

# Nurses Adherence to Standardized Nursing Practices for Patients undergoing Eye Surgeries

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**Abstract:** Quality of nursing care of ocular surgery patient should be conforming to standards of care, which are considered as a starting point for better and excellent practice. **Objectives:** This study aimed to assess nurses' adherence to standardized nursing practices for patients undergoing eye surgeries. **Setting:** The study was conducted at Lions Sight First Eye Hospital, Nairobi, Kenya. **Design:** a descriptive research design. **Subjects:** A convenience sample of 70 ophthalmic nurses who were available at the time of data collection, providing direct pre and post- operative care to patients undergoing eye surgeries were included **Data collection:** Three tools were utilized: a structured questionnaire on nurses' knowledge level and perceived barriers to standardized nursing practices and an observational Checklist **Results:** Ninety two point nine percent of the studied nurses had high scores in pre-operative questions, while 87.1% had high scores in post-operative questions. Eighty eight point six percent of the studied nurses had adequate adherence to pre- operative nursing practices and (92.9%) had adequate adherence to post-operative nursing practices. The organizational related barriers had the highest mean percentage score, followed by environment related barriers and lastly individual related barriers. **Conclusion:** Most of the studied nurses had high adherence rate to standardized nursing practices but adherence varied across different domains of practice. **Recommendations:** Continuing nursing education programs/sessions on eye surgery guidelines to update and enhance ophthalmic nurses' knowledge and practice are highly recommended.

**Keywords:** Adherence, Eye surgeries, Standards of nursing practices.

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## I. INTRODUCTION

World Health Organization (WHO) has estimated globally approximately 314 million people are visually impaired and about 45 million people are blind. Almost 90% of blind and visually impaired people are living in low and middle-income countries. (Thevi, Basri, & Reddy, 2012). Ophthalmic patients receive treatment as outpatients and day cases. If hospitalized, they tend to stay for a short time in the hospital (Shaw & Lee 2017).

Eye Surgery can correct problems like cataracts and glaucoma. Other procedures can improve poor vision so as to see well without glasses or contacts. Intraocular surgery is performed within the sensitive tissues of the eye. It includes various types such as cataract-removal surgery, glaucoma-filtrating surgery, corneal surgery, and vitreoretinal surgery (Abid, 2018).

In the United States, all ophthalmic procedures performed in 29 states were analyzed and concluded that the most common procedures were lens and cataract removal (66.5%) followed by intraocular procedures (11.4%) then procedures that involved eyelids, cornea, and conjunctiva (8.2%) (Usmani, Iftikhar, Latif, & Shah, 2019).

Ophthalmic nurses should employ clear assessment skills to carry out an effective assessment. The ophthalmic nurse should have all qualities required of a nurse working in any specialty. The eye is very delicate and sensitive, and the nurse will attend to patients who will have varying degrees of anxiety about their eye and pain or discomfort in and around the eye. (Shaw & Lee 2017).

Adherence is the extent to which someone follows an agreed set of actions. It assumes an equal relationship between two people and is a voluntary process (Chapman, 2018). Adherence to guidelines is influenced by personal willingness, culture, economic and social conditions, and levels of knowledge. Non-adherence on the other hand will go against professional beliefs, norms, and expectations of the healthcare professionals (Elden & Alim, 2018).

Nurses' adherence to standardized nursing practices for patients undergoing eye surgeries has been studied both in developed and developing countries. A previous study was done at El Mansoura Hospital in Egypt, to evaluate the effect of implementing nursing guidelines on nurses' performance regarding patients undergoing cataract or glaucoma surgery (Abid, 2018). Also, the establishment of nursing care standards for surgical ophthalmic patients at Alexandria Main University Hospital in Egypt was conducted by (Adel, 1997).

Nowadays, eye surgeries are widely performed and the ophthalmic nurse is the backbone of eye care. Any deficiency in providing adequate nursing care pre or post eye surgery can lead to serious complications. The nurse plays a significant role in providing care to eye surgical patients and her role begins in the preoperative stage throughout proper evaluation of the patient. Additionally, she or he is responsible for providing patients with the necessary information and meeting their physical and psychological needs. For the success of the postoperative phase, the nurse should emphasize minimizing the patient's pain and discomfort, involving the patient and his family in postoperative care, preventing complications as possible, and providing complete discharge instructions. (Shaw, 2017).

Therefore, the ophthalmic nurse can increase the quality of care during every patient encounter. Doing so promotes patient comfort and satisfaction and improves outcomes regarding vision, eye health, and overall well-being. The purpose of this study is to assess nurses' adherence to standardized nursing practices for patients undergoing eye surgeries. To the best of the researcher's knowledge, there are no studies done on the national level regarding nurses' adherence to standards of practices for patients undergoing eye surgeries. Inherent in the previous statements is the need to seek and ascertain the extent of nurses' adherence to standardized nursing practices provided for patients undergoing eye surgeries. (Fischer, Lange, Klose, Greiner, & Kraemer, 2016)

## II. MATERIALS AND METHOD

### MATERIALS

#### Research design:

A descriptive research design was utilized to meet the aim of the present study.

#### Setting:

The present study was conducted at Lions Sight First Eye Hospital, Nairobi, Kenya.

#### Study subjects:

A convenience sample of 70 ophthalmic nurses who were available at the time of data collection, providing direct pre and post-operative care to patients undergoing eye surgeries and who agreed to participate in the study were included.

Epi info program v 7.0 was used to estimate the minimum sample size.

#### Study tools:

Three tools were used in conducting this study for data collection.

#### Tool I: Nurses' Adherence to Standardized Nursing Practices for Patients undergoing Eye Surgeries; an Observational Checklist.

This tool was developed after reviewing recent national and international relevant literature (Walton et al., 2010; MoH-Kenya, UKaid, 2017; Shaw, 2016; Merbs et al., 2015). It was used to observe nurses' adherence in accordance with

standardized nursing practices as they carry out pre- and post-operative nursing interventions. It comprised standardized practices regarding main broad items as follows: routine admission nursing care, immediate nursing interventions, and instructions, follow-up and written and verbal communications. These nursing activities were checked on a 3 point Likert Scale, ranging from being “done adequately” (2 scores), “not done”(one score), and “inapplicable” (zero score).A total percent score of 75% or more was considered “Adequate” adherence to standardized practices. A score of 60-<75% implied “inadequate” adherence and a score of less than 60% denoted “Poor” adherence.

### **Tool II: Nurses’ Knowledge of Standardized Nursing Practices for Patients undergoing Eye Surgeries: A Structured Questionnaire.**

This tool was developed after reviewing recent national and international relevant literature. (World Health Organization, 2013; MoH-Kenya UKaid, 2017; Cooper et al., 2016). It consisted of two parts as follows:

#### **Part I: Nurse's Socio-demographic Characteristics:**

This part contained nurse participant’s socio-demographic characteristics, as well as previous attendance of training courses related to nursing patients undergoing ophthalmicsurgeries.

#### **Part II: Nurse's Knowledge regarding the Standardized Practices of Patients Undergoing Eye Surgeries.**

This part included 23 multiple-choice questions (MCQ). Each question had four alternatives with only one correct response. Nurses’ responses were scored on 4 choices multiple-choice questions. These questions addressed the knowledge regarding the standardized pre and postoperative nursing practices of patients undergoing eye surgeries. Each “correct response” was given a score of one and “wrong response” was given a score of zero. Scores of the items were then summed up and converted into percentages. A total percent score of >85% was considered "excellent" level, from 75 to <85%"; very good", from 65 to <75%; "good", 60 to <65%;" satisfactory" and less than 60%" fail or poor".

### **Tool III: Nurses’ Perceived Barriers to Adherence to Standardized Nursing Practices for patients undergoing Eye Surgeries.**

The tool was also developed based on recent literature (Efstathiou et al., 2011; Akagbo, Nortey, & Ackumey, 2017). It was used to identify nurses’ perceptions of barriers to their adherence to standardized nursing practices for patients undergoing eye surgeries. The items included: Individual, organizational and environmental factors. Nurses’ responses were also scored on a 3 point Likert Scale ranging from “Agree” (2 scores), “neutral” (1 score), and “Disagree” (zero score).The total score for this part was calculated and converted into percentage scores. A total percent score of 75% or more denoted “High” perception of the barriers, from 60 to <75% “Moderate” perception of the barriers, while scores of less than 60% implied “Low” perception.

## **METHOD**

### **1. Written Approval**

The study protocol was approved by Ethical Research Committee of the Faculty of Nursing, University of Alexandria and Moi University/Moi Teaching and Referral Hospital, Institutional Research and Ethics Committee (IREC) and, Lions Sight First Eye Hospital administrative authorities.

### **2. Tool development**

The three study tools I, II and II were developed by the researcher after reviewing the recent relevant literature in English.

### **3. Validity**

Content and construct validity of the study tools were tested by five experts’ members in the field of Medical-Surgical Nursing, Faculty of Nursing-University of Alexandria.

### **4. Reliability**

Reliability for the study tools was estimated using the Cronbach'sAlpha test.

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### 5. Pilot study

A pilot study was conducted to ascertain the clarity, feasibility, and applicability of the study tools. It was conducted on 10% (7 nurses) of the study subjects outside the sample and fulfilling subjects inclusion criteria, from the Lions Sight First Eye Hospital Nairobi, Kenya, who provided direct care for patients undergoing ophthalmic surgeries. In the light of the findings of the pilot study, modifications were done, accordingly.

### 6. Data collection:

- Study nurses providing direct pre and post-operative nursing interventions for patients undergoing ocular surgeries were, observed using tool I. Individual subjects were observed twice for the specified nursing practices.
- Nurses' knowledge of standardized nursing practices for patients undergoing eye surgeries was evaluated using tool II.
- Nurses' perceived barriers to adherence with standardized nursing practices for patients undergoing eye surgeries, was measured using tool III. Tool II and III was introduced to subjects during break hours at morning and afternoon shifts, as feasible.
- Data collections took about two months. This was carried out daily from 8am to 5pm excluding vacations.

### 7. Ethical considerations:

- Verbal and written nurses' informed consent to participate in the study was obtained from the study ophthalmic nurses after explaining the aim of the study, its potential benefits, before data collection, and assured that data collection was used only for the purpose of the study.
- Written witness confirmed consent was obtained from the head nurse of the study setting.
- Nurses' anonymity, the privacy of study subjects, and confidentiality of the collected data were maintained during the execution of the study.
- Participation in the study was entirely voluntary and study subjects were assured they had the right to withdraw from the study at any time.

### 8. Data Processing and Statistical Analysis

Data were fed to the computer and analyzed using IBM SPSS software package version 20.0. (Armonk, NY: IBM Corp). The Kolmogorov-Smirnov test was used to verify the normality of distribution. The significance of the obtained results was judged at the 5% level.

#### The used statistical tests were:

#### 1 - Chi-square test

For categorical variables to compare between different groups.

#### 2 – Monte Carlo Correction test

This test was used for correction of chi-square when more than 20% of the cells have expected count less than 5.

#### 3 - Pearson Correlation Coefficient test

This test was used to correlate between two normally distributed quantitative variables.

#### Graphical presentations

Graphs were done for data visualization of study findings using Microsoft Excel software.

III. RESULTS

Results revealed the following:

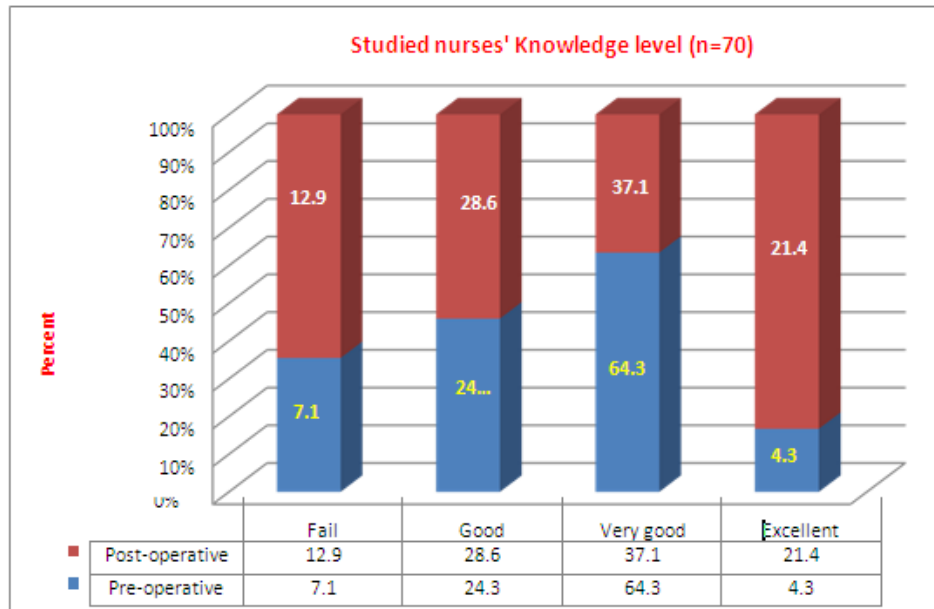
**Table (1):** The studied nurses were aged between 20 to 60 years old. More than three-quarters of them were females (77%). Seventy-seven percent of the studied nurses had a diploma in nursing, and 19 % had a technical school of nursing certificate. Sixty four percent of the studied nurses had less than 5 years of working experience in field of ophthalmology. The majority of the studied nurses (94%) reported to have attended previous training courses related to ophthalmic nursing surgical care and 48% of them, stated they had attended the training courses several times.

**Table (1): Frequency distribution of the studied nurses according to their socio-demographic characteristics (n=70).**

Nurse's socio-demographic characteristics	No.	%
<b>Gender</b>		
Male	16	22.9
Female	54	77.1
<b>Age in years:</b>		
20 >30	36	51
30>40	25	36
40>50	7	10
50≥ 60	2	3
<b>Marital status</b>		
Single	30	43
Married	38	54
Widow	2	3
<b>Level of education:</b>		
Certificate in nursing	13	19
Diploma in nursing	54	77
Bachelor's degree in nursing (BSc)	3	4
<b>Years of experience in ophthalmic surgery department:</b>		
>5 years	45	64.3
5 > 10 years	17	24.3
10>20 years	5	7.1
≤20 years	3	4.3
<b>Attendance of nursing the ophthalmic surgery patient training courses:</b>		
Yes	66	94.3
No	4	5.7
<b>Number of attended courses: (n=66)</b>		
Once	9	13.6
Twice	8	12.1
Three times	1	1.5
Several times	48	72.7

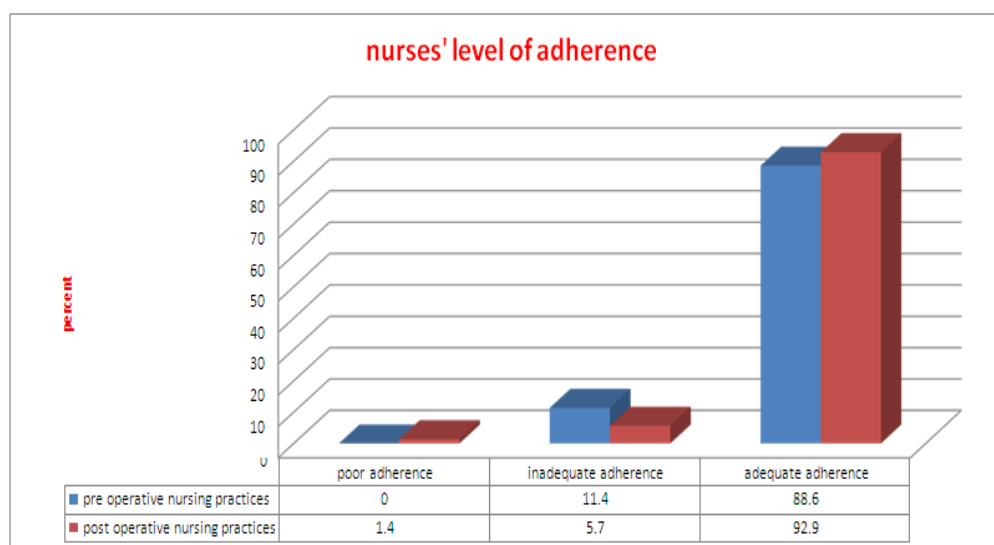
**Figure (1):** displays frequency distribution of the studied nurses according to their levels of knowledge regarding standardized practices for patients undergoing eye surgeries. This figure illustrate that 7.1% of the studied nurses had the lowest score in pre-operative questions, while (92.9%) had high scores in pre-operative questions with a mean of

75.48±9.51. For post-operative management questions 12.9% of the studied nurses had the lowest scores, while (87.1%) had high scores with a mean of 76.62±14.57. Both pre and post-operative percentage scores of the studied nurses were (94.3%) with a mean of 76.02±9.59.



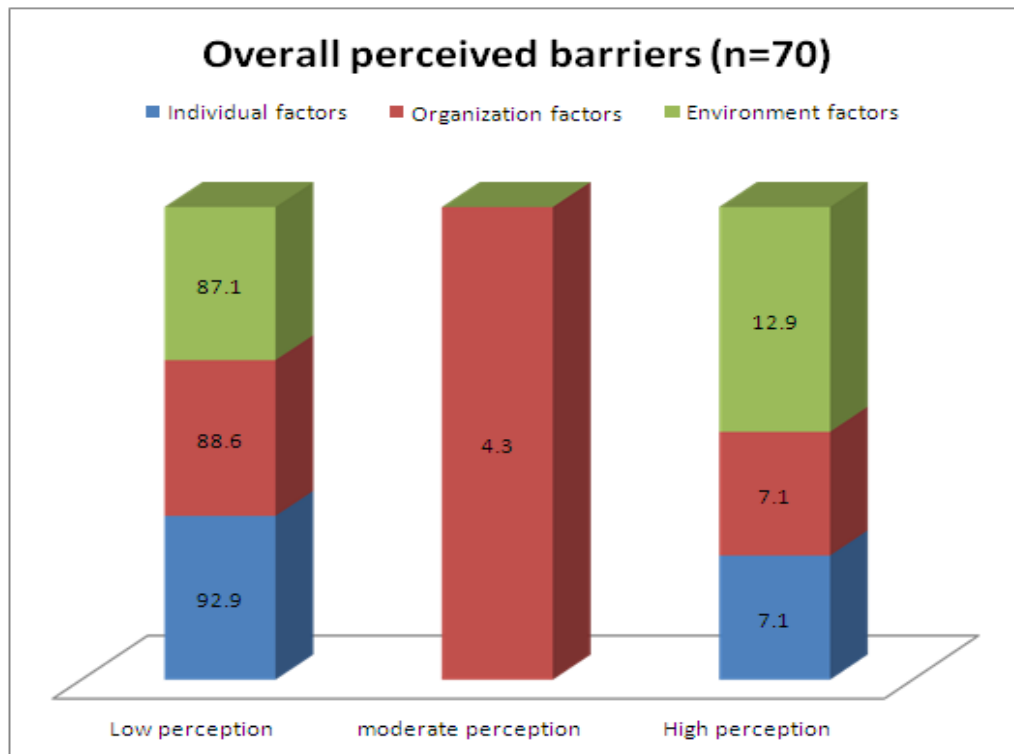
**Fig.1: Frequency distribution of the studied nurses according to their levels of knowledge regarding standardized practices for patients undergoing eye surgeries.**

**Figure (2):** Eighty eight point six percent of the studied nurses had adequate adherence to pre- operative nursing practices with a mean of 58.55±0.91. Under pre-operative nursing practice, “pre-operative physical care” had the highest mean of 66.16±3.10, while “pre-operative nursing instructions” had a low mean of 50.00±0.00. The overall mean score of the studied nurses’ post-operative nursing practices was 76.46±3.08. Ninety two point nine percent of the studied nurses had adequate adherence to post-operative nursing practices. The highest mean score was on “post-operative teaching” i.e. 98.57±11.95, while the lowest mean was on “eye ointment installation” with a mean of 5.71±23.38. The overall mean score of the studied nurses on the observational checklist was 70.21±2.07.



**Fig.2: Frequency distribution of the studied nurses according to their level of adherence to standardized nursing practices for patients undergoing eye surgeries. (n=70)**

**Figure (3):** Individual-related barriers were regarded by more than three-quarters of the studied nurses as low barrier (92.9%), followed by environment- related barriers and organizational barriers (87.1% and 88.6%), respectively. Around four percent of the studied nurses regarded organizational barriers as moderate barriers. Thirteen percent of the studied nurses indicated that environment-related barriers were high barriers to implementation of standardized nursing practices while 7.1% expressed individual-related and organizational barriers as high barriers.



**Fig.3:** Frequency distribution of the studied nurses according to their levels of overall perceived the barriers to adherence to standardized nursing practices for patients undergoing eye surgeries.

**Table (2):** Statistical significant relationships were detected between nurses' attendance of ophthalmic surgery training courses and the overall nurses' knowledge level ( $\chi^2=15.25$ , &  $p<0.001$ ). There was also, a statistical significant relationship between the studied nurses' number of attended courses in ophthalmic nursing and their overall knowledge level ( $\chi^2= 21.995$  &  $p=0.007$ ).

**Table (2):** Relationships between the overall knowledge levels with nurse's Socio demographic characteristics.

Nurses' Socio-demographic Characteristics	Overall Nurses' knowledge								$\chi^2$	MC <sub>p</sub>
	Fail or poor (n=4)		Good (n=22)		Very good (n=31)		Excellent (n=13)			
	No.	%	No.	%	No.	%	No.	%		
<b>1. Gender</b>										
Male	3	75.0	5	22.7	5	16.1	3	23.1	5.831	0.103
Female	1	25.0	17	77.3	26	83.9	10	76.9		
<b>2. Age in years:</b>										
20 >30	3	75.0	10	45.5	19	61.3	4	30.8	12.434	0.117
30>40			8	36.4	9	29.0	8	61.5		
40>50			4	18.2	2	6.5	1	7.7		
50≥60	1	25.0			1	3.2				



3. Marital status										
Single	3	75.0	8	36.4	15	48.4	4	30.8	10.209	0.066
Married			13	59.1	16	51.6	9	69.2		
Widow	1	25.0	1	4.5						
4. Level of education:										
Certificate	1	25.0	4	18.2	3	9.7	5	38.5	10.228	0.057
Diploma	3	75.0	15	68.2	28	90.3	8	61.5		
BSc. Nursing			3	13.6						
5. Years of experience in the ophthalmic surgery department:										
>5 years	3	75.0	12	54.5	22	71.0	8	61.5	7.446	0.564
5 > 10 years			6	27.3	7	22.6	4	30.8		
10>20 years			3	13.6	1	3.2	1	7.7		
≤20 years	1	25.0	1	4.5	1	3.2				
6. Attendance of Nursing the ophthalmic surgery patient training courses:										
Yes	1	25.0	21	95.5	31	100.0	13	100.0	15.525*	<0.001*
No	3	75.0	1	4.5						
7. Number of attended courses:										
Once			5	22.7	2	6.5	2	15.4	21.995*	0.007*
Twice			4	18.2	3	9.7	1	7.7		
Three times					1	3.2				
Several times	1	25.0	12	54.5	25	80.6	10	76.9		
None	3	75.0	1	4.5						

$\chi^2$ : Chi square test

MC: Monte Carlo

p: p-value for associating between different categories

\*: Statistically significant at  $p \leq 0.05$  n: number of studied nurses

**Table (3):** There was a statistically significant relationship between the studied nurses' gender and the overall perceived barriers ( $\chi^2=5.745$  &  $p=0.033$ ). There was also, a statistical significant relationship between the studied nurses' attendance of ophthalmic nursing training courses and the overall perceived barriers ( $\chi^2=17.190$  &  $p<0.001$ ). Also, the relationship between the number of attended courses and the overall perceived barriers was statistically significant (since  $\chi^2=24.392$  &  $p=0.001$ ).

**Table (3): Relationships between the overall perceived barriers level and nurses' socio-demographic characteristics. (n=70)**

Nurses' Socio- demographic Characteristics	Overall Perceived Barriers						$\chi^2$	MC <sub>p</sub>
	Low (n=65)		Moderate (n=1)		High (n=4)			
	No.	%	No.	%	No.	%		
1. Gender								
Male	13	20.0			3	75.0	5.745*	0.033*
Female	52	80.0	1	100.0	1	25.0		
2. Age in years:								
20 >30	31	47.7	1	100.0	4	100.0		



30>40	25	38.5					7.079	0.457
40>50	7	10.8						
50≥ 60	2	3.1						
<b>3. Marital status</b>								
Single	26	40.0	1	100.0	3	75.0	5.403	0.323
Married	37	56.9			1	25.0		
Widow	2	3.1						
<b>4. Level of education:</b>								
Certificate	13	20.0					2.894	0.722
Diploma	49	75.4	1	100.0	4	100.0		
BSc. Nursing	3	4.6						
<b>5. Years of experience in ophthalmic surgery department:</b>								
>5 years	40	61.5	1	100.0	4	100.0	4.915	0.830
5 > 10 years	17	26.2						
10>20 years	5	7.7						
≤20 years	3	4.6						
<b>6. Attendance of nursing the ophthalmic surgery patient training courses:</b>								
Yes	64	98.5	1	100.0	1	25.0	17.190*	<0.001*
No	1	1.5			3	75.0		
<b>7. Number of attended courses:</b>								
Once	8	12.3	1	100.0			24.392*	0.001*
Twice	8	12.3						
Three times	1	1.5						
Several times	47	72.3			1	25.0		

$\chi^2$ : Chi square test                      MC: Monte Carlo

p: p-value for associating between different categories

\*: Statistically significant at  $p \leq 0.05$  n: number of studied nurses

**Table (4):** There were negative correlations between the overall knowledge levels and the overall perceived barriers to adherence to the standardized nurses' practices for patients undergoing eye surgeries ( $p < 0.001$ ).

**Table (4):** Correlations between the overall standardized nurses' practices, overall nurses' knowledge, and the overall perceived barriers hindering adherence to standardized nursing practices for patients undergoing eye surgeries. (n=70)

Item	r	p
Nurses' knowledge Vs. standardized nurses' practices	-0.109	0.371
Nurses' knowledge Vs. perceived barriers	-0.550*	<0.001*
Standardized nurses' practices Vs. perceived barriers	0.187	0.122

r: Pearson coefficient

\*: Statistically significant at  $p \leq 0.05$  n: number of studied nurses

#### IV. DISCUSSION

The current study revealed that two-thirds of the studied nurses were females. The segregation of more female than male respondents was a factor of nursing staffing, with nursing described as a female-dominated profession (Kouta & Kaite, 2011; Ossai, 2014). Slightly more than half of the studied nurses aged between twenty and thirty years. This age bracket is

associated with heightened professional activity in all fields. The majority of the nurses had less than 5 years of experience. Over 5 years' experience in many professions is considered adequate to practice effectively (Lucas, 2011). A similar study done on 8 different hospitals indicated that work ability of nursing professionals varied by age and work experience. The young nurses, mental demands of work were a critical influence on their work ability. (Chiu et al., 2007). The majority of the studied nurses reported attending previous training courses related to nursing care in ophthalmic surgery. Mafwin, Kisenge, & George (2014), also reported that about two-thirds of the studied nurses received eye care training.

The finding of this study on nurses' level of knowledge indicated that the majority of the studied nurses had a high level of knowledge regarding pre-operative nursing practices. These results might be attributed to the reported number of several training courses that the studied nurses attended related to nursing practices. Similar findings were reported by Mafwiri, Kisenge, & Gilbert (2014) and Abid (2018) indicated that after training nurses on eye conditions, there was an improved knowledge and practice change. In this context, Taha (2015) stated that nurses need to be knowledgeable on eye diseases through the use of standardized nursing practices. Kalua et al. (2014) reported that most health workers had low knowledge and skills on eye diseases. Byamukama & Courtright (2010) reported that many nurses in their study had a low level of knowledge about eye surgeries. The studied nurses in the present study also demonstrated high levels of knowledge, about post operative practices. Similarly Taha (2015) concluded that after implementation of the guidelines, the studied nurses' knowledge in all tested areas, improved.

In this context, Menlah et al. (2018); Shoqirat, Mahasneh, Al-Khawaldeh, & Al Hadid (2019) concluded that their studied nurses had an inadequate level of knowledge regarding post-operative pain management. Also, Adams, Varaei, & Jalalinia (2020) declared similar findings. Nurses therefore, need to be empowered through continuing education/training programs to keep abreast with changing trends and evidence-based pre- and post-operative practices.

In the current study, the overall level of knowledge of the studied nurses regarding pre- and post-operative practices was high. This finding could be attributed to nurses' experience as well as the several training courses the studied nurses had undergone. Similarly, Bubb, Mathews, Oehring, & Harper (2021); Abid (2018) concluded that their studied nurse practitioners had a high level of knowledge on glaucoma surgery. Shrestha et al. (2018); Padmajothi et al. (2019) and Ichhpujani, Bhartiya, Kataria, & Topiwala (2012) however, revealed a low level of knowledge on eye diseases and nursing practices.

Pre-operative evaluation is a process of clinical assessment that precedes the delivery of anesthesia care for surgical procedures. It includes a review of medical records and recent test results, a comprehensive medical history, and physical examination (Usmani, Iftikhar, Latif, & Shah, 2019). The majority of the currently studied nurses adhered with this pre-operative evaluation. Similar findings have been reported in a retrospective study by (Palareti et al., 2016). Adherence with obtaining a family history on ocular diseases had a low percentage in this study. This can be explained by nurses' assumption that obtaining ocular family history is primarily the ophthalmologist responsibility in pre-admission visit. Takusewanya (2019); Hardy (2009) emphasized the importance of taking accurate and efficient patient history by the nurse before eye surgery. Family eye history also helps to establish familial predisposition of inheritable ocular disorders like glaucoma, retinoblastoma or congenital eye diseases, diabetes, and hypertension.

The majority of the currently studied nurses reported that they always check recent laboratory results in patient's file. In this regard, Nilsson (2016) mentioned that in a similar study, both healthcare staff and nursing students demonstrated decreased levels of adherence to blood specimen collection guidelines. Nevertheless, it was noticed that the majority of the currently studied nurses provided psychological care to the patients. Hegazy, Ragheb, Elsaid & Rashad (2012) however, reported that in their study, no psychological preparation was offered by nurses before cataract surgery. Only one-third of the currently studied nurses obtained patients informed consent. This finding could be attributed to the current hospital policy, that doctors are more responsible for obtaining informed consent. Faison (2018) carried out a systematic review of nurse's role about the informed consent process, and showed that nurses had several roles in informed consent process. Susilo et al. (2013) were in line with the current study, and concluded that obtaining informed consent depends on the hospital culture and policy. Nevertheless, Ali, Lalani & Malik (2012) reported that a high percentage of the nursing staff obtained informed patients consent, before surgery. Agnew & Jorgensen (2012) also emphasized the importance of supporting the consent process by the nurse.

All the studied nurses in the present study were found not providing pre-operative education, before surgery. Similar studies by **Beth, Lih, & Kushalan (2015)** and **Abid (2018)** concluded that majority of the nurses did not provide patients and families with appropriate preoperative health teaching. One possible explanation of this result could be because of limited time in the day surgeries. **Farrell & Dempsey (2013)** revealed that preoperative teaching and education was not done on the day of surgery, but rather in pre-admission visit. This inadequate adherence to preoperative teaching can also be attributed to several causes such as large numbers of patients, and tight surgery schedules. **Lee & Lee (2013)** on the other hand, suggested that nurses' availability, and language barriers as factors affecting the provision of preoperative teaching. It was noticed that the majority of the studied nurses were carrying out patients' physical preparation efficiently, on most procedures. A similar finding was concluded by **Sayin & Aksoy (2012)**. **Christoforo & Carvalho (2009)** however reported that there was a deficiency regarding patients' physical preparation.

In the current study, there was adequate adherence to marking surgical sites by the studied nurses. A similar study, concluded that surgical site marking can be performed by trained nurses. However, surgeons remain fully responsible for the correct operation on the correct patient (**Schäfli-Thurnherr, Biegger, Soll, & Melcher, 2017**).

All the current participants study were not adhering to pre-operative fasting, simply because all the patients undergoing eye surgeries were induced under local anesthesia. According to **Popovic, Schlenker, Goldshtein, Rai, & El-Defrawy (2019)** a survey carried out, by the British Ophthalmic Anesthesia Society, revealed that over 50% of the centers, do not require fasting before cataract surgery. The results of the current study agreed with a retrospective study to investigate the possibility, that fasting is not required before cataract surgery, suggested that it is safe to perform cataract surgery under topical or infiltration anesthesia with intravenous sedation, without fasting before surgery (**Sanmugasunderam & Khalfan, 2009**).

Although majority of the studied nurses, were carrying out efficient immediate post-operative practices, all of them, however, had an inadequate adherence to post-operative vital signs, possibly because all the patients were undergoing surgery under local anesthesia rather than general. Equally, **Cupo, Scarinci, Ripandelli, Sampalmieri & Giusti (2012)** compared changes in vital signs and pain levels experienced by patients during phacoemulsification using either topical or local anesthesia, concluded that use of topical or local anesthesia for cataract surgery had a more stable heart rate, diastolic and mean blood pressures. The highest percentage of the studied nurses had adequate adherence to eye drop and eye ointment administration. This high adherence rate can be attributed to the several times of training they had undergone. **Shaw (2016)** and **Gao et al. (2018)**, also stressed that eye care practitioners should pay more attention to eye drop administration. **Abid (2018)** however, reported that nurses did not practice eye drops administration and ointment application correctly. **Taha (2015)** also, reported nurses' low adherence to eye drop administration and ointment application.

The majority of the studied nurses had adequate adherence to aseptic eye dressing following aseptic technique. **Gould, Gallagher, Chudleigh, Purssell, & Hawker (2020)**; **Pickering & Marsden (2015)** emphasized the importance of aseptic eye dressings. **Taha (2015)** and **Abid (2018)** concluded that none and most of the nurses in their studies were not following aseptic change of eye dressings. The current study revealed that all the studied nurses provided post-operative teaching and complete discharge instructions to the patients and their family members. Also patients and their family members were provided with written down discharge instructions as well as verbal instructions. In this regard, **Atinyagrika Adugbire & Aziato (2018)** emphasized that nurses require good communication and attitude when providing post-operative teaching and discharge instructions. Also, **Ingadóttir & Zoëga (2017)** emphasized patient discharge education and its related role. Similarly, **Gülşen & Akansel (2020)** on a controlled comparative study to assess the impact of planned discharge education on patients who underwent cataract surgery concluded that discharge education was effective to the patients. Nevertheless, **Kang, Gillespie, Tobiano, & Chaboyer (2018)** found out that the quantity of nurses discharge education was low and incomplete discharge instructions. In the current study, the overall adherence of the studied nurses with the standardized nursing practices for patients undergoing eye surgery was adequate. **Vaismoradi, Tella, Logan, Khakurel, & Vizcaya-Moreno (2020)** had similar findings although, **Taha (2015)** revealed low adherence of the studied nurses before implementation of the guidelines.

Since the inception of the nursing practices for patients undergoing eye surgeries, the uptake of these nursing practices has been variable due to important barriers. Interestingly, more than two-thirds of the studied nurses in this present study

disagreed that lack of knowledge; losing skills, forgetfulness, and lack of clear guidelines were considered as individual-related barriers to adherence to the standardized nursing practices. There were printed and visibly displayed posters for pre- and post-operative management of patients undergoing eye surgeries, in the current setting wards, which helped as reminders in the implementation by most nurses. There were also available nursing practices checklists to facilitate communication. **Jansson, Syrjälä, Talman, Meriläinen, & Ala-Kokko (2018)** however, indicated a disagreement on the individual-related barriers.

Organization-related barriers that the studied nurses disagreed with, in the current study were inaccessible guidelines, inadequate supervision, lack of accountability, lack of collaboration with other health care providers, unstable work environment, and lack of training programs. Multidisciplinary collaboration in the current study was observed. Effective communication and teamwork was also detected which greatly improved adherence. The ophthalmic nurses in the current study setting have access to the recent up-to-date books in the settings. More than one-third of the studied nurses agreed that heavy workload, nursing staff shortage, and lack of motivation were organizational barriers to adherence. A similar finding by **Mosavianpour, Collet, Sarmast, & Kissoon (2016)** indicated that studied nurses reported that lack of motivation was one of the barriers to implementing the guidelines. Therefore, it is important for successful implementation of the guideline to motivate nurses and the best way is involve nurses in the development of the guidelines. Interestingly, a study from Ethiopia by **Hadgu (2015)** demonstrated that heavy workload inhibited the implementation of the guidelines.

Environment-related factors that were strongly disagreed as barriers by most studied nurses included; unavailability of required equipment and lack of time to implement the guidelines. **Contrada (2012)** revealed in this context that, it is important to mitigate barriers like unavailability of required equipment because it may derail successful implementation of the guideline. Similarly, **Ngao (2015)** demonstrated that factors like unavailable resources and lack of sufficient time were considered as barriers affecting implementation of guidelines.

In the present study, there were no statistical significant relationships between nurses' gender and their knowledge and practice of standardized nursing practices. Also, **Abid (2018)** had similar findings. There were no statistical significant relationships regarding nurses' age and their knowledge and practices in the present study. **Taha (2015)** also had similar findings. Statistical significant relationships were detected between the studied nurses who attended training courses, the number of times they attended the courses, and the overall level of knowledge **Amsalu, Messele, & Adane (2021)**, revealed similar findings. **Chaghari, Saffari, Ebadi, & Ameryoun (2017)** concluded that empowering education can facilitate a high level of knowledge which in return will help achieve greater mastery of professional skills among nurses. Statistical significant relationships were detected between the studied nurses' age and the overall perceived barriers to adherence to standardized nursing practices. The younger nurses who were the majority in the study were newly employed, with perhaps limited exposure in the current setting. Therefore, they were more likely to indicate the barriers to the guidelines. **Ngao (2015)** also, identified that younger nurses were more likely to indicate barriers to the guidelines.

There was a negative correlation between the overall current ophthalmic nurses' knowledge and the overall perceived barriers with the standardized nursing practices for patients undergoing eye surgeries. Most ophthalmic nurses had attended several training courses and eventually this experience could have contributed to their low perception of barriers. A similar finding was established by **Khammarnia, Haj Mohammadi, Amani, Rezaeian, & Setoodehzadeh (2015)** who concluded that the number of training courses attended by the studied nurses was associated with barriers to implementation of guidelines. Generally, the overall adherence of the studied nurses to the standardized nurses' practices, both pre- and post operatively was high and/or adequate.

## V. CONCLUSION AND RECOMMENDATIONS

### Conclusion

Majority of the currently studied nurses had adequate adherence to the standardized nursing practices for patients undergoing eye surgeries. Overall high adherence related to practices of preoperative and post-operative management of patients undergoing eye surgeries, was revealed. Nurses' knowledge level of pre- and postoperative practices regarding standardized nursing practices for patients undergoing eye surgeries was excellent.

**Recommendations**

- Continuing nursing education programs/sessions on eye surgery guidelines to update and enhance ophthalmic nurses' knowledge and practice are highly recommended.
- Adjusting nurse-patient ratios to enhance adherence to standardized nursing practices, for patients undergoing eye surgeries, is needed.
- Periodic audits and feedbacks on implementation of standardized nursing practices, to create awareness and motivation among the ophthalmic nurses, are highly advocated.
- Orientation and in-service training for ophthalmic nurses regarding implementation of standardized nursing practices to reduce variations in practices, need to be updated.

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