

## Assessment the Nurses Knowledge towards Blood Transfusion Procedure in Karbala City Hospital/ Iraq

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### Abstract

Blood transfusion is a life-saving operation that also comes with a high danger of invasiveness. Patient safety continues to be jeopardized by clinical staff nurses' lack of understanding of many elements of blood transfusion. This study aims to assess nurses knowledge towards blood transfusion procedure; and determine those knowledge with demographic data.

**Methods:** A quantitative descriptive analysis investigate the knowledge among nurses toward blood transfusion procedures. Throughout the non-probability sampling method, a purposive random sample of (108) nurses is chosen. A constructed questionnaire includes (socio-demographic data and knowledge question composed 33 items about blood transfusion procedure), data was collection through the use of a questionnaire and self report. Through the application the descriptive statistic and inferential, data were analyzed

**Results:** The findings revealed the nurses knowledge towards patients prepare, collection of blood bags and blood transfusion procedure were within poor knowledge (mean < 1.5) except, the nurses knowledge towards complication of blood transfusion were good knowledge score (mean ≥ 1.5). The overall knowledge were poor level at low level of mean+ S.d.= 1.34+0.4232. the education attainment, years of employment and training sessions have been significant relationship with their poor knowledge.

**Conclusion:** More years of experience in training the staff on blood transfusion by local officials help raising professionals' nurses. Provide the health resources and exploiting young energies of nurses which indeed helps to develop their knowledge.

**Key-wards:** Assessment, Nurses, Blood Transfusion.

### INTRODUCTION

Millions of people receive blood transfusions each year all throughout the world. A new branch of science called "transfusion medicine" was born as a result of the identification of blood groups at the turn of the twentieth century, the resolution of anticoagulation problems, the development of sterile techniques, and the resolution of equipment problems thanks to technological advances <sup>[1]</sup>. In acute or chronic situations, blood transfusion is a critical and life-saving procedure. However, transfusion of blood or blood products carries considerable dangers; as a result, the clinical benefits and necessity of transfusion for each patient should be thoroughly examined and weighed before proceeding <sup>[2, 3]</sup>. Transfusion of blood and blood products is a common therapeutic procedure in modern medicine around the world. Blood transfusion, on the other hand, is a typical life-saving treatment for patients, but it can come with a number of complications and hazards. Mistakes in blood transfusion procedures usually do not create serious problems for blood recipients, but acute and deadly reactions are not uncommon <sup>[4]</sup>. For proper blood product utilization and safe transfusion, there is a risk of error at every step of the operation, close clinician teamwork, and necessary understanding <sup>[5]</sup>. Nurses play a critical role in ensuring the safety of blood transfusions. Nurses with little knowledge of blood and its components might cause several difficulties in

patients. As a result, nurses must be informed of the risks and advantages of blood transfusions<sup>[6]</sup>.

## METHODOLOGY

To investigate the knowledge among nurses toward blood transfusion procedures. Throughout the non-probability sampling method, a purposive random sample of (108) nurses is chosen. A constructed questionnaire includes (socio-demographic data and knowledge question composed 33 items about blood transfusion procedure), data was collection through the use of a questionnaire and self report. Through the application the descriptive statistic and inferential, data were analyzed "Assessment. Level: ( $<.1.5$ ) = Poor; ( $\geq 1.5$ ) = Good".

## RESULTS

**Table1:Descriptive Statistic Nurses Demographic Variables**

Demographic Variables	Rating	N=108	%
Age/years (Mean± S.d= 28.11±5.674)	20-29years old	82	75.9
	30-39years old	19	17.6
	40-49years old	5	4.6
	50 and older	2	1.9
Gender	Male	51	47.2
	Female	57	52.8
Residency	Rural	25	23.1
	Urban	83	76.9
Educational Attainment	Preparatory nursing	27	25.0
	Diploma	53	49.1
	Bachelor's	28	25.9
Work Unit	Oncology	39	36.1
	Dialysis	58	53.7
	Thalassemia	11	10.2
Years of Experience	<5 years	75	69.4
	5-10 years	18	16.7
	>10 years	15	13.9
Years of experience in the current workplace	<5 year	54	50.0
	5-10 years	44	40.7
	>10 years	10	9.3
Training Sessions	No trained	60	55.6
	1 session	22	20.4
	2 sessions	21	19.4
	>2 sessions	5	4.6

**Table 2:Nurses Knowledge towards Blood Transfusion Procedure**

List	Domains	N	S.d.	Mean	Ass.
1	Knowledge related to Patient Prepare	108	0.474	1.33	Poor Knowledge
2	Knowledge related to Collecting Blood Bags	108	0.347	1.14	Poor Knowledge
3	Knowledge related to Blood Transfusion Procedure	108	0.405	1.20	Poor Knowledge
4	Knowledge related to Complication of Blood	108	0.467	1.69	Good

Transfusion				Knowledge
Overall knowledge related to Blood Transfusion Procedure	108	0.4232	1.34	Poor Knowledge

"N= Number, Mean= (1.5), Poor (mean = <1.5), Good (mean ≥ 1.5), S.d= Stander deviation"

This table shows the statistically distribution and blood transfusion procedure main domains. The findings revealed the nurses knowledge towards patients prepare, collection of blood bags and blood transfusion procedure were within poor knowledge (mean < 1.5) except, the nurses knowledge towards complication of blood transfusion were good knowledge score (mean ≥ 1.5). The overall knowledge were poor level at low level of mean+ S.d.= 1.34+0.4232.

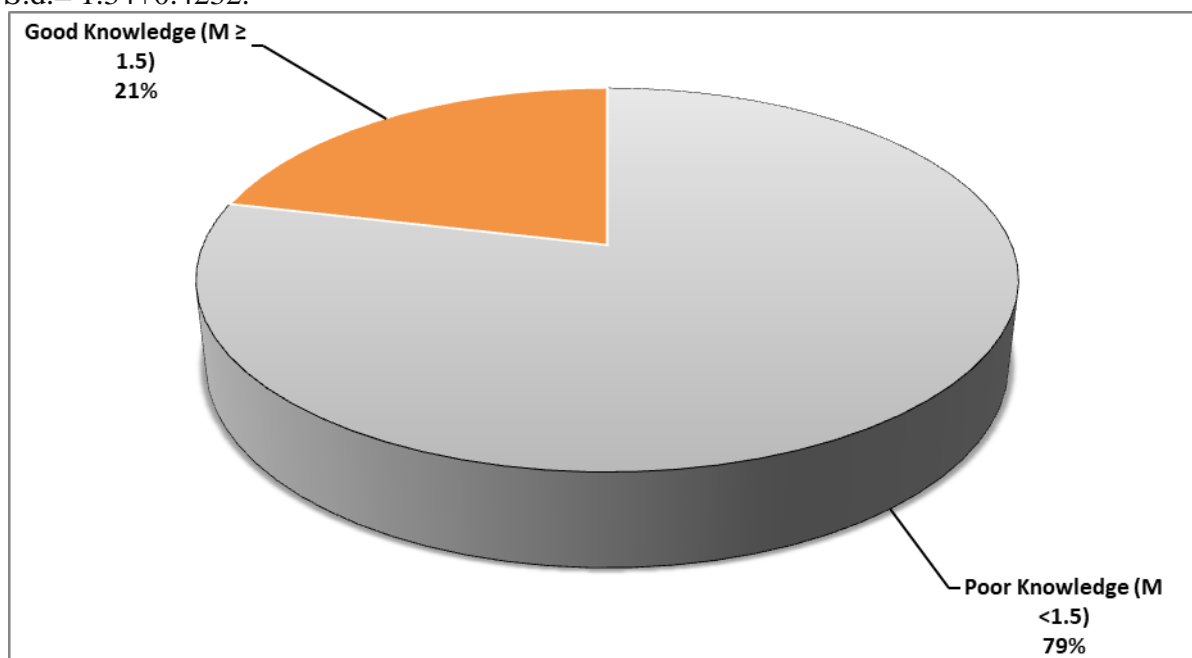


Figure 1:Overall Assessment of Nurses Knowledge

Table 3:Ch-square Analysis between Nurses Knowledge and their Age

Age	Rating	Knowledge		Total	d.f	Sig.	
		Incorrect	Correct				
	20-29years old	64	18	82	3	$\chi^2_{obs.}=0.568$ $\chi^2_{crit.}= 7.815$ "P-value=0.904"	N.S
	30-39years old	15	4	19			
	40-49years old	4	1	5			
	50 and older	2	0	2			
	Total	85	23	108			

" $\chi^2_{obs.}$  = Chi-square observer,  $\chi^2_{crit.}$  = Chi-square critical, Df= Degree of freedom, P-value= Probability value, S= significant, NS= non significant, S= significant, HS= high significant"

The results demonstrated that nurses' age groups had no effect on their knowledge of blood transfusion procedures (p-value >0.05).

Table 4:Ch-square Analysis between Nurses Knowledge and their Gender

Gender	Rating	Knowledge		Total	d.f	Sig.
		Incorrect	Correct			

	Male	39	12	51	1	$\chi^2_{obs.}=0.288$ $\chi^2_{crit.}= 3.841$ "P-value=0.592"	N.S
	Female	46	11	57			
	Total	85	23	108			

" $\chi^2_{obs.}$  = Chi-square observer,  $\chi^2_{crit.}$  = Chi-square critical, Df= Degree of freedom, P-value= Probability value, S= significant, NS= non significant, S= significant, HS= high significant".

The results showed that nurses' gender had no bearing on their understanding of blood transfusion procedures (p-value >0.05).

Table 5:Ch-square Analysis between Nurses Knowledge and their Residency

Residency	Rating	Knowledge		Total	d.f	Sig.	
		Incorrect	Correct				
	Rural	21	4	25	1	$\chi^2_{obs.}= 0.544$ $\chi^2_{crit.}= 3.841$ "P-value=0.46"	N.S
	Urban	64	19	83			
	Total	85	23	108			

" $\chi^2_{obs.}$  = Chi-square observer,  $\chi^2_{crit.}$  = Chi-square critical, Df= Degree of freedom, P-value= Probability value, S= significant, NS= non significant, S= significant, HS= high significant"

At a p-value of >0.05, there is no correlation between nurses' homes and their understanding of blood transfusion procedures.

Table 6:Ch-square Analysis between Nurses Knowledge and their Education

Education	Rating	Knowledge		Total	d.f	Sig.	
		Incorrect	Correct				
	Preparatory nursing	25	2	27	2	$\chi^2_{obs.}= 41.711$ $\chi^2_{crit.}= 5.991$ "P-value=0.000"	H.S
	Diploma	50	3	53			
	Bachelor's	10	18	28			
	Total	85	23	108			

" $\chi^2_{obs.}$  = Chi-square observer,  $\chi^2_{crit.}$  = Chi-square critical, Df= Degree of freedom, P-value= Probability value, S= significant, NS= non significant, S= significant, HS= high significant"

The results demonstrated that nurses' educational attainment was highly correlated with their understanding of blood transfusion procedures, with a p-value of 0.01.

Table 7:Ch-square Analysis between Nurses Knowledge and their Work Unit

Work Unit	Rating	Knowledge		Total	d.f	Sig.	
		Incorrect	Correct				
	Oncology	29	10	39	2	$\chi^2_{obs.}= 1.243$ $\chi^2_{crit.}= 5.991$ "P-value=0.537"	N.S
	Dialysis	48	10	58			
	Thalassemia	8	3	11			
	Total	85	23	108			

" $\chi^2_{obs.}$  = Chi-square observer,  $\chi^2_{crit.}$  = Chi-square critical, Df= Degree of freedom, P-value= Probability value, S= significant, NS= non significant, S= significant, HS= high significant"

The results illustrated that nurses' work unit had no effect on their understanding of blood transfusion procedures (p-value >0.05).

Table 8:Ch-square Analysis between Nurses Knowledge and their Years of Experience

Experience	Rating	Knowledge		Total	d.f	Sig.	
		Incorrect	Correct				
	<5 years	69	6	75	2	$\chi^2$ obs.= 42.186 $\chi^2$ crit.= 5.991 "P-value=0.000"	H.S
	5-10 years	4	14	18			
	>10 years	12	3	15			
	Total	85	23	108			

" $\chi^2$  obs.= Chi-square observer,  $\chi^2$  crit. = Chi-square critical, Df= Degree of freedom, P-value= Probability value, S= significant, NS= non significant, S= significant, HS= high significant"

Nurses' years of experience were found to be extremely important in their knowledge of blood transfusion procedures, with a p-value of 0.01.

Table 9:Ch-square Analysis between Nurses Knowledge and their Years of Experience in Current Workplace

Experience in current work	Rating	Knowledge		Total	d.f	Sig.	
		Incorrect	Correct				
	<5 years	42	12	54	2	$\chi^2$ obs.=0.734 $\chi^2$ crit.= 5.991 "P-value=0.693"	N.S
	5-10 years	36	8	44			
	>10 years	7	3	10			
	Total	85	23	108			

" $\chi^2$  obs.= Chi-square observer,  $\chi^2$  crit. = Chi-square critical, Df= Degree of freedom, P-value= Probability value, S= significant, NS= non significant, S= significant, HS= high significant"

Years of experience in the current workplace of nurses were shown to have no bearing on their understanding of blood transfusion procedures (p-value >0.05).

Table 10:Ch-square Analysis between Nurses Knowledge and their Training Sessions

Training Sessions	Rating	Knowledge		Total	d.f	Sig.	
		Incorrect	Correct				
	No trained	60	0	60	3	$\chi^2$ obs.= 47.64 $\chi^2$ crit.= 7.815 P-value=0.000	HS
	1 session	16	6	22			
	2 sessions	8	13	21			
	>2 sessions	1	4	5			
	Total	85	23	108			

" $\chi^2$  obs.= Chi-square observer,  $\chi^2$  crit. = Chi-square critical, Df= Degree of freedom, P-value= Probability value, S= significant, NS= non significant, S= significant, HS= high significant"

Findings shows that training sessions of nurses were highly significant with their knowledge towards blood transfusion procedure at p-value <0.01.

## DISCUSSION

### Demographic Factors of Descriptive Statistic

The groups of studied age of the subjects in this study was 20-29 years old, and they made up (75.9%) of the total number of participants. Oncology, dialysis, and thalassemic wards require youthful nurses due to the nature of their work. Furthermore, this age group is capable of providing and perfecting nursing interventions efficiently and effectively, as most nurses with many years of experience go to the primary health care sector, allowing younger

nurses to remain in hospital care. These findings are consistent with those of who discovered that the majority of study samples were between the ages of 20 and 29, and that they were required in critical areas of hospitals <sup>[7]</sup>. The results of a hepatitis prevention study done at Diwaniya Teaching Hospital are also mentioned. Young nurses between the ages of 20 and 24 made up the bulk of the participants <sup>[8]</sup>.

In terms of gender, male nurses predominated and accounted for more than half of all nurses, as opposed to female nurses, who account for 52.8 percent of all nurses and dwell in urban regions. This conclusion is due to the fact that the majority of the nurses who work directly with patients in the selected wards are male, as patient interaction necessitates a high level of physical activity.

The data show that more than half of the study sample had diplomas and worked in dialysis units (49.1 percent and 53.7%, respectively), owing to the vast number of institutions that offer such degrees. This conclusion is also due to the fact that hospital wards rely entirely on nurses who have graduated from nursing institutes, although nurses who have graduated from nursing colleges are still in the minority compared to other nurses. This research was conducted among nurses at the Major Referral Center in Ghana. Their findings revealed that the majority of nurses who deal with blood transfusion activities have a diploma and make up 8.87 percent of the workforce <sup>[9]</sup>.

More than half of the research participants (69.4 percent and 50.0 percent, respectively) have fewer than 5 years of experience in their career and current workplace. This is because they are quitting employment in cancer, dialysis, and thalassemia departments to work as nursing assistants, which requires them to have the necessary certifications. Alternatively, the few years of nursing experience in particular wards could be explained by the fact that nurses rotate from one unit to another within the hospital. The findings are based on the findings of Saudi Arabian health-care employees. They discovered that most nurses work in specialized sections of the hospital (work load) and have less years of experience due to frequent mobility between wards <sup>[10]</sup>.

The majority of the study participants were not trained and constituted (55.6 percent). This is due to the lack of interest in the continuing education units. This decade demonstrates the need for blood transfusion education, which is comparable to nurses were limited in their training courses due to the number of sessions they could conduct <sup>[11]</sup>.

### **Knowledge related to Patient Preparation**

According to the results of the average study, the majority of nurses (66.7%) had insufficient information about how to prepare patients for blood transfusions. In this regard, nurses need more training and courses should be provided to improve their knowledge. In this regards the low level of knowledge due to the equipment that need in procedure are not fully available, as from the nurses' point of view, there is a lack of preparation of the tools used and did not prepare patients.

This research, along with studies from Hospital Pulau Pinang, focuses on nurses' responsibility during blood transfusions. Their findings indicated that nurses were unable to accurately answer all knowledge questions about patients' preparation for blood transfusion activities <sup>[12]</sup>.

Another decade has passed with a scarcity of knowledge on how to prepare patients due to the lack of health requirements required in blood transfusion procedures <sup>[13]</sup>. The availability of health resources and the supervision of health authorities who took into account variables substantially boosted health care professionals' knowledge and practice <sup>[13]</sup>.

### **Knowledge related to Collecting Blood Bags**

Currently, findings indicate that the majority (86.1%) of nurses were poor knowledge related to collecting blood bags during blood transfusion. Poor knowledge come because the nurses considered the collection of blood bags were responsibilities of laboratory analysts,

but in fact those of responsibility of nurses. In those regards, nurse officials need to be conducted more training workshops to raise nurse's professionalism. Those findings are comparable to those of who discovered that because nurses did not attend training sessions, they mistakenly answered questions on blood bag collection during blood transfusion activities <sup>[1]</sup>.

The nurses' team was found to be lacking in knowledge when it came to collecting blood bags. This emphasizes the importance of expanding chances for nursing professionals who work in areas related to transfusion to gain skills, such as training courses and continuing and permanent education, with an emphasis on patient safety and quality of care <sup>[15]</sup>.

#### Knowledge related to Blood Transfusion Procedure

Findings indicate that the majority (79.6%) were shown a poor level of knowledge related to blood transfusion procedures. The reasons for these results are; "low level of education lack of training as well as, years of experience for the nurses were few".

These findings are similar to those who discovered that due to a lack of experience and education, nurses had a limited knowledge of blood transfusion techniques <sup>[16]</sup>.

Furthermore, another findings from a Turkish study concerns nurses' awareness of blood transfusion. Findings show that excellent knowledge scores were low compared to poor knowledge scores, with bad knowledge predominating due to less years of experience and restrictions of local authority training sessions <sup>[17]</sup>.

Other research in Ghana found that 53% of nurses had insufficient knowledge on safe blood transfusions, despite the fact that nearly 90% of nurse responders had a diploma in nursing or midwifery <sup>[18]</sup>.

#### Knowledge related to Complication of Blood Transfusion

Patients who have gotten a blood transfusion frequently do not experience any complications or issues. However, minor to severe complications like as allergy, fever, and hemolytic reactions do occur on occasion. According to the findings of a study published, the majority (68.5 percent) of the participants had a high degree of knowledge about blood transfusion complications, because it is considered general and known information, most of the complications of blood transfusion are allergic and fever, the nurses of course has been covered these topics in the academic study.

Evaluated nurses' knowledge of blood transfusion at medical training institutes, came to the our findings. Their findings revealed that, as a result of continual training, nurses had adequate understanding of the difficulties and adverse effects of blood transfusion <sup>[19]</sup>. It is reported that a majority of their participants had appropriate understanding of complication and blood transfusion reaction in their study examining transfusion-related knowledge of staff <sup>[20]</sup>.

#### Overall Knowledge towards Blood Transfusion Procedure

Blood transfusion is one of the most critical life-saving therapies for humans today, yet it can cause a slew of complications and even death if done incorrectly. Finding shown that overall knowledge was poor at a low level of mean+ S.d.=1.34+0.4232. The little knowledge comes from many reasons include the difference between the degrees of education, for example, academic nurses in front of others who had a diploma, also the less of employment years and the lack of training sessions, in addition the availability of health resources not related to standard global and missing lack of monitoring by health authorities, all that's lead to decreased level of knowledge.

Knowledge findings come consisting with a "descriptive cross-sectional study of 171 nurses assessed for knowledge regarding blood transfusion procedure. Findings depicted that unsatisfactory (poor level) knowledge, and those come because new graduates or inexperienced nurses, those working in blood transfusion units. Blood transfusions needed

more support to improve their knowledge levels. Nurses require in-service training to improve their knowledge of safe blood transfusion"<sup>[21]</sup>.

### Relationships between Nurses Knowledge towards Blood Transfusion Procedure and Socio-demographic Characteristics

Findings indicate that age groups, gender, residency, work unit and experience in current workplace of nurses were insignificant with their knowledge towards blood transfusion procedure. As well as, the nurses education attainment, years of employment and training sessions have been significant related to their knowledge. "Findings come in the same line with descriptive study approach was carried out at Al-Salam teaching hospital in Mosul city. Their findings revealed that a third of nurses' have poor knowledge of blood transfusion, and finding a significant relationship between the nurses knowledge and level of education, also a significant relationship between the nurses' knowledge and course trainings at p-value <0.05. In the same study, there were no-significant association between nurses knowledge and their age, gender and work place by using one way ANOVA" <sup>[11]</sup>.

### CONCLUSION

More years of experience in training the staff on blood transfusion by local officials help raising professionals' nurses. Provide the health resources and exploiting young energies of nurses which indeed helps to develop their knowledge.

### Ethical Clearance

"All experimental protocols were approved under the Karbala Health Directorate, Iraq and all experiments were carried out in accordance with approved guidelines".

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