



Results



RESULTS

The present study composed of the following tabulated data which presented in tables (1-13) and included the following parts:

Part I.	Personal data of the pediatric nursing students in study and control groups (table 1 and figure 1).
Part II.	Pediatric nursing students' awareness regarding hemoglobinopathies (table 2:3).
Part III.	Pediatric nursing students' performance regarding hemoglobinopathies (table 4:6).
Part IV.	Pediatric nursing students' attitude regarding hemoglobinopathies (table 7).
Part V.	Total students' awareness, performance and attitude scores (table 8).
Part VI.	Relations between awareness, performance and attitude of the study group with the personal data (table 9:11)
Part VII.	Correlations between awareness, attitude and performance of the students in study and control group (table 12-13)

Part I. Personal data of the pediatric nursing students

Table (1): Personal data of the pediatric nursing students in study and control groups (n= 108)

Personal data	Study group (n=54)		Control group (n=54)	
	n	%	n	%
Age				
Less than 20 years	2	3.7	7	12.9
20: <22 years	46	85.2	43	79.6
≥22 years	6	11.1	4	7.4
$\bar{X} \pm SD$	21.136±1.191		21.032±0.959	
	20.64±0.988 years			
Gender				
Male	11	20.4	7	12.9
Female	43	79.6	47	87
Residence				
Urban	46	85.2	41	75.9
Rural	8	14.8	13	24.1
Marital status				
Single	44	81.5	46	85.2
Married	10	18.5	8	14.8
Family history				
Yes	4	7.4	5	9.3
No	50	92.6	49	90.7

Table (1) Shows that, more than three quarters (85.2% and 79.6%) of the study and control group are between 20 and 22 age group with a mean age of 21.136±1.191 for the study group and 21.032±0.959 for control group. This table reveals that, more than three-quarters (79.6 % and 87%) of the students are female in both groups. The vast majority of the study and control groups had free history of hemoglobinopathies.

Figure (1): Frequency distribution of married pediatric nursing students in both groups (n=18).

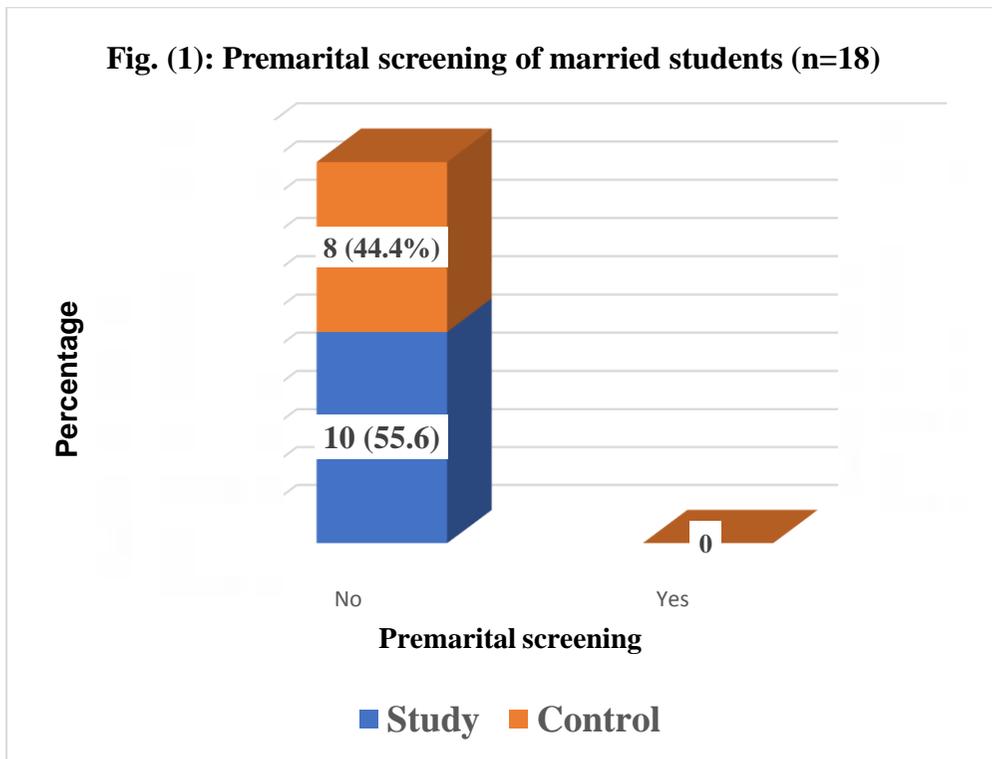


Figure (1): Shows that all married pediatric nursing students didn't making the premarital screening test.

Part II. Pediatric nursing students' awareness regarding hemoglobinopathies

Table (2): Mean and standard deviation of the students' awareness scores regarding blood, genetics, and thalassemia (pre/post n=108).

Items	Study group (n=54)				t	p	Control group (n=54)				t	p
	Pre-test		Post test				Pre-test		Post test			
	Mean	±SD	Mean	±SD			Mean	±SD	Mean	±SD		
1. Blood physiology	1.944	0.831	4.185	0.783	6.058	0.000 [#]	2.012	0.423	2.391	0.529	0.235	0.815
2. Basic genetics	0.986	1.012	3.987	0.837	5.335	0.000 [#]	0.986	1.012	1.087	0.661	0.335	0.738
3. Definition of thalassemia	0.545	0.214	0.894	0.113	3.835	0.003 [*]	0.435	0.114	0.525	0.103	0.321	0.749
4. Causes of thalassemia	0.612	0.291	1.761	0.213	4.689	0.000 [#]	0.721	0.301	0.762	0.354	0.212	0.832
5. Types of thalassemia	0.712	0.232	1.821	0.113	4.567	0.000 [#]	0.632	0.202	0.698	0.012	0.256	0.798
6. Clinical manifestations of thalassemia	0.918	0.584	2.651	0.238	4.897	0.000 [#]	0.828	0.214	0.936	0.306	0.288	0.774
7. Diagnosis of thalassemia	0.412	0.231	1.661	0.313	4.989	0.000 [#]	0.302	0.113	0.401	0.210	0.889	0.378
8. Medical management of thalassemia	2.215	2.361	8.658	1.235	7.849	0.000 [#]	1.985	1.781	2.120	1.435	0.452	0.653
9. Nursing management of thalassemia	1.186	1.012	3.887	0.837	5.115	0.000 [#]	1.291	0.912	1.386	0.837	0.358	0.721

t= paired t test

* = P<0.05

[#] = P <0.001

Table (2) Illustrates that, there were highly statistical significant differences between the students' awareness mean scores in pretest and posttest within the study group (P=<0.05). Meanwhile, there were no statistical significant differences between the students' awareness mean scores in pretest and posttest within the control group (P=>0.05).

Table (3): Mean and standard deviation of the students' awareness scores regarding sickle cell disease (pre/post n=108).

Items	Study group (n=54)				t	p	Control group (n=54)				t	p
	Pre-test		Post test				Pre-test		Post test			
	Mean	±SD	Mean	±SD			Mean	±SD	Mean	±SD		
1. Definition of SCD	0.645	0.114	0.794	0.193	3.995	0.002*	0.395	0.214	0.395	0.118	0.348	0.728
2. Causes of SCD	0.598	0.301	1.623	0.198	4.689	0.000#	0.698	0.285	0.702	0.301	0.251	0.802
3. Types of SCD	0.692	0.394	1.799	0.198	4.567	0.000#	0.631	0.218	0.698	0.112	0.256	0.798
4. Clinical manifestations of SCD	0.918	0.475	3.551	0.294	4.897	0.000#	0.798	0.194	0.845	0.351	0.293	0.771
5. Diagnosis of SCD	0.512	0.327	2.661	0.213	4.989	0.000#	0.481	0.105	0.492	0.164	0.861	0.393
6. Medical management of SCD	2.215	2.361	6.451	1.105	7.849	0.000#	1.885	1.232	2.123	1.213	0.507	0.614
7. Nursing management of SCD	1.278	1.081	3.957	0.764	5.612	0.000#	1.283	0.854	1.312	0.915	0.387	0.701

t= paired t test

* = P<0.05

= P <0.001

Table (3) demonstrates that, there were highly statistical significant differences between the students' awareness mean scores in pretest and posttest within the study group ($P < 0.05$). Meanwhile, there were no statistical significant differences between the students' awareness mean scores in pretest and posttest within the control group ($P > 0.05$).

Part III. Pediatric nursing students' performance regarding hemoglobinopathies

Table (4): Frequencies of students' responses regarding blood transfusion in study and control groups (pre/post-test n= 108).

Items	Pre-Post	Study group (n=54)			Control group (n=54)			Sig. test X ²	P
		DC	DI	ND	DC	DI	ND		
		n (%)	n (%)	n (%)	n (%)	n (%)	n (%)		
1. Identified self and verified the child's identity.	Pre	44 (81.5)	6 (11.1)	4 (7.4)	45 (83.3)	5 (9.3)	4 (7.4)	.102 [#]	.950
	Post	48 (88.9)	—	6(11.1)	45 (83.3)	5(9.3)	4(7.4)	5.497 [#]	.064
2. Performed hand hygiene.	Pre	39(72.2)	—	15 (27.8)	31(57.4)	—	23(42.6)	2.598	.158*
	Post	46(85.2)	—	8(14.8)	27(50)	23 (42.6)	4(7.4)	29.279 [#]	.000**
3. Put on clean, non-sterile gloves.	Pre	35 (64.8)	—	19 (35.2)	32 (59.3)	—	22 (40.7)	.354	.692
	Post	47(87)	—	7(12.9)	32(59.3)	18(33.3)	4(7.4)	21.666 [#]	.000**
4. Attached the blood bag to one end of the blood set.	Pre	20 (37)	34 (63)	—	16 (29.6)	34 (63)	4 (7.4)	4.444	.108
	Post	50(92.6)	—	4(7.4)	15(27.8)	34(63)	5(9.3)	52.957 [#]	.000**
5. Flushed the line with normal saline attached to the other side of the Y tubing.	Pre	7 (12.9)	30 (55.6)	17 (31.5)	18 (33.3)	25 (46.3)	11 (20.4)	6.580 [#]	.037*
	Post	45 (83.3)	—	9(16.7)	4(7.4)	30(55.6)	20(37)	68.479	.000**
6. Clamped off the tubing, keeping the distal end covered.	Pre	14 (25.9)	31 (57.4)	9 (16.7)	13 (24.1)	31 (57.4)	10 (18.5)	.09	.956
	Post	51(94.4)	—	3(5.6)	13 (24.1)	31 (57.4)	10 (18.5)	57.332 [#]	.000**
7. Disconnected it, covering the hub with a sterile needle or needleless system to keep it sterile.	Pre	17(31.5)	28 (51.9)	9 (16.7)	21 (38.9)	26(48.1)	7 (12.9)	.745	.689
	Post	46(85.2)	—	8(14.8)	21 (38.9)	26(48.1)	7(12.9)	35.395	.000**
8. Flushed the child's IV line with normal saline to ensure its patency.	Pre	33 (61.1)	—	21 (38.9)	34 (63)	—	20 (37)	.039	.843
	Post	47(87)	—	7(12.9)	32(59.3)	1(1.9)	21 (38.9)	10.848	.004*
9. Attached the blood tubing.	Pre	54 (100)	—	—	54 (100)	—	—	—	—
	Post	54(100)	—	—	54(100)	—	—	—	—
10. Slowly opened the clamp on the tubing, adjusting the flow with the roller.	Pre	37 (68.5)	17 (31.5)	—	40 (74.1)	14 (25.9)	—	.407	.671
	Post	50(92.6)	—	4(7.4)	40 (74.1)	14 (25.9)	—	19.11 [#]	.000**
11. Started the transfusion slowly. Instructed the child and/or parent to report any reaction immediately.	Pre	39(72.2)	15 (27.8)	—	43 (79.6)	11 (20.4)	—	.811	.5
	Post	51(94.4)	—	3(5.6)	43 (79.6)	11(20.4)	—	14.681 [#]	.001*
12. The flow rate was increased if no reaction was noted.	Pre	38(70.4)	—	16 (29.6)	37 (68.5)	—	17 (31.5)	.044	.835*
	Post	47(87)	—	7(12.9)	34(63)	20(37)	—	26.086	.000**

Cont. **Table (4):** Frequencies of students' responses regarding blood transfusion in study and control groups (pre/post-test n= 108).

Items of Performance	Pre-Post	Study group (n=54)			Control group (n=54)			Sig. test X ²	P
		DC	DI	ND	DC	DI	ND		
		n (%)	n (%)	n (%)	n (%)	n (%)	n (%)		
13. Monitoring vital signs every 5 minutes for the first 15 minutes, every half hour, and then hourly.	Pre	—	31 (57.4)	23 (42.6)	1 (1.9)	31 (57.4)	22 (40.7)	1.022 [#]	.06
	Post	48 (88.9)	—	6(11.1)	1(1.9)	31 (57.4)	22 (40.7)	85.224 [#]	.000**
14. If the child developed any sign of reaction, stopped the transfusion, changed the IV to 0.9% saline, and notified physician.	Pre	—	26(48.1)	28 (51.9)	2 (3.7)	26(48.1)	26(48.1)	2.074 [#]	.355
	Post	52(96.3)	—	2(3.7)	2(3.7)	26(48.1)	26(48.1)	92.868 [#]	.000**
15. After the administration of blood, flushed the line with normal saline and connected the IV fluid ordered by the physician.	Pre	29(53.7)	—	25 (46.3)	30 (55.6)	—	24 (44.4)	.037 [#]	.847
	Post	51(94.4)	—	3(5.6)	19(35.2)	35 (64.8)	—	52.629 [#]	.000**
16. Placed the used blood bag and tubing in a plastic bag, sealed it, and returned it to the blood bank with copies of the transfusion	Pre	5 (9.3)	32 (59.3)	17 (31.5)	7 (12.9)	30 (55.6)	17 (31.5)	.398 [#]	.820
	Post	49(90.7)	—	5(9.3)	7(12.9)	30(55.6)	17(31.5)	68.045 [#]	.000**
17. Documented blood administration, vital signs, responses, and interventions.	Pre	9 (16.7)	42 (77.8)	3 (5.6)	12 (22.2)	39(72.2)	3 (5.6)	.540 [#]	.764
	Post	47(87)	—	7(12.9)	12(22.2)	39(72.2)	3(5.6)	61.36 [#]	.000**

DC=done completely, DI= done incompletely, ND= not done, IV= intra-venous, X²= Chi Square test, # F = Fisher Exact test, *P <0.05, **P <0.01

Table (4) reveals that all (100%) students in study and control groups well attached the blood tubing during procedure, and only 12.9% respectively placed the used blood bag and tubing in a plastic bag, sealed it, and returned it to the blood bank with copies of the transfusion compared to more than three-quarters (90.7%) post program implementation. There were statistical significant differences between the study and control group in all above items (P=<0.05).

Table (5): Frequencies of students' responses regarding Desferal administration in study and control groups (pre/post-test n= 108).

Items of Performance	Pre-Post	Study group (n=54)			Control group (n=54)			Sig. test X ²	P
		DC	DI	ND	DC	DI	ND		
		n (%)	n (%)	n (%)	n (%)	n (%)	n (%)		
1. Wash hand thoroughly and dry them on a clean towel.	Pre	41(75.9)	13 (24.1)	—	39(72.2)	13 (24.1)	2(3.7)	2.050	.359
	Post	50(92.6)	—	4(7.4)	39(72.2)	13 (24.1)	2(3.7)	15.026	.001**
2. Unwarp a sterile syringe and attach a new sterile needle to it	Pre	48 (88.9)	6(11.1)	—	48 (88.9)	6(11.1)	—	000	1
	Post	51(94.4)	—	3(5.6)	48 (88.9)	4(7.4)	2(3.7)	4.291	.017*
3. Break the top of an ampule of sterile water for injections.	Pre	20(37)	34(63)	—	20(37)	34(63)	—	000	1
	Post	54(100)	—	—	20(37)	24(44.4)	10 (18.5)	49.622	.000**
4. Draw up the write amount of water into the syringe. For the 500mg strength, you need to use 5 ml of water to dissolve the powder.	Pre	36(66.7)	18(33.3)	—	37(68.5)	17(31.5)	—	.042	.837
	Post	52(96.3)	2(3.7)	—	37(68.5)	17(31.5)	—	21.528	.000**
5. Clean the rubber stopper of the Desferal vial with an alcohol.	Pre	3 (5.6)	30(55.6)	21 (38.9)	7(12.9)	24(44.4)	23 (42.6)	2.358	.301
	Post	47(87)	7(12.9)	—	7(12.9)	24(44.4)	23 (42.6)	62.163	.000**
6. Inject the water from the syringe through the stopper into vial.	Pre	46(85.2)	8(14.8)	—	46(85.2)	8(14.8)	—	.000	1
	Post	54(100)	—	—	46(85.2)	8(14.8)	—	8.640	.006*
7. Check the vial well to dissolve the dry powder. It will become a clear colorless or slight yellowish liquid. Do not use it if the liquid is cloudy or you can't see through it.	Pre	19(35.2)	35 (64.8)	—	18(33.3)	30(55.6)	6(11.1)	2.412	.241**
	Post	50(92.6)	—	4(7.4)	17(31.5)	30(55.6)	7(12.9)	47.072	.000**
8. Clean the stopper of the vial again with an alcohol wipe and draw the liquid from the vial back into the syringe.	Pre	6(11.1)	48 (88.9)	—	10 (18.5)	44(81.5)	—	1.174	.417*
	Post	51(94.4)	—	3(5.6)	10(18.5)	44(81.5)	—	74.557	.000**
9. Put the syringe contain the drug at the deferral pump and the air is ejected from the syringe and the tube connected to it and the time is adjusted by doctor instruction.	Pre	27(50)	27(50)	—	30(55.6)	24(44.4)	—	.334	.7
	Post	54(100)	—	—	28 (51.9)	24(44.4)	2(3.7)	34.244	.000**
10. Choose the site of injection to the child are as follow: Upper arm – around umbilicus – in the front of the thigh.	Pre	34(63)	20(37)	—	37(68.5)	17(31.5)	—	.370	.685
	Post	51(94.4)	—	3(5.6)	38(70.4)	16(29.6)	—	20.899	.000**
11. Clean the injection site well using alcohol in a circular fashion.	Pre	38(70.4)	16(29.6)	—	38(70.4)	12(22.2)	4(7.4)	4.571	.102
	Post	50(92.6)	—	4(7.4)	36(66.7)	12(22.2)	6(11.1)	14.679	.001*

Cont. Table (5): Frequencies of students' responses regarding Desferal administration in study and control groups (pre/post-test n= 108).

Items of Performance	Pre-Post	Study group (n=54)			Control group (n=54)			Sig. test X ²	P
		DC	DI	ND	DC	DI	ND		
		n (%)	n (%)	n (%)	n (%)	n (%)	n (%)		
12. Insert the needle in the skin with 15-degree angle and are instilled by tap.	Pre	27(50)	27(50)	—	30(55.6)	24(44.4)	—	.334	.7*
	Post	53 (98.1)	—	1(1.9)	26(48.1)	—	28 (51.9)	34.366	.000**
13. Opening the pump slowly and observe the injection site.	Pre	54(100)	—	—	48 (88.9)	6(11.1)	—	3.353	.127*
	Post	52(96.3)	—	2(3.7)	45 (83.3)	—	9(16.7)	4.960	.052*
14. After the completion of the taking medication is deposit of the syringe and tube (placed in sealed plastic try).	Pre	32(59.3)	22 (40.7)	—	35 (64.8)	18(33.3)	1(1.9)	1.534	.464
	Post	53(98.1)	—	1(1.9)	35 (64.8)	—	19(35.2)	19.882	.001*
15. Wash hand and documentation	Pre	24(44.4)	30(55.6)	—	28 (51.9)	26(48.1)	—	.593	.564
	Post	50(92.6)	—	4(7.4)	28(51.9)	—	26(48.1)	22.338	.000**

DC=done completely, DI= done incompletely, ND= not done, X2= Chi Square test, * F = Fisher Exact test, **P <0.05

Table (5) demonstrates that, more than three-quarters (88.9%) of the students in study and control groups well unwrapped a sterile syringe and attach a new sterile needle, and only 5.6% of students at the study group clean the rubber stopper of the Desferal vial with an alcohol correctly compared 87% post program implementation. There were statistical significant differences between the study and control group in all above items (P=<0.05).

Table (6): Frequencies of students' responses regarding oral Exjade administration in study and control groups (pre/post-test n= 108).

Items of Performance	Pre-Post	Study group (n=54)			Control group (n=54)			X ²	P
		DC	DI	ND	DC	DI	ND		
		n (%)	n (%)	n (%)	n (%)	n (%)	n (%)		
1. Wash hand thoroughly	Pre	54(100)	—	—	50(92.6)	—	4(7.4)	4.154	.118*
	Post	54(100)	—	—	47(87.1)	—	7(12.9)	3.485	.113*
2. Wash the cup and spoon uses well.	Pre	51(94.4)	—	3(5.6)	47(87)	—	7(12.9)	1.763	.320
	Post	52(96.3)	—	2(3.7)	47(87.1)	—	7(12.9)	3.030	.161*
3. Take Exjade on an empty stomach, 30 minutes before eating at least at the same time every day.	Pre	3(5.6)	—	51(94.4)	7(12.9)	—	41(75.9)	1.763	.320
	Post	48 (88.9)	—	6(11.1)	8(14.8.)	—	46(85.2)	59.34*	.000**
4. Don't allow child to show or swallow or mash Exjade by teeth but placed in a cup of water (with a capacity of 100-200 ml) not use carbonated water.	Pre	5(9.3)	—	49(90.7)	5(9.3)	—	49(90.7)	.000	1
	Post	50(92.6)	4(7.4)	—	19(35.2)	35 (64.8)	—	38.569	.000**
5. Move the tablet in the liquid until get a (solution commentator) use a plastic spoon (and drink the solution directly)	Pre	—	21 (38.9)	33 (61.1)	5(9.3)	12(22.2)	37(68.5)	4.683	.121*
	Post	51(94.4)	—	3(5.6)	6(11.1)	—	48 (88.9)	75.232	.000**
6. After drinking the solution add a small amount of water to the small cup to take advantage of any residual; of the drug. Drink the rest of the solution is to ensure that the amount of residual Exjade complete.	Pre	12(22.2)	—	42(77.8)	15(27.8)	—	39(72.2)	.444	.657*
	Post	50(92.6)	—	4(7.4)	31 (57.4)	—	23(42.6)	17.827	.000**
7. Wash the hand, wash the cup and spoon well.	Pre	29(53.7)	—	25(46.3)	31 (57.4)	—	23 (42.6)	.150	.847
	Post	52(96.3)	—	2(3.7)	15(27.8)	—	39(72.2)	53.823	.000**
8. Documentation.	Pre	42(77.8)	—	12(22.2)	44(81.5)	—	10 (18.5)	.228	.812*
	Post	54(100)	—	—	44(81.5)	—	10(18.5)	11.020	.001**

DC=done completely, DI= done incompletely, ND= not done, X2= Chi Square test, * F = Fisher Exact test

Table (6) demonstrates that, all (100%) of the students in study group wash hands and well document procedure steps. More than three-quarters (94.4% and 75.9%) of the students in study and control groups didn't mention the Exjade was administered on empty stomach, 30 minutes before eating which changed after implementing the program to the most (88.9%) of students had a positive response. There were statistical significant differences between the study and control group in all above items ($P=<0.05$).

Part IV. Pediatric nursing students' attitude regarding hemoglobinopathies

Table (7): Pediatric nursing students' attitude toward hemoglobinopathies in study and control groups (pre and post-test n= 108).

Items	Pre-Post	Study group (n=54)					Control group (n=54)					X ²	P
		SA	A	U	D	SD	SA	A	U	D	SD		
		N %	N %	N %	N %	N %	N %	N %	N %	N %	N %		
1. like to a relationship with a hemoglobinopathic person.	Pre	—	4(7.4)	26(48.1)	18(33.3)	6(11.1)	—	4(7.4)	20(37)	19(35.2)	11(20.4)	2.280	.516
	Post	—	10(18.5)	26(48.1)	4(7.4)	2(3.7)	—	4(7.4)	20(37)	—	11(20.4)	12.815	.005**
2. will visit a consultant before marriage.	Pre	—	7(12.9)	28(51.8)	19(35.2)	—	—	7(12.9)	20(37)	27	—	2.725	.256
	Post	27(50)	27(50)	28(51.8)	—	—	—	7(12.9)	20(37)	—	—	85.765	.000**
3. will take necessary blood test before marriage?	Pre	—	2(3.7)	32(59.3)	20(37)	—	—	2(3.7)	24(44.4)	28(51.8)	—	2.476	.290
	Post	24(44.4)	25(46.3)	32(59.3)	—	—	—	2(3.7)	24(44.4)	—	—	82.347	.000**
4. If favorite person has hemoglobinopathy disorder, you will still want to marry him/her.	Pre	—	6(11.1)	21(38.9)	20(37)	7(12.9)	—	5(9.3)	19(5.2)	21(38.9)	9(16.7)	1.668	.113
	Post	33(61.1)	18(33.3)	21(38.9)	—	—	—	—	19(35.2)	—	11(20.4)	96.783	.000**
5. like to donate your blood for hemoglobinopathic patients?	Pre	14(25.9)	14(25.9)	26(48.1)	—	—	14(25.9)	20(37)	15(27.8)	—	—	4.768	.092
	Post	34(63)	20(37)	26(48.1)	—	—	21(38.9)	20(37)	15(27.8)	—	—	16.073	.000**
6. If there was a major hemoglobinopathic patient in your family, and you are the only chance for bone marrow transplantation, you will do it.	Pre	26(48.1)	22(40.7)	6(11.1)	—	—	24(44.4)	30(55.6)	—	—	—	4.373	.121*
	Post	49(90.7)	4(7.4)	6(11.1)	—	—	24(44.4)	30(55.6)	—	—	—	29.444	.000**
7. will not accept the probability of a hemoglobinopathic child just for a family marriage.	Pre	—	—	18(33.3)	26(48.1)	10(18.5)	—	—	18(33.3)	24(44.4)	12(77.8)	1.231	.137
	Post	10(18.5)	27(50)	18(33.3)	—	—	—	—	18(33.3)	—	20(37)	62.667	.000**
8. If in pregnancy period and before soul inspiration, parents know the fetus is affected a hemoglobinopathy disorder, do you agree with medical abortion?	Pre	—	3(5.6)	35(64.8)	11(20.4)	5(9.3)	—	4(7.4)	23(42.6)	16(29.6)	11(20.4)	5.802	.122
	Post	14(25.9)	11(20.4)	35(64.8)	2(3.7)	2(3.7)	—	4(7.4)	23(42.6)	—	11(20.4)	28.560	.000**
9. If were a hemoglobinopathic patient, did you like to cooperate with medical center for consulting with the disease?	Pre	13(24.1)	15(27.8)	25(46.3)	1(1.95)	—	13(24.1)	16(29.6)	25(46.3)	—	—	1.032	.793
	Post	21(38.9)	21(38.9)	25(46.3)	—	—	12(77.8)	15(27.8)	25(46.3)	—	—	9.224	.01**

X²= Chi Square test, * F = Fisher Exact test, SA= strongly agree, A= agree, U= undecided, D= disagree, SD= strongly disagree

Table (7) reveals that there were no statistical significant differences between the study and control group at preprogram as compared to post program. Meanwhile, there were statistical significant differences between the study and control group in all above variables ($P < 0.05$).

Part V. Total students' awareness, performance and attitude scores.

Table (8): Total awareness, attitude, and performance scores of the students regarding hemoglobinopathy nursing program through the implementation phases (n=108)

topic	Study group (n=54)				t	P	Control group (n=54)				t	P
	Pre		Post				Pre		Post			
	No	%	No	%			No	%	No	%		
Total awareness score												
Good	4	7.5	38	70.4	-19.335	<.001**	5	9.2	6	11.1	0.220	.826
Average	3	5.5	13	24			4	7.5	5	9.2		
Poor	47	87	3	5.6			45	83.3	43	79.7		
$\bar{x} \pm SD$	19.68±13.34		48.65±6.94				20.26±13.75		23.96±11.54			
Total performance score												
Competent	16	29.7	54	100	-29.351	<.001**	18	33.3	21	38.9	0.273	.786
Incompetent	38	70.3	-	-			36	66.7	33	61.1		
$\bar{x} \pm SD$	50.96±5.1		74.52±4.47				50.85±5.43		51.24±5.47			
Total attitude score												
Positive	27	50	54	100	-32.419	<.001**	24	44.4	26	48.1	1.863	.065
Negative	27	50	-	-			30	55.6	28	51.9		
$\bar{x} \pm SD$	17.56±2.4		28.61±2.1				16.67±2.56		19.67±2.31			

* = P<0.05

= P <0.001

Table (8) shows that there was a highly statistical significant difference (P<0.001) in the studied students' total awareness, attitude, and performance score in favor of post training. Meanwhile, there was no statistical significant difference (P>0.05) in the studied students' total awareness, attitude, and performance score in the control group.

Part VI: Relations between awareness, attitude and performance of the students with their personal data**Table (9)** Pediatric nursing students' awareness levels in relation to their personal data among study and control groups after the study (n=108).

Personal data	Study group (n=54)							Control group (n=54)								
	Good		Average		Poor		X ²	P	Good		Average		Poor		X ²	P
	n	%	n	%	n	%			n	%	n	%	n	%		
Age																
<20 years	1	1.85	1	1.85	—	—	1.540	0.820	1	1.85	—	—	6	11.1	2.818	0.589
20:22 years	33	61.1	10	18.5	3	5.6			3	5.6	5	9.3	35	64.8		
>22 years	4	7.4	2	3.7	—	—			1	1.85	—	—	3	5.6		
Gender																
Male	7	12.9	2	3.7	2	3.7	6.252	0.042*	—	—	—	—	7	12.9	1.828	0.401
Female	31	57.4	11	20.4	1	1.85			5	9.3	5	9.3	37	68.5		
Residence																
Urban	33	61.1	10	18.5	3	3.6	1.308	0.520	4	7.4	4	7.4	33	61.2	0.111	0.946
Rural	5	9.3	3	5.6	—	—			1	1.85	1	1.85	11	20.4		
Marital status																
Married	5	9.3	5	9.3	—	—	4.832	0.089	—	—	1	1.85	7	12.9	1.018	0.601
Single	33	61.1	8	14.8	3	5.6			5	9.3	4	7.4	37	68.5		
Family history																
Yes	4	7.4	—	—	—	—	1.819	0.403	2	3.7	—	—	3	5.6	6.446	0.040*
No	34	63	13	24.1	3	5.6			3	5.6	5	9.3	41	75.9		

X²= Chi Square test, * P <0.05

Table (9) shows the students' awareness levels in relation to their personal data among study and control group after the study. There was no statistical significant difference between the students' personal data and their level of awareness (P=>0.05).

Table (10) Pediatric nursing students' performance levels in relation to their personal data among study and control groups after the study (n=108).

Personal	Study group (n=54)						Control group (n=54)					
	Competent		Incompetent		X ²	P	Competent		Incompetent		X ²	P
	N	%	N	%			N	%	N	%		
Age												
<20 years	2	3.7	—	—	—	—	6	11.1	1	1.85	4.801	.091
20:22 years	46	85.2	—	—			31	57.4	12	22.2		
>22 years	6	11.1	—	—			1	1.85	3	5.6		
Gender												
Male	11	20.4	—	—	—	—	3	5.6	4	7.4	2.920	.177*
Female	43	79.6	—	—			35	64.8	12	22.2		
Residence												
Urban	46	85.2	—	—	—	—	27	50	14	25.9	1.666	.301*
Rural	8	14.8	—	—			11	20.4	2	3.7		
Marital status												
Married	10	18.5	—	—	—	—	4	7.4	4	7.4	1.869	.217*
Single	44	81.5	—	—			34	63	12	22.2		
Family history												
Yes	4	7.4	—	—	—	—	4	7.4	1	1.85	.245	.621*
No	50	92.6	—	—			34	63	15	27.8		

X²= Chi Square test, * F = Fisher Exact test

Table (10) demonstrates the students' performance levels in relation to their personal data among study and control group after the study. There was no statistical significant difference between the students' personal data and their level of performance (P=>0.05) in control groups.

Table (11) Pediatric students nurses' attitude levels in relation to their personal data among study and control groups after the study (n=108).

Personal data	Study group (n=54)					Control group (n=54)						
	Positive		Negative		X ²	P	Positive		Negative		X ²	P
	N	%	N	%			N	%	N	%		
Age												
<20 years	2	3.7	—	—	—	—	7	12.9	0	0	3.534 #	0.171
20:22 years	46	85.2	—	—			32	59.3	11	20.4		
>22 years	6	11.1	—	—			4	7.4	0	0		
Gender												
Male	11	20.4	—	—	—	—	6	11.1	1	1.85	.184 #	.668
Female	43	79.6	—	—			37	68.5	10	18.5		
Residence												
Urban	46	85.2	—	—	—	—	31	57.4	10	18.5	1.697 #	.261
Rural	8	14.8	—	—			12	22.2	1	1.85		
Marital status												
Married	10	18.5	—	—	—	—	5	9.3	3	5.6	1.699 #	.337
Single	44	81.5	—	—			38	70.4	8	14.8		
Family history												
Yes	4	7.4	—	—	—	—	3	5.6	2	3.7	1.309 #	.266
No	50	92.6	—	—			40	74.1	9	16.7		

X²= Chi Square test, # F = Fisher Exact test

Table (11) illustrates the students' attitude levels in relation to their personal data among study and control group after the study. There was no statistical significant difference between the students' personal data and their level of attitude (P=>0.05) in control group.

PART VII. Correlations between pediatric nursing students' awareness, performance and attitude in study group

Table (12) Correlation between total awareness, performance and attitude scores regarding hemoglobinopathy nursing program pre-intervention for study group (n=54)

Items	Awareness score		Performance score	
	r	P	r	P
Attitude score	-.074	.596	-.226	.100
Performance score	.041	.321	-	-

P significant at level of 5%

r= Pearson correlation test

Table (12) shows that there was no correlation between students' awareness and their performance and attitude ($p > 0.05$) in study group in pre-intervention.

Table (13) Correlation between total awareness, performance and attitude scores regarding hemoglobinopathy nursing program post intervention for study group (n=54)

Items	Awareness score		Performance score	
	r	P	r	P
Attitude score	0.568	<0.001*	0.357	<0.001*
Performance score	0.661	<0.001*	-	-

P significant at level of 5%

r= Pearson correlation test

Table (13) shows that there was a positive significant correlation between students' awareness and their performance and attitude ($p = 0.001$) in study group post intervention.