RESULTS

The results of this study are presented in 5 parts as shown in tables from 1 to 21 and 6 figures to cover the following items.

Part (I): General Characteristics of the Study Sample (table 1 and figure 1, 2)

Part (II): Nurses' Knowledge about Blood (table 2 : 4).

Part (III): Nurses' Knowledge about Thalassemia (table 5 : 14 and figure 3, 6).

Part (IV): Assessment of Nurses' Performance (table 15 : 6).

Part (V) : Relation between characteristics of the study sample and their knowledge and performance (Table 17:21).

Part I: General Characteristics of the Study Sample

Table (1): Number and Percentage Distribution of Nurses' According to their Socio-demographic characteristics.

Nurses'' Characteristics	Total no. 98 (100%)	
	No.	%
Age in years:		
< 20 yrs	15	15.3
20 < 30 yrs	52	53.1
30 < 40 yrs	21	21.4
40+ yrs	10	10.2
Mean SD	**27.6 ± 8.4 years**	
Level of education:		
B.Sc. Nursing	22	22.5
Technical Nursing Institute	21	21.4
Secondary Nursing with specialty	1	1.0
Secondary Nursing school	54	55.0
Working status:		
Head of Dept.	3	3.0
Head Nurse	23	23.5
Staff Nurse	72	73.5
Years of experience:		
> one year	17	17.3
1 > 3 yrs	30	30.6
3 > 5 yrs	28	28.6
More than 5 yrs	23	23.5
Mean ± SD	**3.2 ± 2.0** years	

Table (1) shows that the mean age of the nurses were 27.6 ± 8.4 years. Regarding the level of education, it was found that more than half (55%) of the nurses were technical secondary school. This table also found that 73.5% of the nurses were staff nurses and 30.6% of them had 1 to 3 years of experience with the mean of 3.2 ± 2.0 years.

Figure 1 : Distribution of Nurses' working times in the Unit

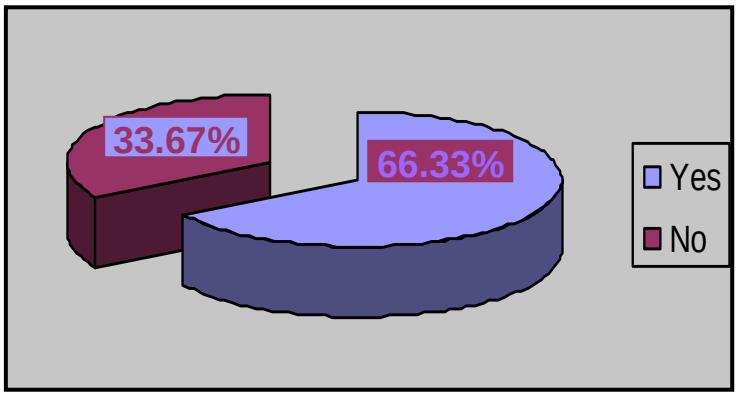

Figure (1) shows that 66.33% of nurses' work all time in the unit.

Figure 2 : Distribution of Nurses' by their Previous Training Course

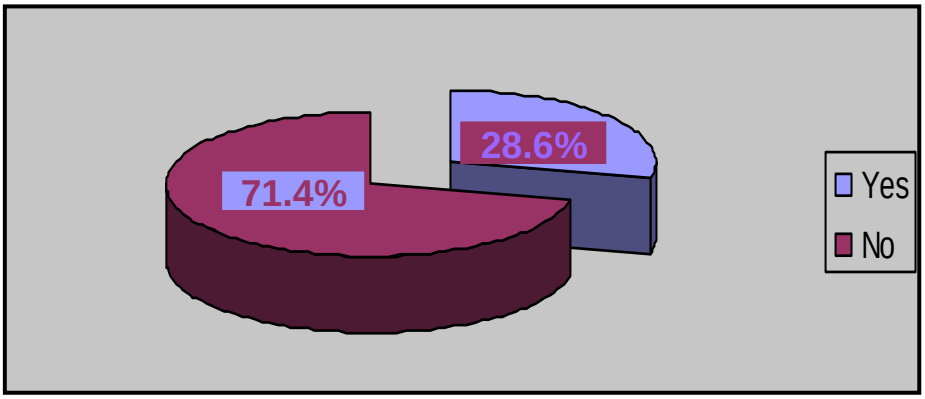

Figure (2) illustrates that 71.4% of nurses hadn't previous training course.

Part II: Nurses' Knowledge about Blood.

Table (2): Number and Percentage Distribution of Nurses' Knowledge about blood components and Function of Blood.

Items	Total no. 98 (100%)	
	No.	%
▪ **Importance of RBC:**		
Good	46	46.9
Average	18	18.4
Poor	34	34.7
▪ **Importance of WBC:**		
Good	40	40.8
Average	10	10.2
Poor	48	49.0
▪ **Importance of platelet:**		
Good	43	43.9
Average	28	28.6
Poor	27	27.5

Table (2): shows that 46.9% and 43.9% of nurses had a good knowledge about the importance of red blood cells and platelets respectively. Furthermore 49% of nurses had poor knowledge about the importance of white blood cells.

Table (3): Number and Percentage Distribution of Nurses' Knowledge about Blood Grouping.

Items	Total no. 98 (100%)	
	No.	%
▪ **Blood grouping:**		
Good	82	83.7
Average	0	0.0
Poor	16	16.3
▪ **Donor:**		
Good	2	2.0
Average	0	0.0
Poor	96	98.0
▪ **Recipient:**		
Good	0	0.0
Average	52	53.1
Poor	46	46.9
▪ **RH factor**		
Good	24	24.5
Average	34	34.7
Poor	40	40.8
▪ **Importance RH factor:**		
Good	0	0.0
Average	12	12.2
Poor	86	87.8

Table (3) shows that the majority (98% & 87.8%) of nurses had a poor knowledge as regards blood donors & importance of Rh factor respectively. This table also clarified that 83.7% of nurses had a good knowledge about blood grouping.

Table (4): Number and Percentage Distribution of Nurses' Knowledge about Hemoglobin Level.

Items	Total no. 98 (100%)	
	No.	%
▪ **Normal Range in male:**		
Good	0	0.0
Average	0	0.0
Poor	98	100.0
▪ **Normal Range in female:**		
Good	0	0.0
Average	0	0.0
Poor	98	100.0

Table (4) shows that, 100% of nurses had poor knowledge about normal range of Hemoglobin of male and female respectively.

Part III: Nurses' Knowledge about Thalassemia.

Table (5): Number and Percentage Distribution of Nurses' Knowledge about Anemia.

Items	Total no. 98 (100%)	
	No.	%
▪ **Definition of Anemia:**		
Good	91	92.9
Average	0	0.0
Poor	7	7.1
▪ **Types of Anemia:**		
Good	53	54.1
Average	45	45.9
Poor	0	0.0
▪ **Causes of Anemia:**		
Good	85	84.7
Average	15	15.3
Poor	0	0.0
▪ **Clinical Manifestations:**		
Good	68	69.4
Average	0	0.0
Poor	30	30.6

Table (5) shows that the majority of the nurse (92.9% & 84.7%) had good knowledge about definition and causes of anemia respectively. Meanwhile this table shows that more than half (54.1% & 69.4%) of nurses had good knowledge about types and clinical manifestation of anemia respectively.

Table (6): Number and Percentage Distribution of Nurses'' Knowledge about Complications and Treatment of Anemia.

Items	Total no. 98 (100%)	
	No.	%
▪ **Complications:**		
Good	51	52.0
Average	35	35.7
Poor	12	12.2
▪ **Treatment:**		
Good	40	40.8
Average	37	37.8
Poor	21	21.4

Table (6) shows that 52% and 40.8% of nurses had good knowledge about complication of anemia and the treatment respectively.

Table (7): Number and Percentage Distribution of Nurses' Knowledge about incidence and Types of Thalassemia.

Items	Total no. 98 (100%)	
	No.	%
▪ **Incidence of thalassemia:**		
6 months	28	28.6
One year	25	25.5
2 year	3	3.0
Don't know	42	42.9
▪ **Prevalence in Egypt:**		
Yes	31	31.6
No	41	41.9
Don't know	26	26.5
▪ **Types of Thalasmia:**		
Good	43	43.9
Average	0	0.0
Poor	55	56.1

Table (7) shows that , (42.9% and 56.1%) of the nurses did not know the incidence and prevalence of thalassmia respectively. Meanwhile, this table also illustrates that 56.1% of nurses had poor knowledge about types of thalassemia.

Table (8): Number and Percentage Distribution of Nurses' Knowledge about investigations of Thalasemia.

Items	Total no. 98 (100%)	
	No.	%
Investigations:		
1. CBC	31	31.6
2. Genetic investigations	21	21.4
3. Others	5	5.1
4. Don't know	41	41.9

Table (8) shows that less than half (41.9%) of nurses didn't know the investigations needed for thralassemia.

Figure 3 : Number and Percentage Distribution of Nurses' Knowledge about treatment of Thalasemia.

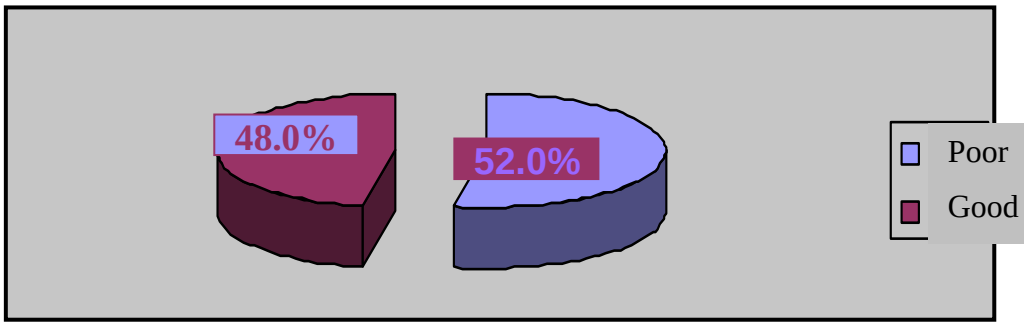

Figure (3) illustrates that 52% of nurses had poor knowledge about treatment of thalassemia.

Table (9): Number and Percentage Distribution of Nurses' Knowledge Related to Precaution during Blood Transfusion.

Items	Total no. 98 (100%)	
	No.	%
• **Precaution**		
Good	32	32.7
Average	7	7.1
Poor	59	60.2
• **Times of Blood Transfusion**		
Once monthly	44	44.9
Twice monthly	34	34.7
Three monthly	6	6.1
Don't know	14	14.3
• **Investigation before Blood Transfusion**		
Good	69	70.4
poor	29	29.6

Table (9) shows that 60.2% of nurses had poor knowledge about precaution during blood transfusion. This table also illustrated that 14.3% of nurses didn't know the time of blood transfusion. This table found that 70.4% of nurses had good knowledge about investigations done before blood transfusion.

Table (10): Number and Percentage Distribution of Nurses' Knowledge about signs of Allergy due to Blood Transfusion.

Items	Total no. 98 (100%)	
	No.	**%**
• **signs of Allergy**		
Good	65	66.4
Poor	33	33.6
• **Action done for Blood Transfusion Allergy**		
Good	50	51
Poor	48	49

Table (10) shows that 66.4% and 51% of nurses had good knowledge about signs of allergy due to blood transfusion and how to deal with this allergy respectively.

Table (11): Number and Percentage Distribution of Nurses' Knowledge Related to Infection during Blood Transfusion.

Items	Total no. 98 (100%)	
	No.	%
• **General signs of Infection:**		
Good	37	37.8
Average	25	25.5
Poor	36	36.7
• **Control measures to Avoid Infection during Blood Transfusion:**		
Good	47	48
Average	17	17.3
Poor	34	34.7

Table (11) shows that 37.8% and 48% of nurses had good knowledge about general signs of infection and the control measures to avoid this infection respectively.

Table (12): Number and Percentage Distribution of Nurses' Knowledge Related to Diet of Children with Thalasmia.

Items	Total no. 98(100%)	
	No.	%
*** Diet of children with thalasemia**		
Good	26	26.6
Average	21	21.4
Poor	51	52.0

Table (12) shows that 52% of nurses had poor knowledge about diet of children with thalassemia.

Fig (4): Number and Percentage Distribution of Nurses' Knowledge Related to Dispheral.

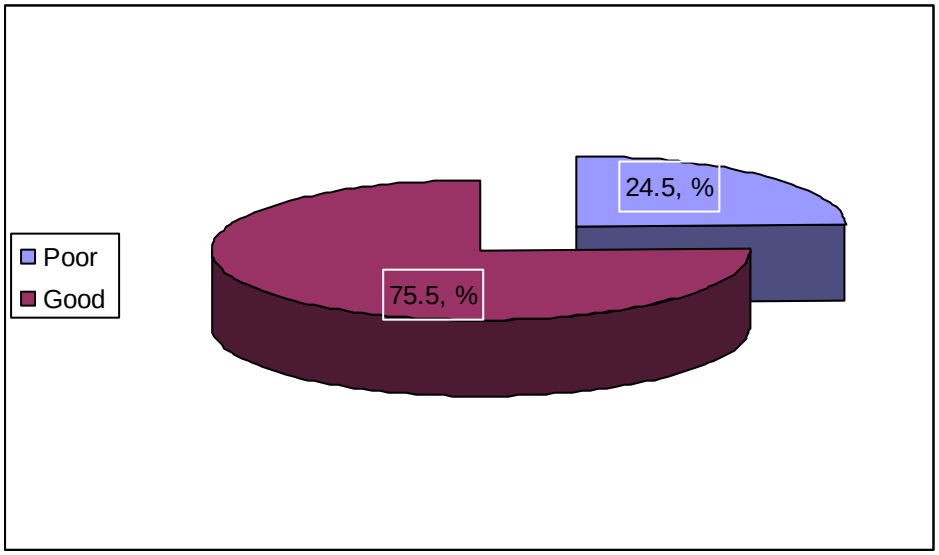

Fig. (4): shows that 75.5% of nurses had good knowledge about dispheral.

Figure 5 : Distribution of Nurses' Knowledge about Their Role to put Dispheral for Children

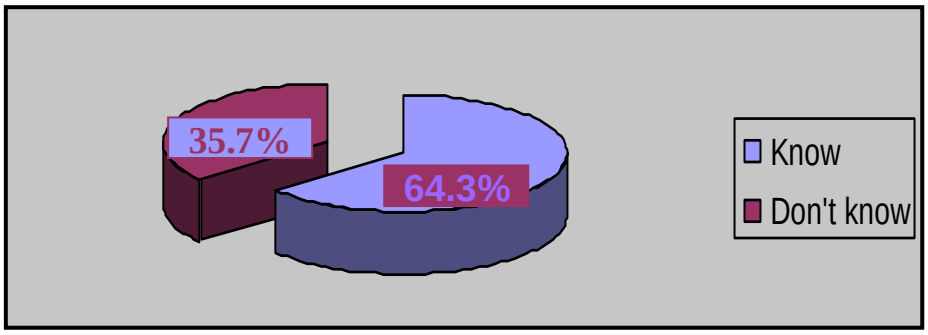

Figure (5) shows that 64.3% of nurses' knew their role to put Dispheral for children.

Figure 6 : Distribution of Nurses' Knowledge regarding Their Role to teach Mothers about Dispheral .

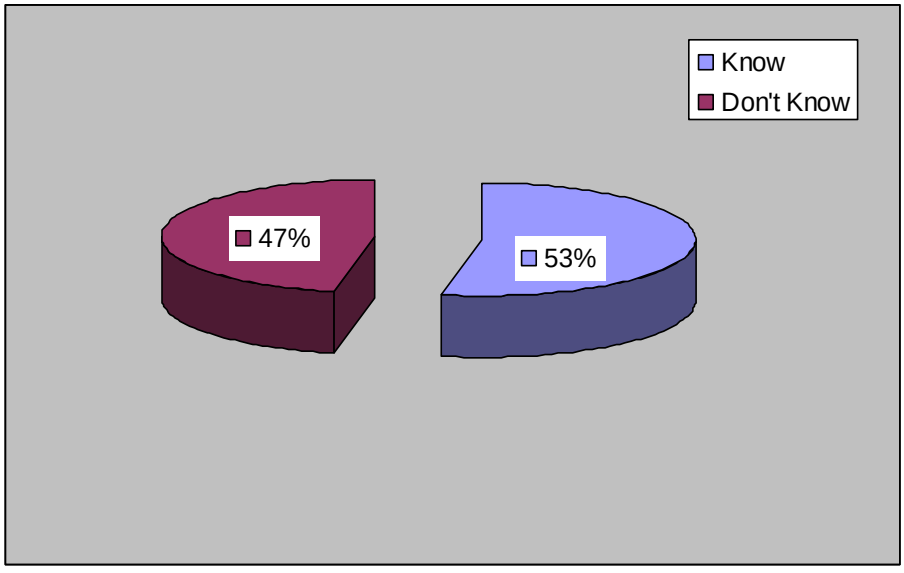

Figure (6) shows that 53% of nurses knew their role to teach mothers about dispheral.

Table (13): Number and Percentage Distribution of Nurses, knowledge about their Role to deal with Stress of Family.

Items	Total no. 98 (100%)	
	No.	%
Good	54	55.2
Average	27	27.5
Poor	17	17.3

Table (13) shows that 55.2% of nurses had good knowledge about their role to deal with stress of family of children with thralassemic child.

Table (14): Number and Percentage Distribution of Nurses Instruction Related to Living Activities.

Items	Total no. 98 (100%)	
	No.	%
Good	28	28.6
Average	31	31.6
Poor	39	39.8

Table (14) shows that 39.8% of nurses had poor knowledge about instructions related to living activities of children with thalassemia.

Part IV: Assessment of Nurse's Performance

Table (15): Number and percentage Distribution of Nurse's Performances Regarding Measuring vital signs.

Performance Items	Total no. 98 (100%)			
	Competent		Incompetent	
	No.	%	No.	%
▪ **Measuring of temperatures**				
▪ Washing hands	25	25.5	73	74.5
▪ Correct measuring	24	24.5	74	75.5
▪ Disinfect after use	10	10.2	88	89.8
▪ Recording	32	32.7	66	67.3
▪ **Measuring of heart rate**				
▪ Correct count	90	91.8	8	8.2
▪ Correct time	11	11.2	87	88.8
▪ Recording	66	67.3	32	32.7
▪ **Measuring of respiratory rate**				
▪ Correct count	15	15.3	83	84.7
▪ Recording	32	32.7	66	67.3
▪ **Measuring of blood pressure**				
▪ Correct position	87	88.8	11	11.2
▪ Correct measuring	86	87.8	12	12.2
▪ Recording	92	93.8	6	6.2
▪ Store equipment	32	32.7	66	67.3

Table (15) shows that , 91.8%, and 88.8% of the nurses were competent in measuring heart rate and Blood pressure respectively, while 75.5% and 84.7% of them were incompetent in measuring temperature and respiratory respectively.

Table (16): Number and percentage Distribution of Nurses'' Performances Regarding Blood Transfusion Therapy.

Performance Items	Total no. 98 (100%)			
	Competent		Incompetent	
	No.	%	No.	%
▪ Prepare equipment	7	7.2	91	92.8
▪ Check file	77	78.6	21	21.4
▪ Check blood package	44	44.9	54	55.1
▪ Check IV line	15	15.3	83	84.7
▪ Observe amount rate	2	2.0	96	98.0
▪ Discard blood in safety way	18	28.6	70	71.4

Table (16) shows that 92.8%, 55.1%, 84.7% 98% and 71.4% of nurses were incompetent as regards prepare equipment, check blood package, check intravenous line, observe amount rate and discard blood in safety way respectively. While 78.6% of nurses were competent in checking file during blood transfusim therapy.

Table (17): Percentage distribution of Nurses' total knowledge about thalassemia

Items	Total no. 98 (100%)	
	No	**%**
Good	6	6.1
Average	34	34.7
Poor	58	59.2
Total	98	100.0

Table (17) As regards total knowledge about thalassemia, shows that 59.2% of them scored poor knowledge, while 6.1% of them scored good knowledge.

Table (18): Number and percentage distribution of nurses' total performance about care of children with thalassemia

Items	Total no. 98 (100%)	
	No	**%**
Competent	3	3.1
Incompetent	95	96.9
Total	98	100.0

Table (18), show that the majority (96.9%) of nurses were incompetent in giving care of children with thalassemia.

Part (V) : Relation between characteristics of the study sample and their knowledge and performance (Table 17:21).

Table (19): Relation between nurses' knowledge and their performance

Knowledge	Performance				Total		X^2	PV
	Competent		Incompetent		No	%		
	No	%	No	%				
Good	2	33.3	4	66.7	6	100.0%	16.8	< 0.01
Average	1	3.0	33	97.0	34	100.0%		
Poor	0	0.0	58	100.0	58	100.0%		
Total	3	3.1	95	96.9	98	100.0%		

Statistical significant difference (P < 0.01)

table (19) shows that there was statistical significant difference (X^2 16.8, P < 0.01) between nurses' knowledge and their performance regarding care of children with thalassemia, where 97.0% of nurses who had average knowledge scored incompetent performance. In addition, 58% of nurses who had poor knowledge their performance was also incompetent.

Table (20): Relation between nurses' knowledge and their characteristics

Nurses' characteristics	Knowledge						Total		X^2	P value
	Good		Average		Poor					
	No	%	No	%	No	%	No	%		
Age in years:										
< 20	1	6.7	2	13.3	12	80.8	15	100.0	3.8	> 0.05
20 < 30 yrs	4	7.7	30	57.7	18	34.6	52	100.0		
30 < 40 yrs	1	4.8	1	4.8	19	90.4	21	100.0		
40 + yrs	0	0.0	1	10	9	90	10	100.0		
Level of education										
B.Sc. Ng.	6	27.3	11	50.5	5	22.7	22	100.0	4.5	< 0.05
Technical Ng. Institute	0	0.0	15	71.4	6	28.6	21	100.0		
secondary Ng. school with specialty	0	0.0	1	100.0	0	0.0	1	100.0		
Secondary Ng. school	0	0.0	7	13	47	8.7	54	100.0		
Occupation:										
Head of dep.	1	33.3	2	66.7	0.	0.0	3	100.0	6.1	< 0.05
Head nurse	4	17.4	18	78.3	1	4.3	23	100.0		
Staff nurse	2	2.8	14	19.4	56	77.8	72	100.0		
Years of experience:										
< one year	0	0.0	2	11.8	15	88.2	17	100.0	7.2	< 0.05
1 < 3 yrs	0	0.0	9	30	21	70	30	100.0		
3 < 5	5	17.9	17	60.7	6	21.4	28	100.0		
More than 5 yrs	1	4.3	6	26.1	16	69.6	23	100.0		

Significant at < 0.05.

Table (20) shows that there was a statistical insignificant difference between nurses' knowledge to their age (X^2 3.8, P > 0.05). Regarding level of education occupation and years of experience there was a statistical significance (X^2 4.5, P < 0.05) (X^2 6.1, P < 0.05) and (X^2 7.2 , P < 0.05).

Table (21): Relation between nurses' performance and their characteristics

Nurses' characteristics	Performance				Total		X^2	P value
	Competent		Incompetent					
	No	%	No	%	No	%		
Age in years:								
< 20	0	0.0	15	100.0	15	100.0	4.1	< 0.05
20 < 30 yrs	3	5.8	49	94.2	52	100.0		
30 < 40 yrs	0	0.0	21	100.0	21	100.0		
40 + yrs	0	0.0	10	100.0	10	100.0		
Level of education								
B.Sc. Ng.	3	13.6	19	86.4	22	100.0	6.1	< 0.05
Technical Ng. Institute	0	0.0	21	100.0	21	100.0		
secondary Ng. school with specialty	0	0.0	1	100.0	1	100.0		
Secondary Ng. school	0	0.0	54	100.0	54	100.0		
Occupation:								
Head of dep.	1	33.3	2	66.7	3	100.0	0.7	> 0.05
Head nurse	4	17.4	19	82.6	23	100.0		
Staff nurse	2	2.8	70	97.2	72	100.0		
Years of experience:								
< one year	1	5.9	16	94.1	17	100.0	8.1	< 0.05
1 < 3 yrs	1	3.3	29	96.7	30	100.0		
3 < 5	2	7.1	26	92.9	28	100.0		
More than 5 yrs	0	0.0	23	100.0	23	100.0		

Significant at < 0.05.

Table (21) shows that there was a statistical significant difference between nurses' performance to their age, level of education and years of experience (X^2 4.1, P < 0.05) , (X^2 6.1 , P < 0.05) and (X^2 8.1, P < 0.05) respectively, while regarding the nurses occupation there was insignificance (X^2 0.7, P > 0.5).