Effect of Quality of Care Program on Nurses' Innovative Behavior at Tanta Ophthalmic Hospital

[1] Hanady M. Elsawaf, [2]Samer H.Gadery, [3] Heba K. Obied, [4]Walaa M. Eid

[1] Tanta Ophthalmic Hospital,

[2] Professor, Nursing Administration, Faculty of Nursing, Tanta University.

[3] Assistant Professor, Nursing Administration, Faculty of Nursing, Tanta University.

[4]Lecturer, Nursing Administration, Faculty of Nursing, Tanta University.

Abstract

Background: Quality care is the right of all patients and the responsibility of all nurses to gain desired outcome by using innovative behavior for generating new ideas directed to apply implement new knowledge or improved processes to reach best result. **Aim**: To determine the effect of quality care program on nurses' innovative behavior at Tanta Ophthalmic Hospital. **Subjects and Method: Setting:** the study was conducted at Tanta Ophthalmic Hospital affiliated to Ministry of Health and Population. **Subjects**: Consisted of all available (N=80) ophthalmic nurses who provide direct care to patients at Tanta Ophthalmic Hospital. **Tools:** Data were collected using four tools. Structured Knowledge Questionnaire about Quality of Care and Innovative Behavior, Ophthalmic Nurses' Quality Care Observational Checklist, Ophthalmic Nurses' Commitment and Improvement Self-Report and Innovative Behavior Assessment Scale. **Results:** 78.8% of ophthalmic nurses had poor total knowledge level of quality care that improved to be majority (90.3%) of them had good total level of knowledge at immediately post program. Also, there was statistically significant correlation between ophthalmic nurses' innovative behavior and all quality care dimensions except for involvement of family and continuity of care dimensions. **Conclusion:** Implementation of a designed program about quality care dimensions and innovative behavior lead to significant improvement in ophthalmic nurses' knowledge about quality care and innovative behavior. **Recommendations:** Integrate quality care dimensions in ophthalmic hospital policy, encourage nurses to generate innovative ideas, support application of these ideas, and follow barriers hinder its applicability.

Key words: Educational program, Innovative behavior, Ophthalmic hospital, Ophthalmic nurses, Quality of care.

Introduction

Ophthalmic hospital is healthcare setting that provides comprehensive surgical and medical quality eye care to patients suffering from eye problems. [1] It included all aspects of visual function in health and disease, including strabismus, refraction and binocular vision. As well as medical and surgical treatment of eye diseases, the visual pathways and structures around the eye. [2] Ophthalmic hospitals should be staffed with registered nurses possess specialized knowledge and skills to provide a comprehensive high quality care for ophthalmic patients. Ophthalmic nurses provide first aid treatment in cases of eye injuries and emergencies, collect medical histories, educate patients on the treatment of ocular conditions, prepare patients for surgery and assist during operations. [3]

In addition, ophthalmic nurses recognize the opportunities and boundaries of their role that necessitate acquiring skills, competencies and working as part of a team to deliver high-quality patients' care. [4] High quality care can be achieved through specification of its dimensions

that include patient care, team commitment and continuous improvement. [5] Patient care dimension directed to identify and satisfy the full range of ophthalmic patients' needs and preferences. [6] It includes integration of care, information and education, respect for patients, emotional support, physical comfort, continuity of care and access to care and family involvement. [7]

Team commitment dimension is one of quality care dimensions including communication, care coordination, mutual support and cohesion, effectiveness and efficiency. [8] Continuous improvement dimension is one of quality care dimensions motivating ophthalmic nurses to develop their ability to care for the eye, find new means of carrying out care in compliance with organization mission/vision of improving care quality. [9] In order to reach innovative behavior ophthalmic nurses need to identify, capture, interpret and share new knowledge to connect them to their own existing knowledge base. [10]

Innovative behavior is essential for development and implementation of new problem-solving ideas. [11] Furthermore, application of innovative ideas promotes care and nursing interventions, encourages the use of knowledge and skills to change old ways of thinking and practicing as well as develop new working methods. [12] Ophthalmic nurses' innovative behavior has key defining attribute that clarify its use. These attributes include opportunity exploration, idea generation, search for idea, idea communication, idea promotion, championing of idea, application and overcoming obstacles. [12]

Ophthalmic healthcare has been facing challenges in recent years to respond more effectively to the increasing patients' demands for better quality care. [13] Ophthalmic nurses need to be equipped with essential knowledge and skills to deal with these challenges. [14] Several research studies have highlighted out the need for planning nursing practice, submission and evaluation of the use of innovative strategies to achieve care quality.

[15,16] Other studies concluded that effects of innovative behavior include solving the organizational problems, enhancing organizational commitment, efficiency and effectiveness. [17] The importance of innovations in nursing is to understand the nurses' contribution in health care to create environments that inspire innovation and shape practice in new and improved ways. Online with these studies conducting quality care program can improve ophthalmic nurses' knowledge regarding quality care dimensions and use their knowledge to create new ideas for practice. [18]

Aim of the study

Determine the effect of quality of care program on nurses' innovative behavior at Tanta Ophthalmic Hospital.

Research hypothesis

-After the implementation of quality of care program the ophthalmic nurses' knowledge about quality care dimensions and innovative behavior are expected to be improved.

Subjects and method

Study design:

Quasi experimental research design was used to achieve the aim of present study. Such design fits the nature of the problem under investigation. It is an empirical study that is used to estimate the casual impact of an intervention on its target population and the criterion for assignment is selected by the researcher. [19]

Setting:

The present study was conducted at Tanta Ophthalmic Hospital affiliated to Ministry of Health and Population at Al Garibay Governorate. It includes 79 beds, average number of patients about 2000 Patient/month, average length of stay one day/patient. It is specialized hospital focus on eyes condition and

problems associated with it. It has five main departments includes emergency, Male Inpatient, Female Inpatient, Outpatient Clinics and Operating Rooms. Outpatient Clinics divided into two parts; General Ophthalmic Clinics (provide general ophthalmic care to patients of different optic problem and different age groups) and Specialized Ophthalmic Clinics (provide care to patients with specific eye problem as glaucoma, retinal problem, squint, laser and cosmetics for congenital deformities of eyes).

Subjects:

The study subject consisted of (N=80) ophthalmic nurses who provide direct care to patients at Tanta Ophthalmic Hospital. It divided to 10 nurses working on Emergency Departement,10 nurses working on Male Inpatient Department, 10 nurses working on Female Inpatient Department, 20 nurses working on Operating Rooms. 15 nurses working on General Ophthalmic Clinics and 15 nurses working on Specialized Ophthalmic Clinics.

Tools of Data Collection

To achieve the aim of this study four tools were used:

Tool I: Structured Knowledge Questionnaire about Quality of Care and Innovative Behavior.

This tool was developed by the researcher guided by **Burhans and Alligood (2018)** [20] and recent related literature[21] to assess ophthalmic nurses' knowledge about quality of care and innovative behavior. It included two parts as follow:

Part one: personal data of ophthalmic nurses included age, sex, marital status, department, level of education, years of experience, attendance of training courses on quality and numbers of courses attended.

Part two: Knowledge Questionnaire about Quality of care and Innovative Behavior covered the quality dimensions, standard of

providing ophthalmic care, team commitment and quality improvement dimension and innovative behavior consisted of 90 questions, in the form of multiple choice (60 questions) and true and false (30 questions).

Scoring system:

Ophthalmic nurses' responses were allotted to score of one for true answer and zero for false answer.

The total score of their knowledge was classified into levels as follow:

− Good knowledge ≥75%.
− Fair knowledge 60-<75%.
− Poor knowledge <60%.

Tool II: Ophthalmic Nurses' Quality Care Observational Checklist.

This tool was modified by the researcher based on **Narver and Slater (2018)** [22], **Lindgren and Anderson (2018)** [23] and recent related literature [24] to observe ophthalmic nurses' practice of quality to care for ophthalmic patient. It included 60 items distributed to eight subscales:

-**Respect for the patient**: it included 6 items from1 up to item 6.

- **Integration of care**: it included 5 items from 7 up to item 11.

-**Information &education**: it included 10 items from12 up to item 21.

-**Physical comfort**: it included 8 items from22 up to item 29.

-**Emotional support**: it included 9 items from 30 up to item 38.

- **Involvement of family**: it included 5 items from39 up to item 43.

-**Continuity of care**: it included 10 items from44 up to item 53.

- **Access to care**: it included 7 items from54 up to item 60.

Scoring system:

Observations were rated and scored in a three points Likert Scales (1-3) always done= 3, sometimes done= 2, and never done = 1

Levels of ophthalmic nurses practice of patient care dimension.

-High level of practice ≥75%.
-Moderate level of practice 60-<75%.
 - Low level of practice <60%.

Tool III: Ophthalmic Nurses' Commitment and Improvement Dimensions Self-Report.
        This tool was modified by the researcher based on **Bartune (2018)** [25] and recent related literature [26] to assess ophthalmic nurses' team commitment and continuous improvement dimensions. It included 31 items distributed into two subscales as follows:
A-Team commitment dimension subscale included 24 items distributed into four subscales:
-**Communication**: it included 6 items from1 up to item 6.

-**Coordination**: it included 5 items from 7 up to item 11.

-**Mutual support& cohesion**: it included 5 items from12 up to item 16.

-**Effectiveness& efficiency**: it included 8 items from17 up to item 24.

B- Continuous improvement dimension subscale: it included 7 items from 25 up to item 31.

Scoring system:

    Ophthalmic nurses' responses were rated and scored on a three points Likert Scales (1-3) always done= 3, sometimes done= 2, and never done=1

Levels of ophthalmic nurses' commitment and improvement

−   High commitment ≥ 75%.
−   Moderate commitment 60-<75%.
−   Low commitment <60%.
Tool IV: Innovative Behavior Assessment Scale.

     This tool was modified by the researcher based on **Weide and Smits (2018)** [27] and recent related literatures [28] to assess ophthalmic nurses' innovative behavior. It included 10 items from 1 up to item 10.

Scoring system:

    Ophthalmic nurses' responses were rated and scored on a three points Likert Scales ranging from 3 to 1 as agree=3uncertain=2 disagree=1

Levels of nursing staff innovative behavior

-High of innovative behavior ≥ 75%.
-Moderate innovative behavior 60- <75%.
-Low innovative behavior < 60%.
Method

1. Official permission to conduct the study was obtained from Faculty of Nursing authority to administrator of Ophthalmic Hospital.
2. Ethical and legal consideration was considered all over the study as the following:
     -Approval of ethical committee obtained
     -The researcher introduced herself to the participants, a full explanation of aim and method of the study done to obtain their acceptance and cooperation as well as their informed consent.
     -The right to terminate participation at any time was respected.
     -The nature of the study did not cause any harm for the entire sample.
     - Hospital nurses were assured about the privacy and confidentiality of collected data and explain that it used for the study purpose only.

3. The tool II, III and IV translated and presented to a jury of seven experts in the area of specialty to check their content validity. The seven experts were three professors and one assistant professor of nursing from the Faculty of Nursing –Tanta University Nursing Services Administrations and two assistant professors of nursing and one professor from the Faculty of Nursing –Tanta University Medical Surgical Nursing,

4. The experts' responses were presented in four points rating scale ranging from (4-1); 4=strongly relevant, 3=relevant, 2=little relevant and 1=not relevant. Necessary modifications were done included clarification, omission of certain questions and adding others and simplifying work related words. The content validity were 98.5%, 96.74% and 96.3%for tools II, III and IV respectively.

5. Reliability of tools were tested using Cronbach alpha coefficient test its value=0.885 for ophthalmic nurses' quality care observational check list, 0.860 for team commitment and improvement self-report 0.817 for innovative behavior assessment scale and 0.865 for nurses' knowledge about quality care and innovative behavior.

6. A pilot study was carried out after the expert's opinion and before starting actual data collection. It was carried out on a sample 10% of ophthalmic nurses (n=8) to test the tools for clarity and applicability then the needed correction was done. The aim of pilot study was to test the sequence of items, clarity, applicability and relevance of the questions. Necessary modifications were done. Pilot study also served to estimate the time required for filling questionnaire sheets. The estimated time needed to fulfill tool III was approximately 15 minutes, 15 minutes to complete tool IV and one hour to complete knowledge test. The pilot study nurses were not included on the actual study sample.

7. **Data collection phase**:

-The researcher assessed the ophthalmic nurses' knowledge regarding quality care dimensions, team commitment and continuous improvement, innovative behavior before and immediately post program using tool I.

-The researcher observed the ophthalmic nurses' quality care dimensions using tool II before and immediately post program, two nurses were observed per day for two days during the morning and afternoon shifts.

-The researcher assessed the ophthalmic nurses' team commitment and improvement before and immediately post program using tool III.

-The researcher assessed ophthalmic nurses' innovative behavior before and immediately post program using tool IV

8. Ophthalmic nurses were divided into 10 groups. The program time was 6 hours for each group.one session every day (one hr./day/6 days). The program was conducted for ophthalmic nurses at their workplace.

9. The appreciate time for data collection was according to type of work and workload for each department. The data collection started from May 2020 to November 2020 and lasted six months.

Construction of educational program

The first step in the construction of this program was the statement of instructional objectives. These objectives were derived from the assessed need of ophthalmic nurses and literature review.

The general instructional objectives:

The main objective of program was to improve ophthalmic nurse's knowledge regarding quality care and innovative behavior.

The specific objectives:
At the end of the program the ophthalmic nurses were able to:

-Recognize quality of care dimensions

-Identify standards for providing effective ophthalmic care

-Apply standards' care on different ophthalmic procedures

-Recognize items of team commitment

- Memorize models of quality improvement

-Recognize the concept of innovative behavior

Organization of program contents:

After determining the objectives of program, the content was specially designed, method of teaching and evaluation was identified. Simple scientific language was used. The content designed to provide knowledge and skills related to quality care dimensions and innovative behavior. The program contents were divided into six sessions as follow:

First session: Quality of care dimensions.

Second session: Standards of providing quality ophthalmic nursing care.

Third session: Applying standard on different ophthalmic procedures.

Fourth session: Team commitment dimension.
Fifth session: Quality improvement dimension.

Sixth Session: Nurses' innovative behavior.

Teaching-Learning strategies:

The selection of teaching methods was governed by studying subjects' themselves and the content of the program. The methods used were lecture, group discussion, example from work and life situations.

Teaching aids:

The teaching aids used for attainment of the program objectives were data show, PPP& videos and pen and paper.

Implementation of program:

-The study was carried on 80 ophthalmic nurses. Ophthalmic nurses were divided into ten groups. The program time was 6 hours for each group. One session every day for 6 days, every session was 1 hour. They preferred to start the session after finishing necessary work.

-The program theoretical sessions were held in the conferences room and nurse's room at Tanta Ophthalmic Hospital.

-The ophthalmic nurses were informed about the general objectives of program and each session. The researcher builds good relationship and gave a simple form of motivation to enhance their participation and more involvement in the program activities.

Evaluation methods:

Program was evaluated after completion using four tools, ophthalmic nurses quality care dimensions observation checklist, team commitment and continuous improvement self-report, innovative behavior assessment scale and knowledge questionnaire about quality care and innovative behavior.

Statistical analysis

Data were fed to the computer and analyzed using IBM SPSS software package version20.0**. (**Armonk, NY: IBM Corp**)** Qualitative data were described using number and percent. Quantitative data were described using range (minimum and maximum), mean, standard deviation and median. Significance of the obtained results was judged at the 5% level.

Results

Table (1): represents distribution of ophthalmic nurses according to personal data. Regarding ophthalmic nurses' age, more than half (55.0%) of them were in the age group 35-<45 years old with mean age 39.49 ± 6.69. All (100.0%) of them were female and more than three quarters (78.8%) were married. 40.0% of nurses were working in outpatient department. More than half (55.0%) of ophthalmic nurses had nursing diploma. Regarding years of

experience, the highest percent (60.0%) of ophthalmic nurses had ≥15 years of experiences with mean 16.91 ± 6.83. Majority (90.0%) of ophthalmic nurses didn't attend any training course during last year.

Figure (1): illustrates ophthalmic nurses' total knowledge levels regarding quality care pre and immediately post program. Preprogram more than three quarters (78.8%) of ophthalmic nurses had poor total knowledge level of quality care that improved to be majority (90.3%) of them had good total level of knowledge at immediately post program**.**

Figure (2): illustrates ophthalmic nurses' levels of knowledge regarding innovative behavior pre and immediately post program. Preprogram (65.0%) of ophthalmic nurses had poor knowledge level of innovative behavior. Also, the figure shows more than three quarter (76.5%) of them had good level of knowledge of innovative behavior at immediately post program**.**

Table (2): shows levels of ophthalmic nurses' quality care dimensions observation before and immediately post program. There was statistically significant difference of ophthalmic nurses' quality care in all dimensions observation before and immediately post program at (p ≤ 0.05). Before the program high percent (70.0%) of ophthalmic nurses had low level regarding respect for patient dimension while (78.8%) of them had high level immediately post program.

More than sixty (65.0%) of ophthalmic nurses had low level regarding emotional support dimension before the program while three quarters (75.0%) of them had high level immediately post program. Before the program (65%) of ophthalmic nurses had low level regarding total quality care dimensions while (78.3%) of them had high level immediately post program.

Table (3): shows levels of ophthalmic nurses' commitment and improvement dimensions

assessment pre and immediately post program. There was statistically significant difference of ophthalmic nurses' levels of commitment and improvement dimensions pre and immediately post program at (p ≤ 0.05).

Preprogram, (65.0%) of ophthalmic nurses had low level of communication that improved to be (72.0%) of them have high level of communication immediately post program. Equal percent (60.0%) of ophthalmic nurses had low level regarding coordination and effectiveness& efficiency preprogram that improved to be (70.0% and 62.5%) of them had high level immediately post program.

Preprogram (57.5%) of ophthalmic nurses had low level of mutual support& cohesion that improved to be (72.0%) of them had high level immediately post program

Table (4): shows levels of ophthalmic nurses' innovative behavior pre and immediately post program. There was statistically significant difference of ophthalmic nurses' levels of innovative behavior pre and immediately post program at (p ≤ 0.05).

Table (5): reveals relation between ophthalmic nurses' overall knowledge and personal data pre and immediately post program. There was statistical significance relation between ophthalmic nurses' years of experience and their overall knowledge immediately post program (p≤ 0.05.).

Table (6): reveals correlation between ophthalmic nurses' quality care dimensions and their innovative behavior pre and immediately post program. Post program there was statistically significant correlation between ophthalmic nurses' all quality care dimensions and their innovative behavior except involvement of family and continuity of care (r=-0.065 &0.030).

Table (1): Distribution of ophthalmic nurses according to personal data (n=80)

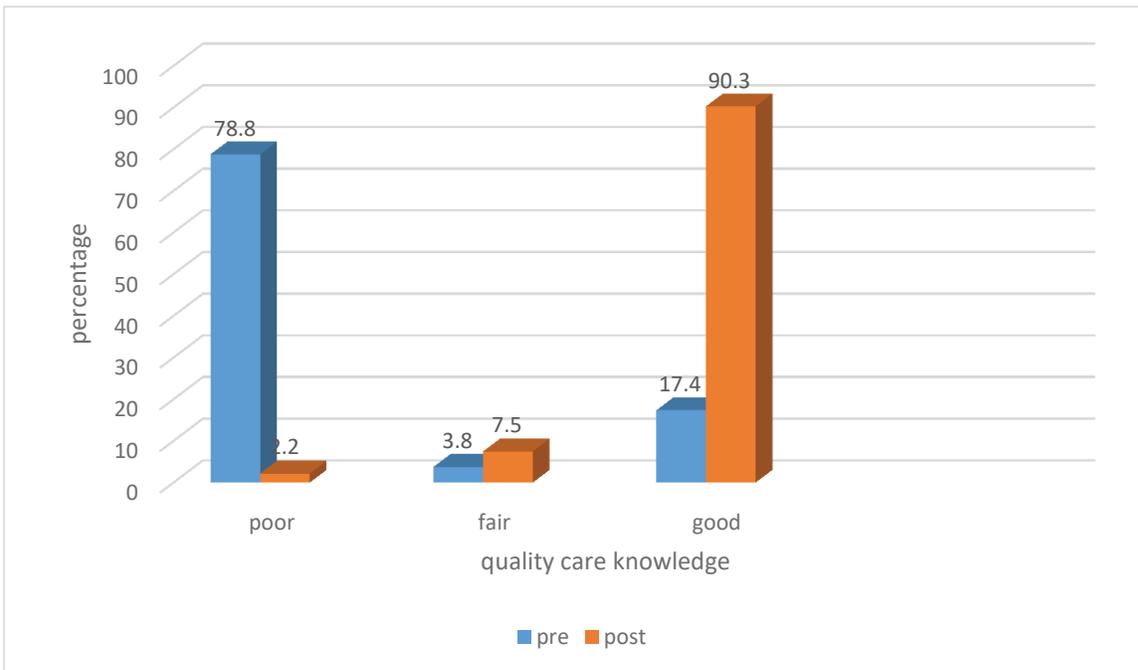| Personal data	No.	%
Age (years)		
<35	17	21.3
35-<45	44	55.0
45-<55	16	20.0
≥55	3	3.8
Min. – Max.	25.0-55.0	
Mean ± SD.	39.49±6.69	
Sex		
Male	0	0.0
Female	80	100.0
Marital status		
Single	17	21.3
Married	63	78.8
Department		
Emergency department	14	17.5
In patient department	14	17.5
Outpatient department	32	40.0
Operating room	20	25.0
Level of nursing education		
Post graduate studies	1	1.3
B.S.C. in nursing	23	30.0
Technical institute	9	13.7
Nursing diploma	47	55.0
Years of experience		
<10	11	13.8
10-<15	21	26.3
≥15	48	60.0
Min. – Max.	2.0 – 35.0	
Mean ± SD.	16.91 ± 6.83	
Attend training courses on quality?		
Yes	8	10.0
No	72	90.0
Numbers of courses attend during last year		
1	8	10.0
2	0	0.0
More than 3courses	0	0.0

Figure (1): Ophthalmic nurses' total knowledge levels regarding quality care pre and immediately post program (n=80)
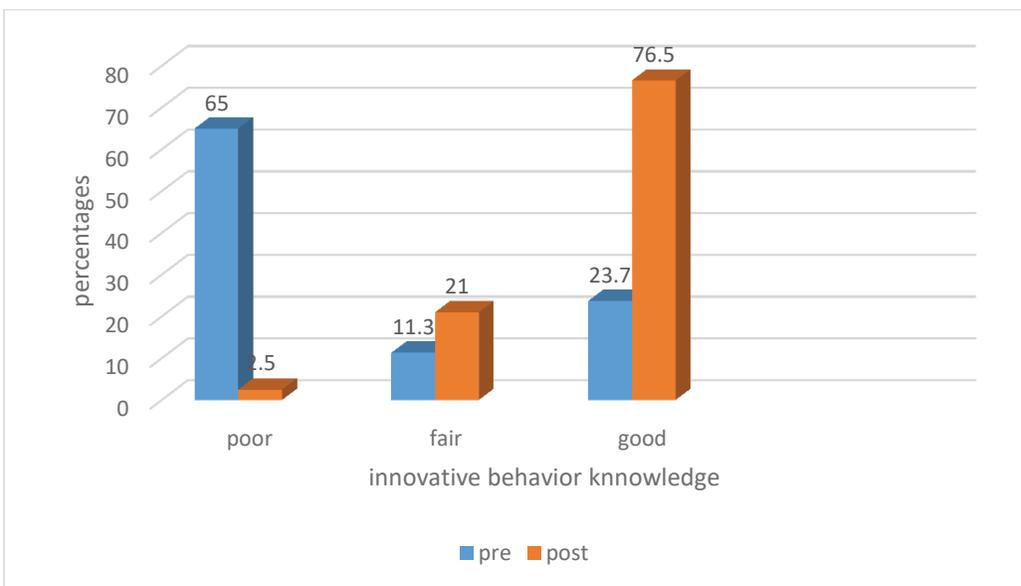

Figure (2): Ophthalmic nurses' levels of knowledge regarding innovative behavior pre and immediately post program (n=80)

Table (2): Levels of ophthalmic nurses' quality care dimensions observation before and immediate post program (n=80)

Ophthalmic nurses' quality care dimensions	Pre						Post						p
	Low level (<60%)		Moderate (60-<75%)		High level (≥ 75%)		Low level (<60%)		Moderate level (60-<75%)		High level (≥ 75%)		
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	
Respect for the patient	56	70.0	5	6.3	19	23.7	5	8.3	10	12.9	65	78.8	MHp<0.001*
Integration of care	40	50.0	15	18.8	25	31.2	5	6.3	19	23.7	56	70.0	MHp<0.001*
Information and education	53	63.8	15	18.8	12	17.4	4	5.0	20	25.0	56	70.0	MHp<0.001*
Physical comfort	49	58.8	13	19.8	18	21.4	10	9.5	18	25.5	52	65.0	MHp<0.001*
Emotional support	53	65.0	11	16.5	16	18.5	10	10.5	12	14.5	58	75.0	MHp<0.001*
Involvement of family in patient care	43	57.3	19	23.9	18	18.8	3	3.8	20	24.0	57	71.2	MHp<0.001*
Continuity of car	53	63.8	10	14.5	17	21.7	9	11.3	12	15.5	59	73.2	MHp<0.001*
Access to care	49	58.8	12	18.0	19	23.7	10	12.5	18	22.5	52	65.0	MHp<0.001*

McN: McNemar test   MH: Marginal Homogeneity Test

p: p value for comparing between the **pre** and **post**

*: Statistically significant at p ≤ 0.05

Table (3): Levels of ophthalmic nurses' commitment and improvement dimensions self-report pre and immediately post program (n=80)

Ophthalmic nurses' Commitment and Improvement Dimensions	Pre						Post						MHp
	Low level (<60%)		Moderate level (60-<75%)		High level (≥ 75%)		Low level (<60%)		Moderate level (60-<75%)		High level (≥ 75%)		
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	
A-Team commitment dimension subscale	50	62.5	10	12.5	20	25.0	3	3.8	14	18.2	63	78.0	<0.001*
Communication.	52	65.0	19	23.8	9	11.2	16	20.5	7	7.5	57	72.0	0.001*
Coordination between team members.	48	60.0	28	35.0	4	5.0	10	12.5	14	17.5	56	70.0	0.001*
Mutual Support & cohesion.	46	57.5	29	36.2	5	6.3	11	13.0	12	15.0	57	72.0	0.005*
Effectiveness &efficiency	48	60.0	27	33.7	5	6.3	13	16.8	15	20.7	52	62.5	<0.001*
B-Continuous improvement dimension	50	62.5	20	25.0	10	12.5	12	18.0	10	12.5	58	69.5	<0.001*

MH: Marginal Homogeneity Test

p: p value for comparing between the **pre** and **post**

*: Statistically significant at p ≤ 0.05

Table (4):Levels of ophthalmic nurses' innovative behavior pre and immediately post program (n=80)

Ophthalmic staff nurses' innovative behavior assessment scale.	Pre		Post		^{MH}P
	No.	%	No.	%	
Low level (<60%)	43	53.7	6	7.5	
Moderate level (60-<75%)	15	18.8	16	20.0	**<0.001***
High level (≥ 75%)	22	27.5	58	72.5	

MH: Marginal Homogeneity Test

p: p value for comparing between the **pre** and **post**

*: Statistically significant at p ≤ 0.05

Table (5): Relation between ophthalmic nurses' overall knowledge and personal data pre and immediately post program (n = 80)

Personal data	Overall knowledge			
	Pre		Post	
	χ^2	p	χ^2	p
Sex	0.013	0.882	0.038	0.659
Age (years)	-0.075	0.509	-0.028	0.805
Marital status	0.018	-0.022	-0.129	0.133
Department	0.014	0.870	-0.202	0.018
Level of education	-0.072	0.528	-0.084	0.459
Years of experience	-0.036	0.754	0.224	0.009*

*: Statistically significant at p ≤ 0.05

Table (6): Correlation between ophthalmic nurse's quality care dimensions and Innovative behavior pre and immediately post program (n = 80)

ophthalmic nurse's quality care dimensions	Innovative behavior			
	Pre		Post	
	r	p	r	p
1.Respect for the patient	0.165	0.144	0.185[*]	0.001[*]
2.Integration of care	0.057	0.618	0.195[*]	0.001[*]
3.Information and education	-0.149	0.186	0.221[*]	0.001[*]
4.Physical comfort	-0.001	0.991	0.173[*]	0.004[*]
5.Emotional support	0.107	0.347	-0.023	0.841
6.Involvement of family in patient care	-0.065	0.567	-0.052	0.149
7.Continuity of car	0.030	0.790	0.118	0.299
8.Access to care	-0.069	0.544	0.146[*]	0.001[*]
Overall quality care	0.014	0.904	0.133[*]	0.026[*]

r: Pearson coefficient

Discussion

In relation to ophthalmic nurses' knowledge, the current study findings showed that preprogram more than three quarters of ophthalmic nurses had poor total knowledge level of quality care that improved to be majority of them have good total level of knowledge at immediately post program. This can be attributed to that ophthalmic nurse didn't attend any training courses during last year about quality care that could refresh their knowledge and enhance the quality of their performance. But after implementing quality care program by the researcher ophthalmic nurses refreshed their knowledge about quality care that assist them in developing the ability to deliver quality care.

These results are in line with **Donalld (2019)** [29], **Gultekin (2019)** [30] **and Reda (2020)** [31] they found that nurses' knowledge level improved after implementation of educational and training program about quality of care. Also, **Kishk (2019)** [32] found that majority of nurses expressed average level of quality care knowledge post educational program.

According to the result of current study more than sixty percent of ophthalmic nurses had poor knowledge level of innovative behavior compared to more than three quarters percent of them had good level of knowledge on innovative behavior post program. This can be attributed to lack of support for nurses' opinion. They weren't updated with the impact of innovative behavior on improvement of work. In addition to lack of atmosphere that encourage innovative behavior. But after attending sessions on innovative behavior that clarifies its meaning, importance and utilization ophthalmic nurses began to think out of the box to find new ways to solve problems.

This finding in accordance with **Abd El Hamed and Abd El Fattah (2020)** [33] and **Hugish (2019)** [34] they found that after educational sessions nurses' knowledge of innovation behavior concept, dimensions and strategies improved. Besides, **Manjari and Sarkar (2019)** [35] and **Dexiu (2020)** [36]

found that nurses' knowledge about innovative behavior has significant score after implementing educational program.

Observation of ophthalmic nurses' quality care dimensions revealed that there was statistically significant difference of ophthalmic nurses' quality care in all dimensions observation before and immediately post program. This may be due to ophthalmic nurses didn't take quality of care seriously and didn't follow performance standards while caring for their patients. But after implementation of the program ophthalmic nurses understand the quality care dimensions.

These findings are in accordance with **Naihua (2019)** [37] who found that there was significant difference between nurses' levels of quality care dimensions after training sessions. In addition, **Alexander (2018)** [38] and **Greer (2019)** [39] they found that there was statistically significant difference between nurses' quality of care dimensions post training intervention.

Observation of ophthalmic nurses' quality care dimensions revealed that before the program seventy percent of ophthalmic nurses had low level regarding respect for patient dimension while more than three quarters of them had high level regarding respect for patient dimension immediately post program. This may be due to some ophthalmic nurses were busy to listen to their patient, didn't consider sociocultural difference of patients. In addition, they couldn't select appropriate words to explain patient visual issues and care. After implementing program ophthalmic nurses realized that respecting the patient is the key element to encourage patient to express his /her needs and gain his consent to perform procedure.

This result supported by **Güvercin (2019)** [40] who found that majority of nurses post program had high level regarding respect for patient dimension. Improvement in patient respect leads to how patient rights were perceived during care. Also, **Mohammed et al. (2018)** [41] implied that around half of nurses recorded high level of respect for patient care subscale after providing education program. In

addition, **Butt and Zahind (2018)** [42] they found that high percent of overall study nurses had high level about respect dimension for patient care after receiving educational program.

Findings of the current study observation showed that more than sixty percent of ophthalmic nurses had low level of emotional support dimension before the program while three quarters of them had high level immediately post program. This can be attributed to some of ophthalmic couldn't guide successful discussion with patients to assess their fear about their visual condition and manage it. As well as less experienced nurses' lack of knowledge regarding different visual disorders and improvement chances associated with it. After implementing educational program ophthalmic nurses can provide emotional support to the patients under their care through simplifying diagnosis, steps of care, encouraging patient to be active participant of their care.

These findings go in the same line with **Ulie and Sheffield (2018)** [43] they found that considerable percent of nurses revealed high level of emotional support dimension after receiving training program. Also, **Watson (2020)** [44] and **Anderson (2021)** [45] they found that high percent of nurses had high levels regarding emotional support dimension after attending educational program.

Finding of current study clarified statistically significant difference of ophthalmic nurses' levels of commitment and improvement dimensions pre and immediately post program. This may be due to focus of some ophthalmic nurses on their personal benefit and they most time search for new position to improve their image. After implementing program ophthalmic nurses were equipped with enough knowledge about team commitment plus, they interested on achievement of organization goal.

This finding consistent with **Ajay and Bindu (2020)** [46], **Zani (2018)** [47] **and Dian (2019)** [48] they found that there was significant difference of staff nurses' commitment after providing influential training support.

The result of this study revealed that there was statistically significant difference of staff nurses' levels of innovative behavior pre and immediately post program. This result can be due to ophthalmic nurses' focus on performing their normal task, as well as they might perceive it uncomfortable to expand their role. Also, this may be due to lack of supervision and support from head nurses to nurses in applying new ideas in their work. In addition, lack of training of ophthalmic nurses about original skill to learn new care procedures. After attending program ophthalmic nurses understand the importance of developing new ideas and innovative attributes that increase their ability to respond more effectively and face extensive changes in current health care work environments.

This finding supported by **Chunchang (2018)** [49] who found that there was statistically significant difference of nurses' levels of innovative behavior post program. Also, **Wang (2019)** [50] and **Mohamed and Mohamed (2020)** [51] they indicated that the nurses who receive the innovative behavior training program had a higher mean posttest score as compared to pretest score

The current study finding revealed that there was statistically significant correlation between ophthalmic nurses' all quality care dimensions and their innovative behavior except involvement of family and continuity of care. This may be due to practice of ophthalmic nurses of some aspect of quality care dimensions make it easier to contribute innovative behavior in their work process. This finding consistent with **Nazir (2018)** [52] who found significant correlation between quality care dimension of patient respect and nurses innovative behavior as respecting patient value, beliefs and preference motivate innovative behavior in providing care. Also, **Yannick (2021)** [53] Found statistically significant correlation between the role understanding and integration of nurses in work environment and their innovative behavior. In addition, **William (2018)** [54] found statistically significant improvement related to information-seeking behavior and innovative behavior among nursing staff.

Conclusion

Based on the findings of the present study it was concluded that:

Tanta Ophthalmic Hospital nurses had poor knowledge level about quality of care dimensions and innovative behavior. While immediately after implementation of a designed program about quality care dimensions and innovative behavior there was significant improvement in ophthalmic nurses' knowledge about quality care and innovative behavior. There was statistically significant correlation between ophthalmic nurses' total quality care dimensions and their innovative behavior except for involvement of family and continuity of care. Besides, there was statistical significance relation between ophthalmic nurse's years of experience and their overall knowledge immediately post program.

Recommendations

On the line of the finding of the current study the following recommendation are suggested:

For hospital administration:

1. Integrate quality care dimensions in ophthalmic hospital policy.
2. Establish continuous training programs about quality care and innovative behavior for ophthalmic nurses.
3. Encourage establishment of professional telecommunication groups to share updating care guidelines and enhance nurses' knowledge.
4. Develop patient health education committee to maintain continuity of care.
5. Encourage nurses to generate innovative ideas, support application of these ideas, and follow barriers hinder its applicability.
6. Lunching hospital website and telecommunication pages to facilitate patient reach to care schedules and related data.

For head nurses
1. Design yearly training planes that cover all nursing staff to update ophthalmic nurses' knowledge and practice.

2. Follow up of implementation of quality care dimensions in daily work.
3. Reorient ophthalmic nurses regarding job description that clarify roles and responsibilities to enhance mutual support.
4. Manage interpersonal conflict that inhibit effective communication, coordination and mutual support.
5. Involve nurses in solving unit problems, stimulate nurses to generate new ideas, and facilitate its applicability.

Further research:

- Investigate barriers affecting applicability of quality care dimensions in ophthalmic hospital.

- Study relationship between continuous improvement and nurses' innovative behavior.

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