Effect of Nursing Program on Nurses' Performance for Children Undergoing Cataract Surgery

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ABSTRACT

Background: Cataracts are opacities in the lens of the eye that scatter light, frequently compromising vision and impacting persons across all age groups. Pediatric cataracts, especially congenital or infantile (occurring within the first year of life), are the most severe cases. **Aim of the study:** to evaluate the effect of nursing program on nurses' performance for children undergoing cataract surgery. **Research design:** A quasi-experimental research design was used. **Setting:** The study was conducted at Ophthalmology Minia University Hospital – Minia governorate – Egypt. **Sample:** A convenient sample of all available nurses (46 nurses) who were providing direct pre- and post-operative care to children undergoing cataract surgery. **Tools:** two tools were used; Tool (I): A structured interview questionnaire covering the demographic characteristics of the studied nurses and nurses' knowledge. Tool (II): Observational checklist form. **Results:** the total nurses' performances increased post nursing program than pre-nursing program regarding cataract surgery with statistically significant differences. In addition, no statistically significant differences was found between total practice levels and demographic data of the studied nurses pre nursing program. **Conclusion:** Applying the designed nursing program could significantly improve knowledge, preoperative practice, and postoperative practice of nurses, which consequently led to improvement of the quality of the nursing care. **Recommendation:** Ophthalmic nurses should receive periodic training programs to improve, update and refresh their performance regarding pediatric cataract.

Keywords: Children undergoing cataract surgery, Nursing program, Nurses' performance.

Introduction

Children are not only diminutive adults especially applicable to infants and their vision. Nearly all anatomical features differ significantly from those of a cataract patient aged 70: the capsule exhibits remarkable elasticity, the cornea and sclera typically lack substantial rigidity, the nucleus is flexible rather than firm, and elevated pressure from the vitreous is anticipated. Pediatric cataract surgery differs significantly from cataract surgery in older adults **(Dick, 2022)**.

Sharply transmitting light onto the retina is the lens' main purpose. This function requires transparency, which diverse approaches deliver. Lens fibers lose intracellular organelles including the cell nucleus and endoplasmic reticulum during development to avoid abnormalities. The lens fibers' cytoplasm is rich in crystalline proteins to maintain the lens' refractive index. Light aberrations are reduced by the lens fibers' parallel configuration and tight cell membrane proximity **(Agrawal, 2021).**

A cataract is the gradual loss of the crystalline lens's visual constancy, from slight variations in clarity to complete cloudiness **(Taha, 2021).** Cataracts are lens opacities induced by lens structural homogeneity disruptions that block light from reaching the retina **(Tariq et al 2022).** Congenital cataracts threaten visual system development. Pediatric cataract causes blindness and visual impairment worldwide but is curable **(Alió et al., 2022).**

UK pediatric cataract prevalence is 3.18/10,000 live births. Geographic differences in pediatric cataract prevalence occur, however gender and laterality (whether the cataract affects 1 or both eyes) are rarely recorded (Gupta et al., 2024). Traumatic cataract was seen in 33% of Upper Egypt hospitalized children with eye injuries. **(Kedwany et al., 2021)**

Major causes include maternal diseases such toxoplasmosis, rubella, cytomegalovirus, herpes virus, and syphilis (TORCHS) and exposure to toxic substances like alcohol and maybe aspirin. Lens opacifications in older children are mainly caused by systemic and eye disorders, including uveitis, trauma, and drug exposure, especially corticosteroids **(Alió et al., 2022).**

Nowadays, eye procedures are common, and ophthalmic nurses are vital to eye care. Poor nursing care before or after eye surgery might cause major consequences. Nurses begin preoperatively by evaluating patients. She provides patients with knowledge and meets their physical and psychological requirements. The nurse should minimize pain and discomfort, involve the patient and family, prevent complications, and provide thorough discharge instructions to ensure postoperative success **(Kolebech et al., 2021).**

Age at surgery affects visual result. Surgery at less than 6–8 weeks for unilateral cataract and 6–10 weeks for bilateral cataract, with less than 2 weeks between procedures and sometimes simultaneous surgery, is recommended by the literature. To improve visual results in this visually impaired state . Early cataract problems within 24 hours are possible surgical consequences. Anterior chamber collapse, corneal edema, keratitis, increased intraocular pressure, wound leaking, discomfort, and inflammation after surgery. After 24 hours of surgery, endophthalmitis, loose suture, rebound uveitis, chronic irritable eye, change in refraction, intra ocular lenses dislocation, cystoid macular edema, astigmatism, posterior capsule opacification, retinal detachment, vitreous detachment, and persistent corneal edema can occur. **(Struck, 2022).**

The ophthalmic nurse must educate patients to wear sunglasses outside, have regular eye exams, eat antioxidant-rich fruits and vegetables, maintain a healthy weight, and control diabetes and other medical conditions to prevent cataracts **(Abdel Azeem et al., 2019).** Nursing care for cataract surgery includes preoperative, postoperative, and discharge instructions. Preoperative fundamental needs should be assessed and met by nurses. Preoperative intervention improves recovery, reduces complications, and duration of stay. Educational nursing treatments increase cataract patients' clinical outcomes, quality of life, and ability to meet needs and execute daily living activities **(Abdullah et al., 2021)**.

Significance of the Study

World Health Organization statistics demonstrate that Egypt hasapproximately 1 million people blind and 3 million visuallyimpaired. Nearly 60% of the visually impaired people in Egypt have a cataract, which requires surgery **(WHO, 2019).**

The study done by **Abdel Azeem et al. (2019)** about the effect of nursing intervention on nurses' knowledge and practice regarding cataract surgery indicated that there was a highly statistically significant difference between nurses' knowledge related to eye anatomy, cataract disease and the nursing role in cataract surgery pre-intervention, post-intervention and follow up.

The study done by **Khokhar et al. (2022)** about North India childhood cataracts study - the real scenario and causes of surgical delay of pediatric cataracts Indicated that 52 (58.43%) out of 89 children had congenital cataracts, 27 (37.08%) had developmental cataracts, and 4 (4.48%) had an acquired cataract.

Aim of the Study

The aim of this study was to evaluate the effect of nursing program on nurses' performance for children undergoing cataract surgery.

Research Hypotheses:

H 0: There is no effect of the nursing program on nurses' performance for children undergoing cataract surgery.

H1: Nursing program expected to increase nurses' performance for children undergoing cataract surgery.

Subject and Method

Research design:

A quasi-experimental research design (pre – posttest) was utilized to meet the aim of this study.

Research Setting:

The study was conducted at Ophthalmology Minia University Hospital, Minia governorate-Egypt. The hospital with bed capacity (17) beds. It consists of two floors; the first floor contains the eye emergency room, outpatient clinics, x-ray room, and the pharmacy. The second floor contains

operating rooms, internal department and recovery rooms.

Sample:

A convenient sample of all available nurses (46 nurses) who were providing direct pre- and post-operative care to children undergoing cataract surgery at Ophthalmology Minia University Hospital accepted to participate in this study and their total number was 46 nurses from both sexes with diverse ages, years of experiences, and different levels of education.

Data collection tools:

Two tools were used to conduct this study by Structured Interviewing Questionnaire.

Tool I: Nurses' Knowledge regarding cataract surgery for children.

This tool was developed after reviewing recent national and international relevant literature (**Kolebech et al., 2021; MoH-Kenya UKaid, 2017).** It was consisted of two parts as follows:

Part one: **Nurse's demographic data:**

This part contained nurse demographic data, as well as age, gender, educational level, residence, marital status, years of experience, clinical experiences in ophthalmology, previous attendance of training courses related to children undergoing cataract surgery and the number of these courses.

Part two: **Nurses' knowledge regarding cataract surgery for children**

This part included nurses' knowledge (20 Items) about three main areas as anatomy and physiology of the eye (10 Items), cataract disease (7 Items), and cataract surgery (3 Items) (true and false).

Scoring system:

The nurses' answers were evaluated using a model answer prepared by the investigator, and the correct answer was scored one while the incorrect answer/ don't know was scored zero. The scores of each area were summed up to give the total score; after that, the score was converted to a percent score, which was transferred into categories as follows: low: < 60.0%, moderate: 60.0% to 80.0% and high knowledge > 80.0% (**Abid et al., 2018)**.

Tool II: Nurses' practices for children undergoing cataract Surgery (Observational Checklist).

This tool was developed after reviewing recent national and international relevant literature (**Abdel Azeem et al., 2019, Abid et al., 2018)**. It was comprised of standardized practices regarding as follows: Preoperative nursing interventions in 6 steps, post-operative nursing interventions in 5 parts, including eye drops instillation (27) steps, applying eye ointment (16) steps, eye dressing changing with following aseptic technique (14) steps, performing eye care (13) steps, and providing complete discharge instructions (9) steps.

Scoring system:

The investigator checked each step of nurses' practice to see if it is done or not done, and the achieved step was scored one while the non-achieved was scored zero. The score was converted to a percent score, which was transferred into categories: unsatisfactory practice: < 60.0% and satisfactory practice ≥ 60% (**Ramadan et al., 2019)**.

Ethical consideration:

Research proposal was taken from the Ethical Committee in the Faculty of Nursing, Minia University, and from the manager of Ophthalmology, Minia University Hospital. There was no risk to the study subject during the application of the research. Confidentiality of subject data was assured. Participants had the right to refuse to participate and or withdraw from the study without any rationale at any time. Participants' privacy and anonymity was considered during the collection of data.

An official letter was granted from the research ethics committee of the Faculty of Nursing, Minia University. Approval to conduct the study was obtained from the dean of the Faculty of Nursing at Minia University. Permission and consent was obtained from the director of the hospital and nursing directors. Permission and consent was obtained from the head of the department and the head nurse.

Before the conduction of the pilot study as well as the actual study, written consent was obtained from the participants who were willing to participate in the study after explaining the nature and purpose of the study. The study subject had the right to refuse to participate or withdraw from the study without any rationale at any time. Study subject privacy was considered during the collection of data. Participants ensured that all their data are highly confidential; anonymity was also being assured by assigning a number for each nurse instead of names to protect their privacy.

Validity and Reliability of the tools:

The tools' validity was tested through a jury of five experts, three in the field of pediatric nursing and two in the field of pediatric ophthalmology. Their opinions on the tool format layout, consistency, knowledge accuracy, relevance, and competence was formulated. Some modifications were applied according to their opinions.

Reliability

To establish reliability alpha as Cronbach's alpha coefficient, statistical analysis was used to check the stability of the internal consistency of the tools. Cronbach's alpha coefficient of 0.00 indicated no reliability, and a coefficient of 1.00 indicates perfect reliability. Reliability of tools was done using a coefficient test to confirm its consistency.

Pilot Study:

A pilot study was conducted on 5 of the studied nurses (10%) to assess the study tools for their clarity, validity, and time required to be applied. According to the results of the pilot study, no modifications made. Participants in the pilot study were included in the main study sample.

Field work:

Procedure of data collection:

The investigator reviewed current and past, local, and international related literature and theoretical knowledge of various aspects of the study using books, articles, journals, and the internet to prepare the tools of data collection, then determined a suitable time to collect the data and confirm days and times suitable to conduct the study. After that, the investigator met the study subjects and arrange with them to complete the study tools.

Data collection was conducted over 6 months, from the beginning of January to the beginning of July 2024, after the ethical committee for the faculty of Nursing of Minia University approved until the end of data collection. The investigator attended three days/week and met the nurses individually.

The educational program:

The proposed program was conducted through the following phases:

1- Assessment phase

The investigator visited the previously mentioned study setting two days/a week, introduced herself, and explained the study aim. The expected outcomes were explained for the nurses. Each nurse was interviewed individually after obtaining informal consent to contribute to the study; they enhance cooperatively to participate. The investigator collected the demographic data and assesses nurses' knowledge about cataract surgery for children (Tool I). On the same time, the investigator observed the nurses' practices during their work by observational checklist (tool II).

2-Planning:

The planning phase included the nursing program time, number of sessions, teaching methods, and media used. In addition, the teaching place and the program facilities were checked for appropriateness. Nurses were divided into small groups (9-11 groups); each group contains 4-5 nurses. The number of sessions was eleven sessions/group; so ten sessions every week for the study group.

Program teaching methods:

The investigator used different teaching methods during the implementation of the educational program. It included lectures, group discussions, demonstration and re-demonstration, and various teaching media such as watching videos, PowerPoint presentations, and handouts about cataract surgery.

3-Implementation phase

The nursing program implementation was premeditated based on the actual nurses' needed assessment of the nurses through reviewing the related literature. Implementing the educational program covered the theoretical and practical skills regarding cataract surgery in children. Nurses were divided into small groups (11groups); each group contains 4-5 nurses and the same nursing program was implemented for each group of nurses.

The nursing program content was as follows:

Through eleven sessions, theoretical and practical sessions, the investigator started every session with a summary related to previous sessions and the objectives of the new session.

1st session: Orientation, pretest, introduction about the study and the study aim, pretest evaluation, definition of cataract, causes & risk factors of cataract, classification of cataract, signs & symptoms of cataract.

2nd session: Anatomy of eye, history, and patient's physical examination.

3rd session: Diagnostic investigations of

cataract, treatment methods of cataract, cataract disease investigations, cataract disease management.

4th session: Timing of cataract surgery, complications of cataract surgery, nursing management of cataract surgery.

5th session: Preoperative preparation, consent, and emotional support.

6th session: eye drops instillation.

7th session: Applying eye ointment.

8th session: Eye dressing changing with following aseptic technique.

9th session: Eye care.

10th session: Discharge instructions.

11th session: Evaluation.

4-Evaluation phase

Pre- test evaluation was performed by using tool I & II to determine need and weak point in nurses' performance and after one month from ending the program by using tool I part two and tool II to evaluate the program effectiveness.

Data Analysis:

The Collected data was tabulated, computerized, analyzed, and summarized by using statistical tests to test the research hypothesis by using SPSS version IBM,25. The significance level was accepted at P< 0.05 and considered highly significant when P-value less than or equal 0.01

Results

Table (1): Distribution of the studied nurses according to their demographic data at Ophthalmology hospital-Minia university, (n = 46).

Demographic data	The studied nurses (n= 46)	
	No.	%
Age / years		
• 20 to < 30	39	84.8
• 30 to < 40	3	6.5
• 40 to < 50	4	8.7
Mean ± SD	**27.4 ± 6.1 Year**	
Qualification		
• Bachelor's	14	30.4
• Nursing Institute	28	60.9
• Diploma	4	8.7
Experience in nursing		
• 1 to < 5 years	34	73.9
• 5 to < 10 years	4	8.7
• 10 to < 15 years	3	6.5
• More than 15 years	5	10.9
Clinical experiences in ophthalmology		
• 1 to < 5 years	38	82.6
• 5 to < 10 years	3	6.5
• 10 to < 15 years	1	2.2
• More than 15 years	4	8.7
Attending of training courses on nursing care for eye surgery patients		
• No	33	71.7
• Yes	13	28.3
If yes, mention number of courses attended (n = 33)		
• 1	6	13.0
• 2	3	6.5
• 3	3	6.5
• 4	1	2.2

Table (1): presents that there are 84.8% of studied nurses aged between 20 - < 30 with mean age 27.4 ± 6.1Years. Regarding educational qualification, there are 60.9% of them have nursing technician degree, 73.9% and 82.6% of nurses their experience in nursing ranged between one to less than 5 years and in ophthalmology respectively. Also, 28.3% of them have previous training courses on nursing care for eye surgery patients.

Nearly three-quarters (71.7%) of the studied nurses did not attend previous training courses related to nursing ophthalmic care, about half of nurses who had attended the courses reported attending only one course.

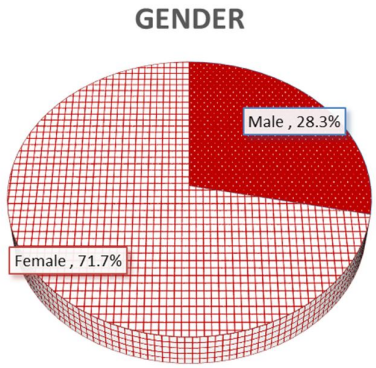

Figure (1): Distribution of the studied nurses according to their gender at Ophthalmology hospital-Minia university, 2024 (n = 46).

Figure (1) illustrates that the more than two thirds (71.7%) of the studied nurses are female and more than one-quarter (28.3%) of them are male.

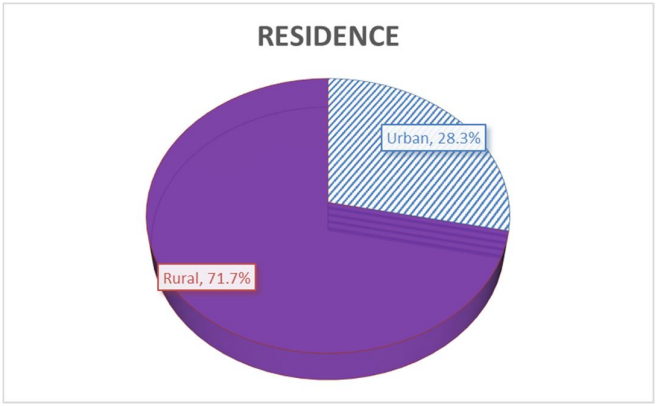

Figure (2): Distribution of the studied nurses according to their residence at Ophthalmology hospital-Minia university, 2024 (n = 46).

Figure (2) illustrates that 28.3% of the studied nurses are living in urban area, and 71.7% of them living in rural area.

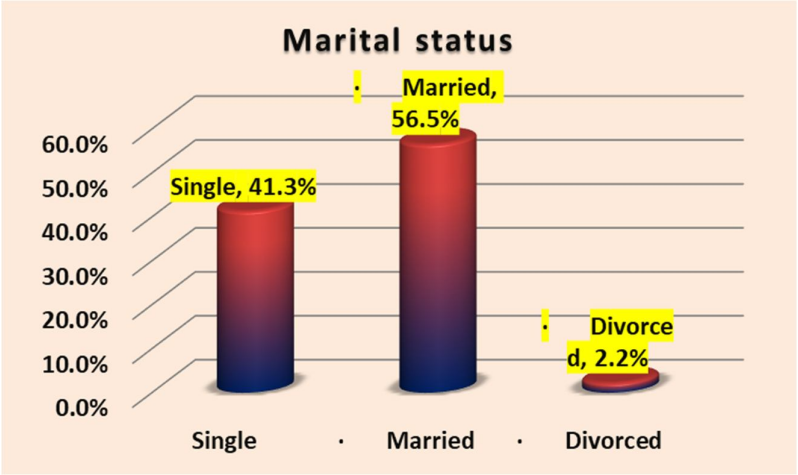

Figure (3): Distribution of the studied nurses according to their marital status at Ophthalmology hospital-Minia university, 2024 (n = 46).

Figure (3) illustrates that 56.5% of the studied nurses married, 41.3% were single and 2.2% divorced.

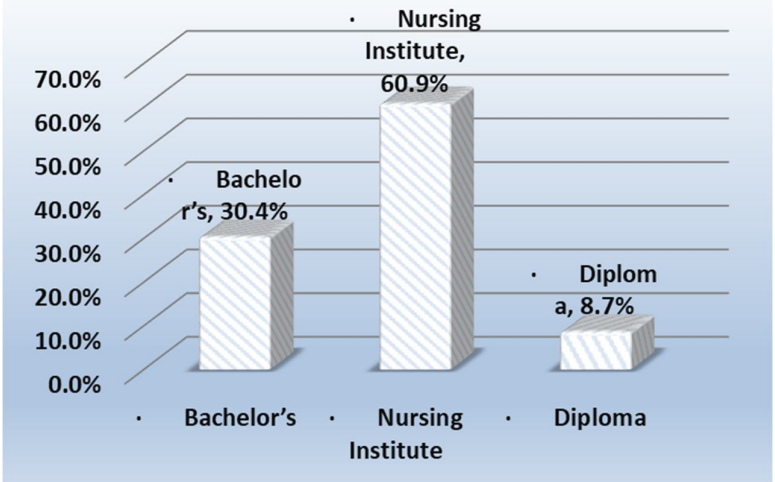

Figure (4): Distribution of the studied nurses according to their educational qualification (n = 46).

Figure (4) illustrates that 60.9% of the studied nurses have nursing technician degree, 30.4% of them have bachelor's degree, and 8.7% of them have diploma degree.

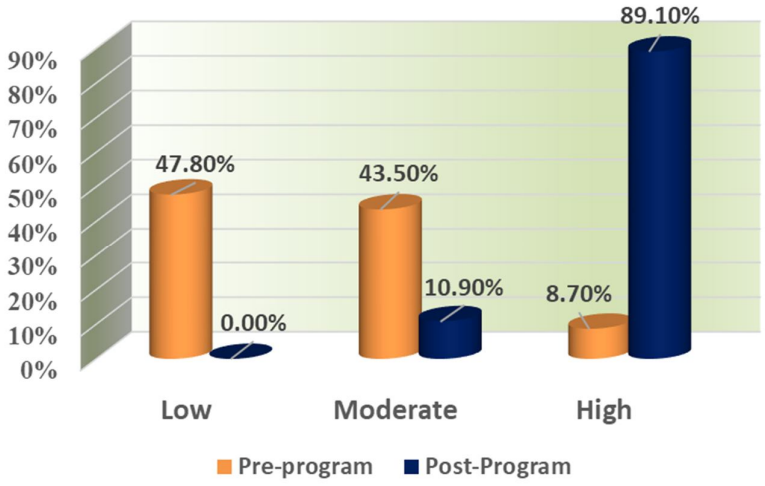

Figure (5): Total nurses' knowledge levels regarding cataract disease and surgery pre and post nursing program at Ophthalmology hospital-Minia university, 2024 (n = 46).

Figure (5): illustrated that, 8.70% of the studied nurses have high total knowledge regarding cataract disease and surgery pre nursing program increased to 89.1% of the studied nurses post nursing program.

Table (2): Total knowledge of the studied nurses pre and post program at Ophthalmology hospital-Minia university, 2024 (n = 46).

Items	Pre-education						Post-education						Test of significant	
	Low		Moderate		High		Low		Moderate		High		Fisher /X^2	*P* - Value
	No	%	No	%	No	%	No	%	No	%	No	%		
Anatomy and physiology of the eye	28	60.9	17	37.0	1	2.1	0	0.0	7	15.2	39	84.4	53.931	0.0001**
Cataract disease	21	45.7	20	43.5	5	10.8	0	0.0	4	8.7	42	91.3	43.125	0.0001**
Cataract surgery	18	39.2	22	47.8	6	13.0	0	0.0	4	8.7	42	91.3	40.250	0.0001**
Total knowledge	**22**	**47.8**	**20**	**43.5**	**4**	**8.7**	**0**	**0.0**	**5**	**10.9**	**41**	**89.1**	**53.931**	**0.0001****

*Statistically significant differences at <0.05 **highly statistically significant differences at < 0.01.

Table (2): presents that the total knowledge of the studied nurses increased post than pre-nursing program with statistically significant differences.

Regarding anatomy and physiology of the eye, 2.1% of the studied nurses have high knowledge pre-nursing program increased to 84.4% of them post nursing program, 10.8% of the studied nurses have high nurses' knowledge regarding cataract disease increased to 91.3% of them post nursing program and 13.0% of the studied nurses have high knowledge regarding cataract surgery increased to 89.1% of them post nursing program with highly statistically significant differences which p – value ≤ 0.0001 for each respectively.

Table (3): Total practices of the studied nurses regarding cataract surgery pre and post program at Ophthalmology hospital-Minia university, 2024 (n = 46).

Items	Pre-education				Post-education				Test of significant	
	Unsatisfactory		Satisfactory		Unsatisfactory		Satisfactory		Fisher /X^2	*P* - Value
	No	%	No	%	No	%	No	%		
Preoperative nursing intervention steps	45	97.8	1	2.2	18	39.1	28	60.9	36.709	0.0001**
Postoperative nursing intervention	33	71.7	13	28.3	0	0.0	46	100.0	51.458	0.0001**
Eye drops instillation	34	73.9	12	26.1	0	0.0	46	100.0	53.931	0.0001**
Applying eye ointment	31	67.4	15	32.6	1	2.2	45	97.8	43.125	0.0001**
Changing eye dressing with aseptic technique measures	28	60.9	18	39.1	0	0.0	46	100.0	40.250	0.0001**
Performing eye care	34	73.9	12	26.1	0	0.0	46	100.0	53.931	0.0001**
Providing complete discharge instructions	35	76.1	11	23.9	0	0.0	46	100.0	56.491	0.0001**
Total practices	**36**	**78.3**	**10**	**21.7**	**0**	**0.0**	**46**	**100.0**	**59.143**	**0.0001****

*Statistically significant differences at <0.05 **highly statistically significant differences at < 0.01

Table (3) illustrated that, 2.2% of the studied nurses have satisfactory preoperative practice pre nursing program increased to 60.9% of them post nursing program and 28.3% of the studied nurses have satisfactory postoperative practice pre nursing program increased to 100% of them post nursing program with highly statistically significant differences which P – value 0.0001 for pre and post operative practices respectively.

Regarding eye drops instillation, 26.1% of the studied nurses have satisfactory postoperative practice pre nursing program increased to 100% of them post nursing program, 32.6% of the studied nurses have satisfactory postoperative practice regarding applying eye ointment pre nursing program increased to 97.8% of them post nursing program and 39.1% of the studied nurses have satisfactory postoperative practice regarding changing eye dressing with aseptic technique measures pre nursing program increased to 100.0% of them post nursing program with highly statistically significant differences which p – value 0.0001, 0.0001, 0.0001.

Regarding performing eye care, 26.1% of the studied nurses have satisfactory postoperative practice pre nursing program increased to 100% of them post nursing program and 23.9% of the studied nurses have satisfactory postoperative practice regarding providing complete discharge instructions pre nursing program increased to 100.0% of them post nursing program with highly statistically significant differences which p – value 0.0001, 0.0001.

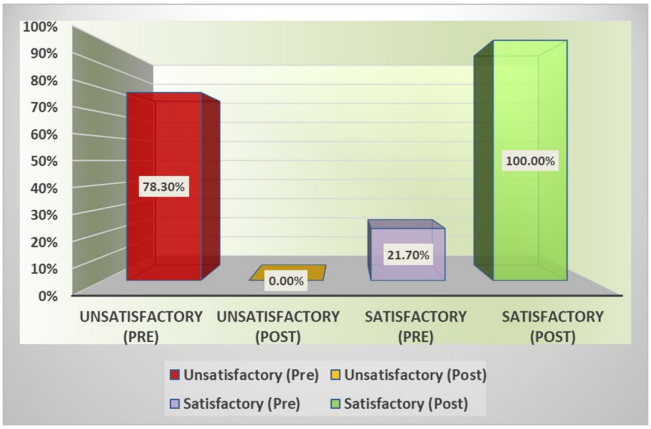

Figure (6): Total nurses practice levels regarding cataract surgery pre and post nursing program at Ophthalmology hospital-Minia university, 2024 (n = 46).

Figure (6): illustrated that, 21.7% of the studied nurses have satisfactory total nurses practice regarding cataract surgery pre nursing program increased to 100.0% of them post nursing program with highly statistically significant differences which *P*– value 0.0001.

Table (4): Relation between total knowledge levels regarding cataract disease and surgery of the studied nurses and their demographic data pre and post nursing program at Ophthalmology hospital-Minia University, 2024 (n = 46).

Items		Pre- program						Post program			
		Low		Moderate		High		Moderate		High	
	No.	No.	%	No.	%	No.	%	No.	%	No.	%
Age / years											
20 to < 30	39	20	51.3	15	38.4	4	10.3	5	12.8	34	87.2
30 to < 40	3	1	33.3	2	66.7	0	0.0	0	0.0	3	100.0
40 to < 50	4	1	25.0	3	75.0	0	0.0	0	0.0	4	100.0
Fisher (*P*- value)		2.563 (0.576)						1.007 (0.604)			
Gender											
Male	13	7	53.8	6	46.2	0	0.0	3	23.1	10	76.9
Female	33	15	45.5	14	42.4	4	12.1	2	6.1	31	93.9
Fisher (*P*- value)		1.743 (0.418)						2.787 (0.095)			
Residence											
Urban	13	8	61.5	4	30.8	1	7.7	2	15.4	11	84.6
Rural	33	14	42.4	16	48.5	3	9.1	3	9.1	30	90.9
Fisher (*P*- value)		1.469 (0.495)						0.381 (0.537)			
Marital status											
Single	19	9	47.4	7	36.8	3	15.8	4	21.1	15	78.9
Married	26	13	50.0	12	46.2	1	3.8	1	3.8	25	96.2
Divorced	1	0	0.0	1	100.0	0	0.0	0	0.0	1	100.0
Fisher (*P*- value)		3.975(0.499)						3.839 (0.176)			
Educational Qualification											
Bachelor's	14	9	64.3	4	28.6	1	7.1	2	14.3	12	85.7
Nursing Institute	28	12	42.9	13	46.4	3	10.7	3	10.7	25	89.3
Diploma	4	1	25.0	3	75.0	0	0.0	0	0.0	4	100.0
Fisher (*P*- value)		٣,٢٣٩(0.466)						0.515 (0.720)			
Experience in nursing											
1 to < 5 years	34	19	55.9	11	32.3	4	11.8	5	14.7	29	85.3
5 to < 10 years	4	1	25.0	3	75.0	0	0.0	0	0.0	4	100.0
10 to < 15 years	3	0	0.0	3	100.0	0	0.0	0	0.0	3	100.0
More than 15 years	5	2	40.0	3	60.0	0	0.0	0	0.0	5	100.0
Fisher (*P*- value)		6.864 (0.223)						0.886 (0.577)			
Clinical experiences in ophthalmology											
1 to < 5 years	38	21	55.3	13	34.2	4	10.5	5	13.2	33	86.8
5 to < 10 years	3	0	0.0	3	100.0	0	0.0	0	0.0	3	100.0
10 to < 15 years	1	0	0.0	1	100.0	0	0.0	0	0.0	1	100.0
More than 15 years	4	1	25.0	3	75.0	0	0.0	0	0.0	4	100.0
Fisher (*P*- value)		7.871 (0.221)						1.205 (0.758)			
Attending of training courses on nursing care for eye surgery patients											
No	33	20	60.6	11	33.3	2	6.1	4	12.1	29	87.9
Yes	13	2	15.4	9	69.2	2	15.4	1	7.7	12	92.3
Fisher (*P*- value)		**8.023 (0.021)***						0.189 (0.664)			

*statistically significant differences at 0.05

Table (4): evidences that 69.2% of the studied nurses who had previous training courses on nursing care for eye surgery patients have moderate knowledge regarding cataract disease and surgery pre nursing program with statistically significant differences *(P* – value < 0.021)**.**

On the other hand, no statistically significant differences was found between demographic data and total knowledge levels pre and post nursing program at Ophthalmology hospital-Minia University, 2024.

Table (5): Relation between total practice levels regarding cataract disease and surgery of the studied nurses and their demographic data pre-nursing program at Ophthalmology hospital-Minia University, 2024 (n = 46).

Items		Pre - program			
		Moderate		High	
	No.	No.	%	No.	%
Age / years					
20 to < 30	39	32	82.1	7	17.9
30 to < 40	3	2	66.7	1	33.3
40 to < 50	4	2	50.0	2	50.0
Fisher (*P*- value)		2.926 (0.295)			
Gender					
Male	13	11	84.6	2	15.4
Female	33	25	75.8	8	24.2
Fisher (*P*- value)		0.430 (0.512)			
Residence					
Urban	13	8	61.5	5	38.5
Rural	33	28	84.8	5	15.2
Fisher (*P*- value)		2.979 (0.084)			
Marital status					
Single	19	15	78.9	4	21.1
Married	26	20	76.9	6	23.1
Divorced	1	1	100.0	0	0.0
Fisher (*P*- value)		0.531 (0.856)			
Educational Qualification					
Bachelor's	14	8	57.1	6	42.9
Nursing Institute	28	26	92.9	2	7.1
Diploma	4	2	50.0	2	50.0
Fisher (*P*- value)		**9.127 (0.011)***			
Experience in nursing					
1 to < 5 years	34	29	85.3	5	14.7
5 to < 10 years	4	2	50.0	2	50.0
10 to < 15 years	3	1	33.3	2	66.7
More than 15 years	5	4	80.0	1	20.0
Fisher (*P*- value)		6.193 (0.092)			
Clinical experiences in ophthalmology					
1 to < 5 years	38	31	81.6	7	18.4
5 to < 10 years	3	2	66.7	1	33.3
10 to < 15 years	1	0	0.0	1	100.0
More than 15 years	4	3	75.0	1	25.0
Fisher (*P*- value)		4.092 (0.250)			
Attending of training courses on nursing care for eye surgery patients					
No	33	26	78.8	7	21.2
Yes	13	10	76.9	3	23.1
Fisher (*P*- value)		0.019 (0.890)			

*statistically significant differences at 0.05

Table (5): shows that no statistically significant differences was found between total practices levels and demographic data of the studied nurses in the pre nursing program at Ophthalmology hospital-Minia University, 2024.

Table (6): Correlation between total knowledge and practices scores regarding cataract disease and surgery of the studied nurses and their age, experience in nursing field, experience in ophthalmology and number of courses attended pre and post program at Ophthalmology hospital-Minia university, 2024.

		Total knowledge score	Total practice score	Total knowledge score	Total practice score
Age	r	0.150	0.257	0.221	-0.049-
	P – value	0.320	0.085	0.140	0.744
Experience in nursing	r	0.186	0.235	0.208	-0.074-
	P – value	0.216	0.117	0.166	0.626

		Total knowledge score	Total practice score	Total knowledge score	Total practice score
Clinical experiences in ophthalmology	r	0.207	0.103	0.171	-0.127-
	P – value	0.168	0.496	0.257	0.400
Total knowledge score	r	1	-0.007-	1	**0.522**
	P – value		0.963		**0.0001****
Total practice score	r	-0.007-	1	0.522	1
	P – value	0.963		0.0001**	

**correlation is significance at the 0.01

Table (6): notes that moderate association between total nurses knowledge and their practices in the post nursing program (r=0.522; P value ≤ 0.0001). on the other hands, no association was found between the total knowledge and practices scores of the studied nurses and their age, experience in nursing field, experience in ophthalmology in the pre and post program at Ophthalmology hospital-Minia university.

Discussion

Nurses knowledge regarding pediatric cataract pre and post educational program

According to the present study findings, pre nursing program; more than half of the studied nurses had a low level of knowledge about anatomy and physiology of the eye.

This finding is agree with the study done by **Abd-Elftah et al. (2023)**, entitled "effect of eye care guidelines on nurses' competence for comatose patients" performed at Intensive Care Unit at Benha University Hospital, Benha – Egypt, that showed that Tenth (10%) of studied nurses had good level of knowledge about the anatomy and physiology of the eye at pre implementation of nursing guidelines, While knowledge of the majority (83.3%) of studied nurses regarding anatomy and physiology of the eye has been improved post implementation of nursing guidelines.

This finding was consistent with the study done by **Elkasby et al. (2021)**, entitled "Effect of eye care learning package for mechanically ventilated patients on critical care nurses' performance" which conducted in Main Mansoura University Hospitals, Mansoura – Egypt, that showed that participant nurses knowledge regarding ocular anatomical and physiological features before learning package implementation was constitutes in the law level. It was found that most of nurses had a reduced level of knowledge.

In contrast, the study done by **El Shafaey et al. (2018)** entitled "Effect of implementing teaching program on knowledge and practice of nurses and clinical outcomes of patients post cataract surgery" which conducted in Ophthalmology Department at Tanta University Hospital – Egypt, revealed that the majority of the studied nurses had fair level of knowledge score. From the researcher point of view, this result might be because the nurses were not interested in knowing anatomical structure of the eye, but were interested in performing their nursing tasks added to their limited exposure to training courses about anatomy and physiology of the eye. Also, these results may be related to not attending any training program for nurses to improve and update nurses 'knowledge. So, nurses need anatomy and physiology course to comprehend how to take good care of their patients and prepare nursesto think and act quickly

In relation to nurses' knowledge regarding cataract disease, in the pre nursing program; the present study presented that less than half of the studied nurses had a low level of knowledge about cataract disease.

The result of this study in the same line to those obtaine by **Gad et al. (2023)**, who conducted a study entitled "effect of intervention guidelines on nurses' performance regarding patient's outcome post glaucoma surgery" which conducted in department of ophthalmology and ophthalmology outpatient clinic at Zagazig University Hospitals – Egypt who cleared that, there was highly statistically significant improvement in the total nurses` knowledge post intervention compared to pre intervention.

On the other hand, the study done by **Hassan et al. (2022**), entitled "Auditing of nursing care offered for patients undergoing cataract surgery at Assiut ophthalmic hospital" performed at Assiut Ophthalmic Hospital, Assiut, Egypt", showed that most of nurses had fair knowledge level.

In relation to nurses' knowledge regarding cataract surgery, pre nursing program; more than one- third of the studied nurses had a low level of knowledge about cataract surgery. The present study was in the line with the study conducted by **Rababa et al. (2020)**, entitled "association of nurses' level of knowledge and attitudes to ageism toward older adults: cross-sectional study"

performed at public hospital and a university-affiliated hospital in Irbid, northern- Jordan, which identified that staff nurses had insufficient knowledge regarding cataract surgery and nurses need to receive nursing guidelines about how to care for such group of patients in this area.

Also, the study done by **Etafa et al. (2020)**, entitled "nursing students' knowledge on the management of peripheral venous catheters at Wollega University" performed at Wollega University main campus found in Nekemte town, which is 330km from the capital city of Ethiopia, Addis Ababa, who found that ophthalmology nurses have only a rudimentary understanding of the fundamentals of sterile technique required to offer safe and effective nursing care to their surgical patients during the intraoperative phase.

Post nursing program, the present study revealed that there was a marked improvement in nurses' knowledge as the majority of nurses had a high level of the knowledge in all tested areas. This indicated the positive effect of the guidelines on nurses' knowledge and reflected that, nurses were able to learn and improve their knowledge. The result of this study in the same line, the study done by **Gad et al., (2023)** entitled "effect of intervention guidelines on nurses' performance regarding patient's outcome post glaucoma surgery" which conducted in department of ophthalmology and ophthalmology outpatient clinic at Zagazig University Hospitals – Egypt who cleared that, there was highly statistically significant improvement in total nurses` knowledge post intervention compared to pre intervention.

This finding was in same line with the study done by **Taha (2021)**, entitled " effectiveness of nursing intervention protocol on nurses' performance and patients' self-care after cataract surgery" performed at Benha University Hospital - Egypt, who illustrated that, the mean knowledge scores of the study group nurses improved significantly immediately post implementing nursing intervention protocol. From the researcher point of view, the reason for the marked improvement in nurses' knowledge, the nurses are supportive and cooperative and learnable.

The studied nurses practice regarding post-operative nursing intervention pre and post program

The present study found that, in the pre nursing program; nurses' postoperative practice regarding cataract surgery was generally unsatisfactory and there was a significant improvement in their postoperative practice in the post nursing program.

The findings of this study revealed that, the highest percentage of the studied nurses did not practice the instillation of eye drops correctly. At the same line, the study done by **Abdullah et al. (2021)**, entitled "educational nursing intervention: its effect on the nurses' performance, patients' daily living activities, needs and selected visual problems of cataract surge" which carried out at Menoufia university hospital and El Ramad hospital in Shebin El-Kom district, Menoufia governorate – Egypt, revealed that, there was highly statistically significant improvement in the total mean nurses' performance score related to instilling eye drops post- intervention than pre- intervention.

This finding was disagreed with the study done by **Elkasby et al. (2021)**, who revealed that high percentage of studied nurses had adequate practice level in eye drop instillation. From the researcher point of view, this result might be because the limited exposure of the studied nurses to training courses that may enhance their practices. Also, the studied nurses depended on their acquired wrong experience in changing eye dressing rather than on the correct evidence based practice.

In relation to applying eye ointment, this study revealed that, more than two thirds (the highest percentage) of the studied nurses did not practice the eye ointment correctly. This finding was in the same line with the study done by **Taha (2021)**, who showed that the study group nurses had incompetent practice scores regarding applying eye ointment before the protocol implementation and the practice improved significantly immediately post implementing nursing intervention protocol. This finding was disagree with the study done by **Elkasby et al. (2021)**, who revealed that high percentage of studied nurses had adequate practice level in applying eye ointment.

From the researcher point of view, this result might be because the limited exposure of the studied nurses to training courses that may enhance their practices. Also, the studied nurses depended on their acquired wrong experience in changing eye dressing rather than on the correct evidence based practice.

As regarding changing eye dressing with aseptic technique measures, pre-nursing program; the present study revealed that, more than half of the studied nurses did not follow aseptic technique measures when changing eye dressing. In the same line the study done by **Abdullah et al. (2021)**, revealed that, there was highly statistically

significant improvement in total mean nurses' performance score related to change eye dressing

In relation to performing eye care, the present study revealed that, pre nursing program; nearly three quarters of the studied nurses did not perform eye care correctly. At the same line, the study done by **Sayed (2022)**, entitled "assessment of critical care nurses' performance regarding eye care for critically ill patients" which carried out at Beni-Suef University Hospital's intensive care units, Beni-Suef governorate – Egypt, noted that the majority of studied nurses had unsatisfactory level of practice regarding eye care.

The findings of the current study is agree with **Tork et al. (2022)**, entitled "Effect of designed eye care protocol on nurses' knowledge and practices regarding prevention of ocular surface disorders among sedated and intubated children at pediatric intensive care unit" who stated that, the majority of the studied nurses had competent practice post designed eye care protocol implementation in all items. On the contrary, the study of **Ebadi (2021)**, entitled "Evaluating intensive care nurses' clinical competence in eye care; a cross-sectional descriptive study" which carried out at ten teaching hospitals located in Tehran, Shiraz, Qom, and Kerman cities located in Iran, who stated that, intensive care nurses' eye care practice was good.

In relation to providing complete discharge instructions, the present study revealed that, in the pre nursing program; more than three quarters of the studied nurses failed to provide complete discharge instructions. In the same line the study done by **Abdullah et al. (2021)**, that showed that, there was a highly statistically improvement in nurses' knowledge mean score regarding discharge instructions. This is disagreeing with **Abid et al. (2018)**, who showed that above half of the studied nurses gave complete discharge instructions to patients and their families.

From the researcher point of view, this result might be because the limited exposure of the studied nurses to training courses that may enhance their practices. Also, the studied nurses depended on their acquired wrong experience in changing eye dressing rather than on the correct evidence based practice.

In the post nursing program, the present study revealed that there was a significant improvement in nurses' total practice in comparison with their practice in the pre nursing program. This indicated the positive effectiveness of the program on nurses' practice. As quarter of the studied nurses have satisfactory total nurses practice regarding cataract surgery pre nursing program increased to all of them post nursing program.

At the same, the study done by **Abdel Azeem et al. (2019)**, revealed that; there was a major deficiency in postoperative nurses' practice before implementation of intervention than after the intervention.

On the other hand, the result disagree with **El Shafaey et al. (2018)**, who found that the majority of the studied nurses had fair level of practice score pre implementation of teaching program while the score was good immediately post- implementation of teaching program. From the researcher point of view, the difference could be attributed to the difference in settings and policies that allow the establishment of training programs for nurses. This finding could be attributed to lack of training programs and shortage of handling ophthalmology nursing in nursing programs.

Relation between total knowledge levels regarding cataract disease and surgery of the studied nurses and their demographic data pre and post nursing program

The present study found that, there was no statistically significant relation between nurses' age and their knowledge. This was in the same line with the study of **Grešš Halász et al. (2021)**, entitled "nurses' knowledge and attitudes towards prevention of pressure ulcers" which carried in Six major East Slovakian hospitals in two large cities, Košice and Prešov, Slovakian, that revealed there was no relation between the knowledge and age of the studied nurses.

In contrast the study done by **AlMarzooq (2020)**, entitled "Emergency department nurses' knowledge regarding triage" which conducted at Emergency Departments of King Fahad University Hospital in AL Khobar and Dammam Medical Complex in Saudi Arabia, which showed relationship between age and knowledge. The age and level of triage knowledge of nurses illustrates statistical significance and hence there exists an association between each other.

Relation between total practice levels regarding cataract disease and surgery of the studied nurses and their demographic data in the pre-nursing program

The present study found that, there was no statistical significant relation between nurses' age and their total practices level. This finding was in harmony with the study done by **Mohamed et al.**

(2019), entitled" Effect of training program on performance of nurses caring for patient with negative pressure wound therapy" that conducted at Orthopedic units in Main Mansoura university hospital and emergency hospital, Mansoura – Egypt, that illustrated that no significant relation to nurses' age and knowledge or practice score.

This was disagreeing with the study done by **Khojastehfar et al. (2020)**, that illustrated there was a significant relationship between age and nurses' practice.

Correlation between total knowledge and practices scores regarding cataract disease and surgery of the studied nurses and their age, experience in nursing field, experience in ophthalmology and number of courses attended in the pre and post program

The study found that, there was moderate association between total nurses' knowledge and their practice post nursing program. At the same line the study done by **El Shafaey et al. (2018)**, demonstrated that there is no statistical significance difference between total nurse's level of knowledge and their practice regarding postoperative cataract patients.

In contrast, the study done by **Abd-Elftah et al. (2023)**, revealed that there was high statistical significant positive correlation between studied nurses' total knowledge score, total practice score and their attitude towards eye care pre and post guidelines implementation.

The study demonstrated that, there is no association were found between total knowledge and practices scores of the studied nurses and their age, experience in nursing field, experience in ophthalmology and number of courses attended pre and post program. This finding was disagree with the study done by **Elkasby et al. (2021)**, who revealed that there is a positive statistical significant relationship between nurses' knowledge and practices with the age.

Conclusion

Based on the findings of this study; total nurses' knowledge, preoperative practice, and postoperative practice regarding the care provided to children with cataract surgery were low pre the nursing program and applying the designed nursing program could significantly improve their knowledge, preoperative practice, and postoperative practice, which consequently led to improvement of the quality of the nursing care.

Recommendations

In the light of the findings of the study, it was recommended to:

1. Ophthalmic nurses should receive periodic training programs to improve, update and refresh their knowledge and practice regarding pediatric cataract.
2. Replication of the study on a large sample size and with long term follow up can help in generalized the results on other clinical areas.
3. A simple illustrated booklet includes the most important instructional points regarding cataract surgery that should be given to nurses.

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