing, shortness of breath and itching. In some instances, however, transfusion reactions take place days after the transfusion. Pay close attention to your body after a transfusion, and contact a doctor if you feel something isn't right (7).

Before starting blood transfusion; the nurse must recognize the right and correct patient who intended blood through two approved persons and a three- test out which includes the blood component label, compatibility slip, and wristband of patient, this is the most critical step of transfusion safety and the final opportunity to interrupt any incorrect blood component. also British Committee for Standards in Haematology recommended that special filters size must be accessible to reduce bacterial profusion (170-200 micron) (8).

The nurse should advise or supervise as well as provide expert nursing care. She should be able to care for patients during the period of hospitalization and act as a supportive substitute for patient in the hospital. The important nursing role includes observation of the patients during blood transfusion, monitoring vital signs, giving medication and supporting patients (9).

Significance of the study

More than 13 million units of red blood cells (RBCs) were transfused in the United States in 2011. The medical indications for these transfusions have received increased scrutiny in recent years. Although additional study is needed in many clinical settings, the general trend has been toward more-strict criteria for transfusion. However, everyday transfusion-audit practices across many hospitals have not been well studied (10).

World Health Organization (WHO, 2011), reported that over nine million patients in 90 different Countries receive blood in a year. According to SHOT program (Serious Hazards of Transfusion) about 70% of all reported adverse events are recognized to the improper transfused blood component. Moreover, half of these events involve more than one error in the transfusions process. Inadequate knowledge about safe blood transfusion practices among nurses can lead to adverse consequences in the transfusion recipients' (8).

Aim of the Study:

- Assess the patient to determine the basic needs.
- Develop and implement the nursing intervention program based on the assessment of basic needs.
- Evaluate the effect of the implemented nursing intervention program on incidence of blood transfusion complications.

Research Hypothesis:

At the end of the present study patients who will receive the nursing intervention program of blood transfusion will have less complications than those patients who will not receive this program .

2. SUBJECT AND METHODS

Research Design:

A Quasi-experimental research design was used in this study.

Setting:

This study was carried out at the medical units at El-Fayoum University Hospital, it is the only educational university hospital in fayoum, and it receive patients from all areas of fayoum governorate. It consist of 2medical units: general medical unit and endemic medical unit.

Subjects

A Purposive sample of 100 adult patients who met the inclusion criteria and agree to participate in the study and selected according to the following criteria ,then they were divided into two equal groups (study and control group ,50 patients in each) .

Data Collection Tools:

Three tools were developed by the investigator after reviewing the relevant literatures.

Tool (1)- patient interview assessment questionnaire :

Which will be developed by investigator based on literature review and includes two parts.

Part (1) Sociodemographic data about the patient (10 items)

Patient name, age, sex, level of education ,occupation ,marital status, blood group, Rh type , Residence , income

Part(2) past and current medical history which include (4 items)

Type of blood transfusion , Past and present history taking ,History of previous blood transfusion , Complete blood count investigation .

Scoring system

The majority of the questions were complete questions which filled by the investigator.

Tool (2) Patient progress record which include_measuring vital signs ,pre transfusion, first 15 minute of transfusion ,after 30 minute of transfusion ,every one hour till end of transfusion ,24 hour of transfusion.

Tool (3)Assessment of blood transfusion complications

This tool adopted from (11) it include all complications that might be occur for patient during and post blood transfusion following and included the parts

Hemolytic reaction (5items)

Febrile reaction (7items)

Allergic reaction mild (4items) and sever (6items)

Cardiac overload (6items)

Contaminated blood administered (5items)

Scoring system

One point will be given for the present of blood transfusion complications and the zero point the absent of blood transfusion complications.

Tools validity and reliability: Content validity was conducted to determine whether the tool covers the aim of the study or not. It was ascertained by a jury of 5 expertises: professor , assistant professor of medical surgical nursing from faculty of nursing, Cairo university, professor of medical from faculty of medicine, Fayoum university and two lecture of medical surgical nursing from faculty of nursing, Fayoum university who review the tool for clarity, relevance, accuracy and comprehensiveness. Reliability of the developed tools (Socio-Demographic Data Sheet, past and current medical history & Assessment of blood transfusion complications sheet) was done. Tools were tested for its reliability by test- retest measurement. It was applied on 100 patients 50 cases group and 50 control group. The Cronbach's alpha model which is a model of internal consistency was used in the analysis (value throughout the assessment are 0.81, 0.78 and 0.88. statistical equation of Cronbach's alpha reliability coefficient normally ranges between 0 and 1, higher value (more than 0.7) denote acceptable reliability.

Ethical consideration

Ethical approval was obtained from the scientific ethical committee of Helwan University. In addition, written informed consent was obtained from each participant prior to data collection. The participants assured that anonymity and confidentiality would be guaranteed and the right to withdraw from the study at any time. Ethics, values, culture and beliefs were respected.

Pilot Study

A pilot study was carried out on 10% (10 patients) of the sample to test applicability and clarity of the tools. Modifications were done according to the results of pilot study. Patients in the pilot study were excluded from the study group.

Field Work:

The study was conducted in the frame of nursing process for patient in study group as following:

- I- First phase (Assessment phase)
- II- Second phase (Implementation phase)
- III-Third phase (Evaluation phase)

I-First Phase (Assessment Phase)

It was used for both study and control groups, technique of data collection first on control group than study group.

- 1) Confirm that the transfusion has been prescribed.
- 2) Check the patient identification by asking the patient name and checking the patient chart.
- 3) Double check the labels with ABO group and Rh type.
- 4) Check the patient blood has been cross matched.
- 5) Verify that patient has signed a written consent.
- 6) Check blood for gas bubbles or any unusual color.

Check the expiration date on blood bag.

- 7) Introduce yourself.
- 8) Explain the procedure to the patient.
- 9) Instruct patient in signs and symptoms of transfusion reaction.
- 10) Maintain privacy of the patient.
- 11) Take patient history about previous blood transfusion or transfusion reaction.
- 12) Prepare equipment.
- 13) Check presence of IV catheter. If not present insert a large size catheter in large vein.

II- Second Phase (Implementation Phase)

○ Implement the nursing intervention program for each patient in study group that received the nursing intervention program of blood transfusion. It include (during transfusion care).

- 14) Obtain packed blood from blood bank after the venous line is inserted.
- 15) Worm the blood bag in appropriate manner.
- 16) Hand washing.
- 17) Wear gloves.
- 18) Take patient vital signs to establish a baseline for comparing vital signs during transfusion.
- 19) Use special set with drip chamber containing a large filter.
- 20) Make sure that blood transfusion is initiated within 30 min from removal of blood bank container.
- 21) Insert the blood bag gently several time to mix the cells with the plasma.
- 22) Dispose the port of blood bag by pulling back of the tube.
- 23) Insert the remaining Y set spike into blood bag.
- 24) Open the filter to expel any residual air with in the filter.
- 25) Close the clamp.
- 26) Insert firmly the Y set into IV catheter.
- 27) Start transfusion slowly (10 to 15 drip/min) for first minutes.
- 28) Monitor vital signs.
- 29) Compare vital signs against base line reading.
- 30) Observe patient carefully for adverse effect.
- 31) Increase flow rate if no adverse effect occur in the first 15 min; unless the patient high risk for overload.
- 32) Monitor closely for 15-30 min to detect signs of reaction.
- 33) Monitor vital signs after 30 of infusion.
- 34) Compare result with base line measurement.
- 35) Assess for signs of adverse reaction.
- 36) Monitor vital signs every hour at end of infusion.
- 37) Compare result with base line measurement.
- 38) Make sure that infusion time no exceed than 4 hours.
- 39) Disconnect the blood unit.
- 40) Flush line with saline.
- 41) Dispose of used materials properly.
- 42) Obtain vital signs.
- 43) Compare vital signs with baseline measurements.
- 44) Hand washing.

III-Third Phase (Evaluation Phase)

During this phase the investigator evaluate patient in both study and control groups two times.

First: To determine patient vital signs and present or absent of blood transfusion complications using tool (2).

Second: To evaluate the effect of nursing intervention program on reducing complication of blood transfusion for both study and control using tool (3).

- 45) Document procedure in patient's medical record including patient assessment finding and any adverse reaction.
- 46) Document the time of the infusion was started and completed.
- 47) Document the blood product volume and number.
- 48) Monitor patient for response to and effectiveness of the procedure.

Statistical Analysis

Statistical presentation and analysis of the present study was conducted, using the mean, standard Deviation, unpaired student t-test and chi-square tests by SPSS V20.

$$\text{Mean} = \frac{\sum x}{n}$$

Where \sum = sum & n = number of observations.

Standard Deviation [SD] :

$$SD = \sqrt{\frac{\sum |x - \bar{x}|^2}{n - 1}}$$

Student t-test [Unpaired]:

$$t = \frac{\bar{X}_1 - \bar{X}_2}{\sqrt{SE_1^2 + SE_2^2}}$$

Where:

\bar{X}_1 = Mean of the first group .

\bar{X}_2 = Mean of the second group .

SE1 = Standard error of the first group.

SE2 = Standard error of the second group.

3. RESULTS

Table (1): Socio-demographic data for both study&control groups(n=100)

Socio-demographic	Study (n=50)		Control (n=50)		Total		Chi-square	
	N	%	N	%	N	%	X ²	P-value
Age Mean±SD	43.67±4.37		47.22±5.12		45.91±3.82			
Sex Male	37	74	28	56	65	65	3.560	0.059

Female	13	26	22	44	35	35		
Marital status								
Single	11	22	6	12	17	17	2.666	0.264
Married	39	78	43	86	82	82		
Divorced			1	2	1	1		
Blood group of patient								
A	21	42	17	34	38	38	8.597	0.035*
B	7	14	19	38	26	26		
AB	13	26	6	12	19	19		
O	9	18	8	16	17	17		
Rh type								
+VE	37	74	35	70	72	7	2.056	0.358
-VE	13	26	15	30	28	28		

>0.05 Non significant <0.05* significant <0.001** High significant

Table (1a): describes sociodemographic data of patient in control and study groups. It shows that the mean age in study group was (43.67±4.37) and (47.22±5.12) in control group, while more than half of them was male (74% & 56%) and married (78% & 86%) for both study& control groups respectively and the majority of them was blood group (A) with (42% and 34%) and (74% and 70%) for Rh (+VE) in both study& control groups respectively.

Figure 1: data about age for both study&control groups

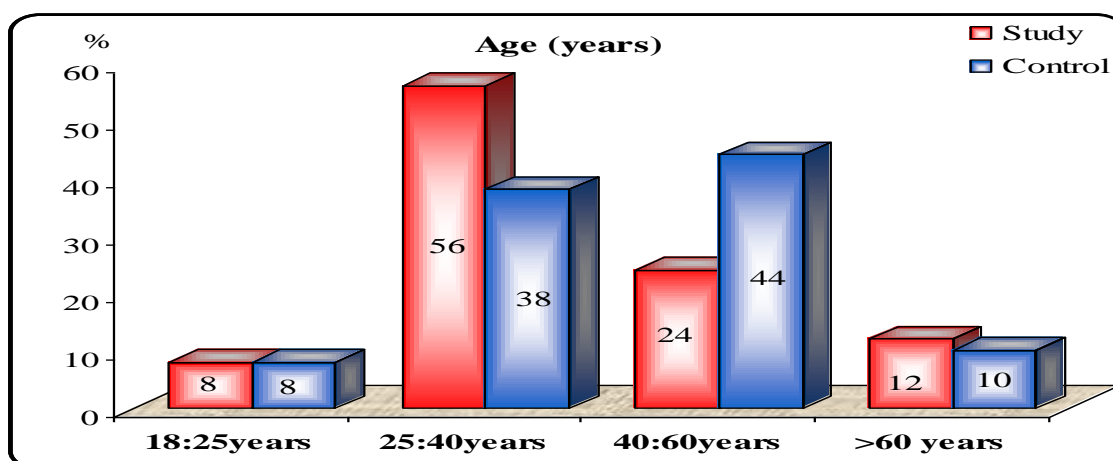


Figure (1)

this figure representative that age range for both study&control groups was between 25:40 years followed by 40:60 years ,more than 60years then 18:25 years respectively .

Table 2: laboratory investigation for both study&control groups (n=100)

Laboratory investigation	Study (n=50)			Control (n=50)			T-test	
	Mean	±	SD	Mean	±	SD	T	P-value
Hemoglobin	8.14	±	0.97	8.23	±	0.70	0.532	0.596
Red blood cells	3.00	±	0.48	3.32	±	0.47	3.307	<0.001**
White blood cells	7.44	±	2.79	7.77	±	3.23	0.561	0.576
Hematocrit	25.08	±	3.41	26.08	±	2.54	1.673	0.098
Platelets	254.24	±	158.95	222.08	±	105.22	1.193	0.236

>0.05 Non significant <0.05* significant <0.001** High significant

Table(2) describes laboratory investigation for both study&control groups it shows there is no any statistically significant difference between two groups regarding laboratory investigation expect red blood cells has highly statistically significant with p-value <0.001** .

Table 3: past and current history of chronic illness for both study&control groups

Chronic illness	Study		Control		Total		Chi-square	
	N	%	N	%	N	%	X ²	P-value
Diabetes mellitus	16	32.0	18	36.0	34	34.0	0.178	0.673
Hyper tension	6	12.0	8	16.0	14	14.0	1.123	0.570
Cardiovascular disease	1	2.0	2	4.0	3	3.0	0.344	0.558
Pulmonary disease	0	0.0	0	0.0	0	0.0	-	-
Kidney disease	1	2.0	10	20.0	11	11.0	8.274	0.004*
Endocrine disease	1	2.0	1	2.0	2	2.0	0.000	1.000
Tumors disease	0	0.0	0	0.0	0	0.0	-	-
Others	1	2.0	2	4.0	3	3.0	0.344	0.558

>0.05 Non significant <0.05* significant <0.001** High significant

Table (3) describes past and current history of chronic illness for both study&control groups it shows that there is no any statistical significant difference between two groups regarding chronic illness expect kidney diseases with p-value (p=0.004).

Table 4: Transfusion reaction for both study and control groups (n=100)

transfusion reaction	Study (n=50)		Control (n=50)		Chi-square	
	N	%	N	%	X ²	P-value
first15 min of transfusion	2	2.0	2	4.0	2.041	0.153
after 30 min of transfusion	2	4.0	6	12.0	2.174	0.140
after end of transfusion	2	4.0	4	8.0	0.709	0.400

>0.05 Non significant <0.05* significant <0.001** High significant

Table (4)describes transfusion reaction for both study and control groups it show large number of reaction occur after 30 minute of transfusion by (16%) of transfusion patient and (12%) after end of transfusion and (6%)for first15 min of transfusion for both control and study groups there was no any statistically significant difference between two groups with p-value >0.05.

Table 5: Assessment of patient complications during transfusion for both study and control groups (n=100)

complications during transfusion	Study(n=50)		Control(n=50)		Chi-square	
	N	%	N	%	X ²	P-value
Hemolytic reaction						
Chills	0	0.0	4	8.0	4.167	0.041*
Fever	1	2.0	4	8.0	1.895	0.169
Tachycardia	1	2.0	6	12.0	3.840	0.050*
Hypotension	1	2.0	6	12.0	3.840	0.050*
Tachypnea	1	2.0	5	10.0	2.837	0.092
Total	4	8	25	50	21.418	<0.001**
Febrile reaction						
Sudden chills	0	0.0	3	6.0	3.093	0.079
Fever	0	0.0	1	2.0	1.010	0.315
Flushing	1	2.0	1	2.0	0.000	1.000

Anxiety	1	2.0	0	0.0	1.010	0.315
Headache	0	0.0	2	4.0	2.041	0.153
Muscle pain	1	2.0	4	8.0	1.895	0.169
Total	3	6	11	22	5.316	0.021*
Mild Allergic reaction						
Flushing	0	0.0	3	6.0	3.093	0.079
Itching	0	0.0	2	4.0	2.041	0.153
Total	0	0.0	5	10.0	5.263	0.022*

>0.05 Non significant <0.05* significant <0.001** High significant

Table(5) shows that ,complication during blood transfusion for both study&control groups,there was highly statistically significant difference between two groups as regard Hemolytic reaction with p-value (p= <0.001) and there was statistically significant difference between two groups as regard Febrile reaction and Mild Allergic reaction with p-value (p=0.021 and 0.022) .

Figure 2: number of patient whom has complications during blood transfusion for both study and control groups

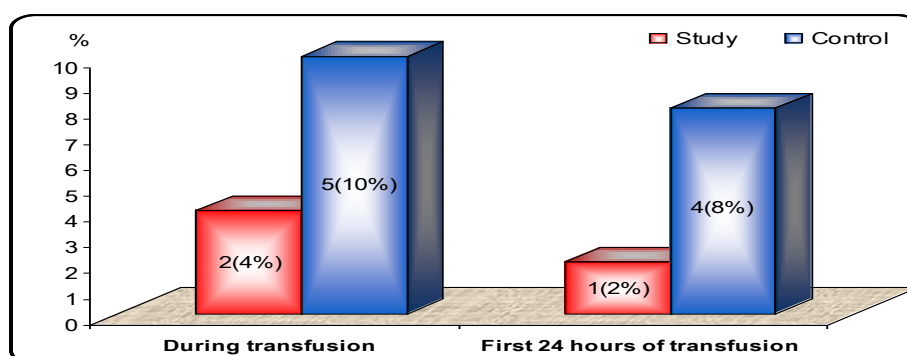


Figure (2)

Figure (2): this figure show highly incidence of complications occurs in control group during transfusion and first 24 hours of transfusion (10% and 8%)compared to study group during transfusion and first 24 hours of transfusion was(4% and 2%) .

Table 6: Relation between demographic data & incidence of complication first 24 hours of transfusion for study group (n=50)

Study	complications first 24 hours of transfusion					
	Yes		No		Chi-square	
	N	%	N	%	X2	P-value
Age						
18:25years	0	0.0	4	100.0	11.735	0.008*
25:40years	0	0.0	28	100.0		
40:60years	1	8.4	11	91.6		
more than60years	0	0.0	6	100.0		
Sex						
Male	0	0.0	37	100.0	2.904	0.088
Female	1	7.7	12	92.3		
Marital status						
Single	1	9.1	10	90.9	3.618	0.057
Married	0	0.0	39	100.0		

Divorced	0	0	0	0		
Blood group of patient						
A	1	15	20	95.2	1.409	0.703
B	0	18	7	100.0		
AB	0	6	13	100.0		
O	0	6	9	100.0		
Rh type						
+VE	0	0.0	37	100.0	2.904	0.088
-VE	1	7.7	12	92.3		

>0.05 Non significant <0.05* significant <0.001** High significant

This table 6 shows there was statistically significant relation between demographic data & incidence of complication first 24 hours of transfusion for study group as regards patient age with p-value(p=0.008). while non statistically significant relation of the other items with p-value >0.05.

Table 7: Relation between past history of chronic illness & incidence of complication during blood transfusion for study group (n=50)

Study	complications during transfusion					
	Yes		No		Chi-square	
	N	%	N	%	X ²	P-value
a-Diabetes mellitus	2	12.5	14	87.5	4.427	0.035*
b-Hyper tension	2	33.3	4	66.7	15.278	<0.001**
c-Cardiovascular disease	0	0.0	1	100.0	0.043	0.837
e-Kidney disease	0	0.0	1	100.0	0.043	0.837
f-Endocrine disease	0	0.0	1	100.0	0.043	0.837
h-Others	0	0.0	1	100.0	0.043	0.837

>0.05 Non significant <0.05* significant <0.001** High significant

This table 7 show highly statistically significant relation between past history of chronic illness & incidence of complication during blood transfusion for study group as regard hypertension with p-value <0.001** . and there was statistically significant relation in diabetes mellitus with p-value <0.05* . while non statistically significant relation of the other items with p-value(p=0.035).

4. DISCUSSION

Blood transfusion is essential component of modern patient therapy. It's a valuable commodity and treatment modality. It has been the solution for many disorders that affect the efficiency of the circulatory system as well as the respiratory system in the way that includes oxygen carriage and delivery to various tissues. Ten percent of all patients administrating hospitals received blood transfusions. The rate of blood transfusion of either RBCs or platelets is approximately 5 percent (9).

Regarding socio-demographic data of patient undergoing blood transfusion ; the present study revealed that Mean±SD of age was (45.91±3.82) and majority of patient were male , married, secondary school education, from urban areas ,dose not have occupation .These findings were in agreement with (5), who mentioned that majority of the patients were in age group from 40years to less than 60 years, males, married, , from rural areas and secondary school education .And disagreement in occupation and residence with (11), who reported that majority of patient were employer and from rural areas.

Regarding the medical diagnosis of the study groups; the present study revealed that the majority of patients under study were diagnosed liver cirrhosis and hematemesis and from the investigator point of view this result could be related to increase prevalence of hepatitis viruses B & C of rural areas and chronic liver diseases that was unknown for patient. These findings were in agreement with (12), mentioned that the majority of patient undergoing blood transfusion diagnosis was severe infection or liver disease that stops your body from properly making blood or some parts of blood and An illness that causes anemia, such as kidney disease or cancer.

According to the laboratory investigation for both study& control groups ;the present study revealed that decrease hemoglobin level less than nine mg\dl & red blood cells level at level of three mmol/l .and From the investigator point of view this result could be related to increase spread of blood diseases and liver diseases as hematemesis , melena and peptic ulcers that increase loss of blood from patient body and increase patient needs for transfusion of blood and blood products. These findings were in agreement (13) mentioned that he participants' median, pretransfusion hemoglobin thresholds for audit review were 8.0 to 8.9 g/dL for most clinical settings and 9.0 to 9.9 g/dL for patients with underlying cardiopulmonary disease. and disagreement with (14) who mentioned that laboratory investigations for patient that need blood transfusion should include hemoglobin level < 8 g/dl as in anemia.

Regarding the past and current history of chronic illness for both study&control groups ;the present study revealed that more than one third of patient that have chronic illness diabetes mellitus and fortune percentage have hypertension while non of patient have pulmonary diseases or tumors with statistically significant deference between two groups as regard Kidney disease .while non statistically significant deference between two groups in others chronic illness and From the researcher point of view this result could be related to increase prevalence of chronic illness among elderly patient and the most common of chronic illness in Egypt was diabetes mellitus ,hypertension ,chronic kidney diseases and tumors.This findings agreement with (15) who mentioned that About 18% of adolescents in the United States live with a chronic illness. Chronic illness may affect the adolescent's development, Increased risk-taking by adolescents with diabetes, asthma, or chronic renal failure can hinder their compliance with their medication regimen.

Relating to blood transfusion reaction for both study and control groups ;the present study revealed that large number of reaction occur after 30 minute of transfusion , after end of transfusion and first15 min of transfusion for both control and study groups and from the investigator point of view this result could be related to transfusion reaction occurs in most common cases after start blood from 15 to 30 minute of starting transfusion it related to hemolytic and febrile reaction this complication occur early of transfusion . This result agreement with (7) who mentioned that nurse will remain with patient for at least the first 15 to 30 minutes of the transfusion. This is because most reactions with blood transfusions, if they happen, occur immediately.

Relating assessment of patient complications during transfusion for both study and control groups ;the present study revealed that there was highly statistically significant difference between two groups as regard Hemolytic reaction and there was statistically significant difference between two groups as regard Febrile reaction and Mild Allergic reaction. this agreement with (16) who mentioned that, the common blood transfusion complication are Acute hemolytic transfusion reaction ,febrile reaction and allergic reaction.

Relating to incidence of present complications for both study and control groups ;the present study revealed that show highly incidence of complications occurs in control group during transfusion and first 24 hours of transfusion compared to study group during transfusion and first 24 hours of transfusion . these agreement with (11) who mentioned that the incidence of blood transfusion complication after application of the designed nursing intervention protocol was lesser than pre implementation of intervention protocol.

According to Relation between demographic data & incidence of complication first 24 hours of transfusion for study group ;the present study revealed that statistically significant relation between demographic data & incidence of complication first 24 hours of transfusion for study group as regarde patient age this agreement with (17) who mentioned that In hip patients first 24 hour of transfusion, low preoperative Hb, high age and female gender were univariately associated with perioperative allogeneic RBC transfusion.

As regard Relation between past history of chronic illness & incidence of complication during blood transfusion for study group ; the present study show highly statistically significant relation between past history of chronic illness & incidence

of complication during blood transfusion for study group as regard hypertension when. while statistically significant relation in diabetes mellitus. This findings agree with (18) who mentioned that The frequency of the associated chronic diseases in psoriasis patients was: 12.9% hypertension, 10.3% obesity and 7.1% type 2 diabetes. The results related to risk of hypertension, type 2 diabetes and obesity in psoriasis patients according to socio-demographic variables. And disagreement with (19) who mentioned that The decrease in BP was not significantly associated with changes of blood count or variables of iron metabolism.

5. CONCLUSION

Results of the present study were successful in obtaining the hypothesis. And there was highly statistical significance decrease in the incidence of blood transfusion complications among study group in comparing to control groups .as well there no any relation between Socio-demographic data and incidence of complications that indicate high effect of the provided intervention program.

6. RECOMMENDATIONS

In light of these findings, the study recommended that:

- 1- The application of developed nursing intervention program for blood transfusion in the similar sitting and medical units.
- 2- Follow up study is suggested to confirm the long term impact of the intervention program.
- 3- The study should be replicated using a strong randomize control of clinical trial with blind assessment of the outcome for more evidence of its positive impact.

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