

Effect of Designed Guidelines for Mothers regarding Care of their Children with Ophthalmological Trauma

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Abstract

Background: Ophthalmological trauma is a critical public health issue that may cause vision loss, mono-ocular visual disability and non-congenital mono-ocular blindness in children because of their immature motor skills and natural curiosity. **Aim of study:** Was to evaluate the effect of designed guidelines on knowledge and practice of mothers in caring for their children with ophthalmological trauma. **Design:** A quasi- experimental design was utilized. **Setting:** The study was accomplished at inpatient department at Specialized Ophthalmology Center of Benha University Hospital. **Sample:** A purposive sample of 80 mothers who had children having ophthalmological trauma and attended the inpatient department of Specialized Ophthalmology Center. **Tools of data collection:** Three tools have been utilized to conduct the study. **I:** Knowledge of mothers structured questionnaire. **II:** Medical and social characteristics of children and **III:** Care of ophthalmological trauma observational checklists which include eye care, application of hot and cold compresses, eye ointment application, eye drops instillations, and eye irrigation. **Results:** At pre/ post-guidelines, a strong positive statistical correlation was noticed between mothers' total knowledge and their total practice scores. **Conclusion:** The research hypothesis was accepted, where most of the studied mothers had adequate knowledge and satisfactory practice following implementation of designed guidelines relative to pre designed guidelines with strongly significant statistical improvement. **Recommendations:** The nursing roles should focus on educating mothers on how to provide proper care for children with ophthalmological trauma.

Key word: Children, Designed guidelines, Ophthalmological trauma.

Introduction

Children are vital to the nation's present and its future; they are vulnerable to several epidemiological factors in their environment that can influence their current and future health. This is due to their tendencies for imitation, curiosity, and hyperactivity, especially small children. Also, they are not able to recognize the difference between dangerous and not dangerous objects (Guo et al., 2021).

Pediatric eye trauma refers to damage that result from direct physical injury to the eye, surrounding area, adjacent skin and bone

structure. Eye injury causes visual impairment, which may be associated with children development. The vulnerability of children in cognitive, motor, and social development makes them susceptible to delayed learning, limited skills acquisition, and impaired social relations. This risk is further increased when children experience visual impairment. Visually impaired children tend to have lowered quality-of-life scores than their peers (Tichauer, 2021).

Nurses have a significant role for the prevention of pediatric ophthalmological

trauma by raising the awareness among the parents and family members regarding the common modes of trauma, the need for supervision of the objects of play. Self-protection should be taught to children to prevent possible ocular injuries. She should ensure on environmental safety of houses, playgrounds and schools as regard common items of trauma such as sharp objects, household lime, and chemicals must be kept out of reach of children. The nurses also play an important role on mothers' education regarding pediatric eye trauma first aids (**Hong & Song, 2018**).

Significance of the study:

Visual impairments caused by ocular trauma result in different problems and continues as a substantial reason for ocular morbidity. About 20-50% of all documented eye injuries are related to pediatric ocular trauma (**Podbielski et al., 2016**). Globally, up to 6 million children withstand ocular trauma annually, and hospitalization is required to about a quarter of a million children (**Barry et al., 2019**). There have been only limited studies on ocular trauma in Egypt, particularly concerning pediatric groups. Furthermore, the ocular trauma rate and pattern have changed since 2011 (**Eldaly et al., 2013**).

Aim of the study:

The current study aimed to evaluate the effect of designed guidelines on knowledge and practice of mothers in caring for their children with ophthalmological trauma.

Research Hypothesis:

Mothers who receive the designed guidelines would have higher level of knowledge and practices on post-test compared to pre-test.

Subject and methods:

Research design:

The current study adopted a quasi-experimental design with pre- and post-tests.

Research setting:

The present study was accomplished at inpatient department at Specialized Ophthalmology Center affiliated to Benha University Hospital.

Research sampling:

A purposive sample of 80 mothers of children with ophthalmological trauma who attended the inpatient department of Specialized Ophthalmology Center during the period of data collection was included in the study.

The inclusion criteria for children

-from both sexes

-their ages from birth to 18 years old

-free from previous eye operations or problems

Tools for data collection:

Data collection involves the use of three tools:

Tool I: Knowledge of mothers structured interviewing questionnaire sheet:

After reviewing recent literature, the researcher developed an Arabic-language questionnaire for this study, which consisted of the following components:

- **Part I: Mothers' personal data such as:** age, educational level, occupation, residence place, and social status.
- **Part (2): Mothers' knowledge regarding ophthalmological trauma:** Which included (17) items.

Scoring system for mothers' knowledge assessment:

A score of 2 was given for a complete and correct answer, while an incomplete correct answer received a score of 1. A score of 0 was given to Don't know or incorrect answer. The entire score for all 17 questions was 34 marks, which equated to 100%. Mothers' answers of more than 20 score was considered adequate knowledge, while the mothers' answers of less than 20 score was considered inadequate knowledge.

The total score of each mother was classified as either:

- **Adequate knowledge:** ($\geq 60\%$) of the total knowledge score.
- **Inadequate knowledge:** ($< 60\%$) of the total knowledge score.

Tool II: Medical and social characteristics of children:

This tool comprised 2 parts:

- **Part (1): Personal characteristics of the children**, including gender, age, arranging the child among the family, education.
- **Part (2): Medical data such as:** medical diagnosis, previous ophthalmological trauma, signs and symptoms related to trauma, complication occurs after eye trauma.

Tool III: Care of Ophthalmological Trauma Observational Checklists:

It was adopted from **Lippincott (2018)** to assess mothers' care provided to their children with ophthalmological trauma. It includes eye care, application of hot and cold compresses; eye drops instillations, eye ointment application and eye irrigation. Correct actions were given a score of 1, while incorrect actions or actions that were not

performed received a score of 0. The entire score for all 60 questions attained 60 marks which equated to 100%. If the mother done 36 correct steps or more it considered satisfactory practice, if less than 36 correct steps it considered unsatisfactory practice.

The total scoring system of mothers' practice was categorized into:

- **Satisfactory practice:** $\geq 60\%$.
- **Unsatisfactory practice:** $< 60\%$.

Tools validity:

Tools were submitted to a panel of three experts, including a Professor in Pediatric Nursing at Faculty of Nursing in Benha University and two assistant Professors in Pediatric Nursing. All required amendments were made.

Tools reliability:

Evaluation of the tool's internal consistency was done utilizing Cronbach's coefficient alpha test. The reliability was 0.81 for knowledge and 0.76 for practice.

Ethical considerations:

The study received approval from the Faculty of Nursing's Dean at Benha University and the Ethical Research Committee. Oral consent was taken from the mothers. Mothers were provided with a clear explanation of the data collection methods. The confidentiality of each mother's and child's data was assured and emphasized.

Pilot study:

It was achieved on a sample representing 10% of the anticipated sample size (8 of mothers and their children) with ophthalmological trauma to assess the applicability and reliability of the tools and determine the questionnaire's completion time. The tools were adjusted based on the pilot study outcomes and experts' opinions.

Field work:

Data collection for this study took place over a period of six months, starting from September 2020 until the end of February 2021. The researcher was present at the study location twice per week to collect data using the previously developed tool. The present study involves the following phases:-

a. Assessment phase

The researcher conducted individual interviews with each mother, introducing herself, explaining the study's purpose, and obtaining their consent prior to data collection. The interviews lasted about 25-35 minutes to complete the questionnaire. The researcher assisted mothers who cannot fill the questionnaire. Meanwhile, an observational checklist was utilized to assist participants during their actual practices. The researcher observed each child with ophthalmological trauma and collected data from the medical record (This took about 5-10 minutes per child), to ensure complete confidentiality and privacy.

b. Planning Phase

Based on the assessment of mothers' knowledge and practices, the researcher developed guidelines for them regarding both knowledge and practice. The guidelines were designed in simple Arabic language and included various colored illustrations to help mothers better understand ophthalmological trauma.

c. Implementation phase

The questionnaire sheets were administered to all mothers separately to judge their knowledge concerning ophthalmological trauma. The observational checklists were used to assess mothers' practice. After the pre-test, the researcher provided the planned guidelines to the mothers relying upon their individual

requirements for knowledge and practices. Mothers were invited to ask any questions they had during this process. Mothers were provided with the guidelines to follow as needed, and they were allocated in groups consisting of 3-5 mothers to learn the relevant knowledge. The researcher provided ongoing support to strengthen the gained knowledge, answer questions, and provide feedback.

Sessions of implementation:

Sessions of implementation were achieved through four sessions as follows: one knowledge session and three practice sessions. Before each session, the researcher reviewed the previous session and outlined the goals for the current one, using language that was appropriate for the mothers' educational level and tailored to their understanding of Arabic. Reinforcement and motivational techniques were utilized during the sessions to encourage participation in the study. The duration of skills sessions took 30-45 minutes, each group of 3-5 mothers received three sessions consisting of both demonstration and re-demonstration. To facilitate the knowledge sessions, the researcher employed several teaching methods, including group discussions, role-playing activities, colored pictures, and handouts.

Session 1: Program orientation and overview on ophthalmological trauma.

Session 2: Demonstration of practices (Eye care, hot and cold compresses).

Session 3: Demonstration of practices (Application of eye drops and eye ointments).

Session 4: Demonstration of practices (Eye irrigation).

d. Evaluation Phase:

At the final session, the researcher asked the mother to answer post-test utilizing the same format of knowledge questionnaires sheet and perform observational checklists.

Statistical analysis:

The data collected during the study was managed, coded, sorted, analyzed, and presented in tables using the Statistical Package for Social Science (SPSS) version 20. The Excel program was utilized to create the graphics. The mean and standard deviation were adopted to present the quantitative data, while the percentages was adopted for qualitative data. Statistical test such as chi-square (χ^2) was employed in determining number and percentage distribution. Correlation analysis was conducted using the Pearson correlation coefficient (r). A p-value of $P < 0.05$ indicated statistical significance, while a highly statistically significant difference was noted if p-value $P < 0.001$. Conversely, if the p-value was $P > 0.05$, it was considered non-significant.

Results

Table (1): Illustrates that more than half (61.2%) of mothers in the study were between 25 and 35 years old, where the mean age attained 33.33 ± 6.11 years. Regarding mothers' education, less than half (46.3%) of them had intermediate education. Also, slightly less than two thirds (65.0%) of them were not working. As regards marital status, around two thirds (66.3%) of involved mothers were married. Furthermore, most (71.3%) of the participating mothers lived in rural areas. Moreover, more than three quarters (78.7%) of studied mothers had 3 - 5 family members.

Figure 1: Displays that 70.0% of mothers had adequate total knowledge score at post-guidelines compare to 31.3% of mothers had adequate total knowledge score at pre-guidelines.

Figure 2: Displays that 85.0%, 82.5% of mothers acquired their information about dealing with their children when eye injuries occur from parents and family and neighbors respectively, 71.25% of them acquired their information from doctor, 58.75% of them acquired their information from pharmacist, while 36.25% acquired their information from the net and only 26.25% of mothers acquired their information from the nurse.

Figure 3: Displays that 86.2% of the mothers exhibited adequate total practice score at post-guidelines compare to 47.5% of the mothers exhibited adequate total practice score at pre-guidelines.

Table (2): Reveals that more than half (53.7%) of the included children were between 5 and 10 years, and their mean age was 7.53 ± 3.53 years. Regarding child's gender, 60.0% of the children in the study were males. Additionally, over half (52.5%) of the children were the second child in their respective families. Regarding child's education, slightly less than half (48.8%) of the children in the study were in elementary stage.

Table (3): Clarifies that the presence of a strongly positive statistical correlation among mothers' total knowledge and their total practice scores at pre/ post-guidelines ($p < 0.001$).

Table (1): Distribution of the mothers included in the study based on their personal data (n=80).

Personal characteristics	No.	%
Mother's age/ year		
18< 25	9	11.3
25< 35	49	61.2
≥ 35	22	27.5
Mean ±SD= 33.33±6.11		
The mother's education degree		
Illiteracy	2	2.5
Read and write	7	8.7
Basic education	14	17.5
Intermediate education	37	46.3
University education	20	25.0
The Mother's Job		
Working	28	35.0
Not working	52	65.0
Marital Status		
Married	53	66.3
Divorced	23	28.7
Widow	4	5.0
Residence		
Rural	57	71.3
Urban	23	28.7
Number of family members		
3 - 5 persons	63	78.7
6 - 8 persons	17	21.3
9 persons or more	0	0.0

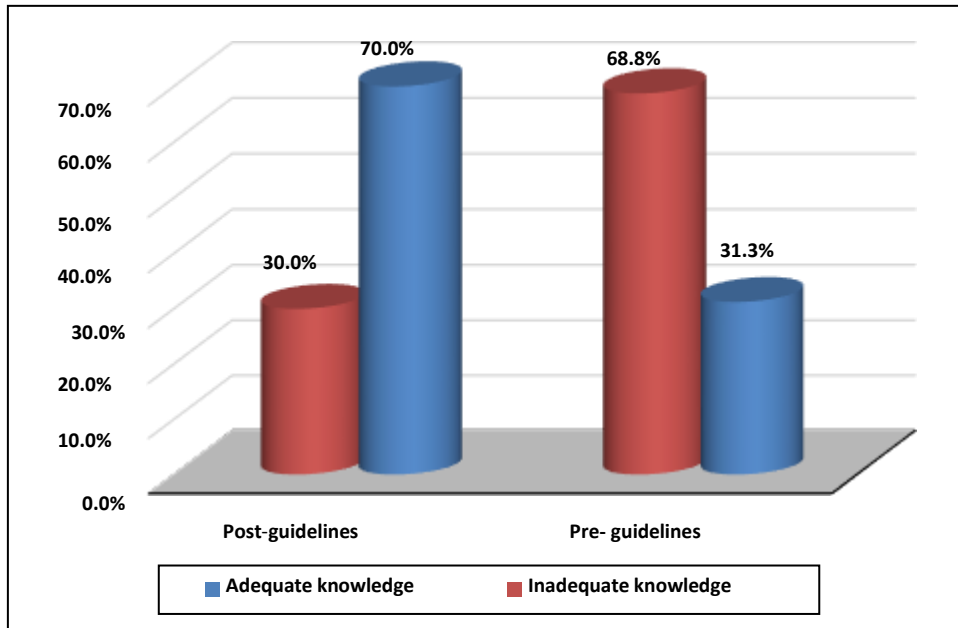


Figure (1): Distribution of the mothers' total knowledge concerning ophthalmological trauma at pre/ post guidelines (n = 80).

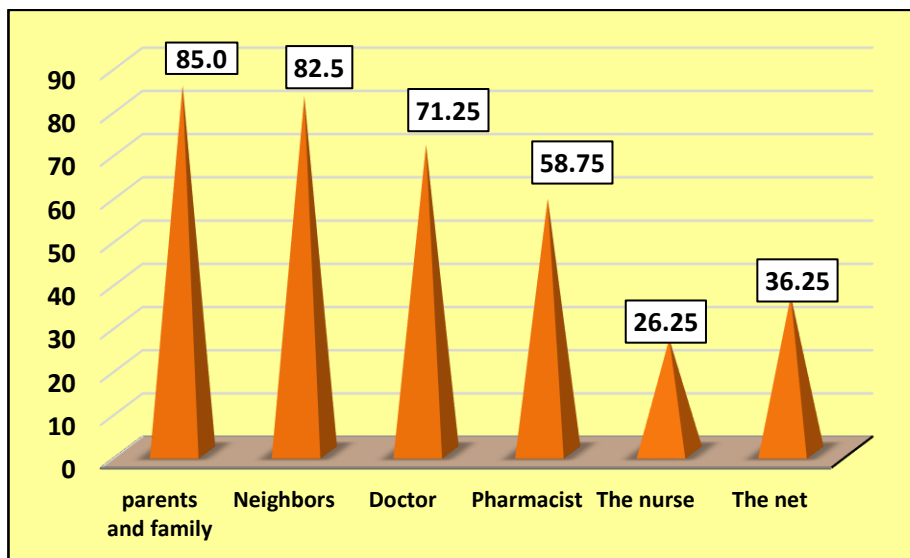


Figure (2): Percentage distribution of mothers' source of information about how to deal with their children when eye injuries occur (n=80)

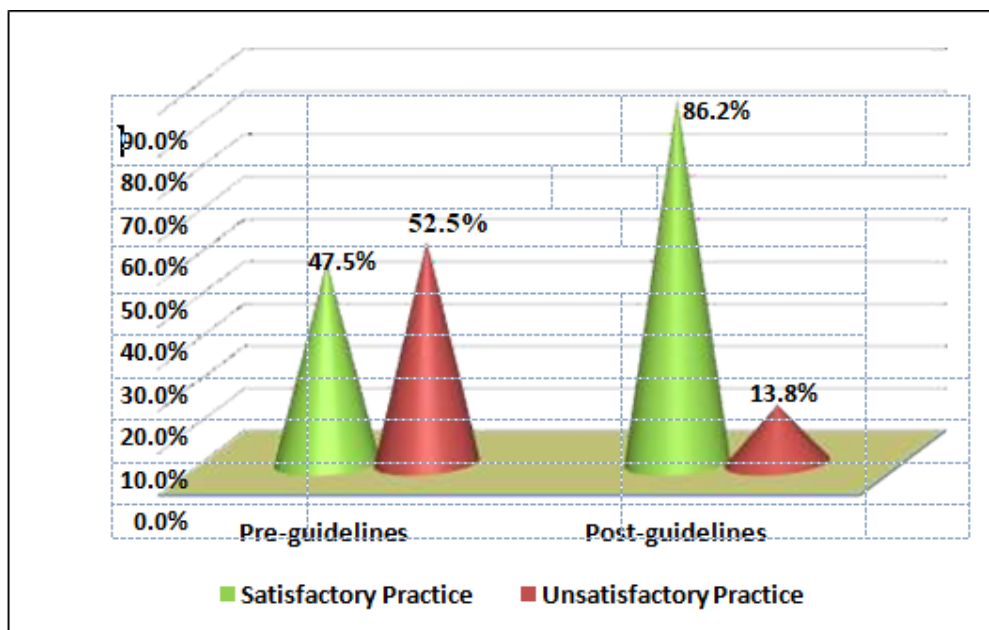


Figure (3): Percentage distribution of the mothers' total practice scores at pre/ post-guidelines (n = 80).

Table (2): Personal characteristics distribution of children included in the study (n=80).

Personal characteristics	No.	%
Child's age/ year		
Less than a year	0	0.0
1 <5	23	28.8
5 <10	43	53.7
10-18	14	17.5
Mean ±SD= 7.53±3.53		
Child's gender		
Male	48	60.0
Female	32	40.0
Arranging the child among the family		
First	8	10.0
Second	42	52.5
Third	23	28.8
Fourth	7	8.7
The child's education degree		
Pre-nursery	0	0.0
Nursery	28	35.0
Elementary stage	39	48.8
Preparatory stage	9	11.2
Secondary	4	5.0

Table (3): Correlation coefficient between studied mothers' total knowledge and total practices scores (n=80)

Variables	Total knowledge			
	Pre		Post	
	r	P-value	R	P-value
Total practices	0.70	.000**	0.61	.000**

Discussion

Ophthalmological trauma is a leading cause of non-congenital visual impairment and the primary cause for acquired blindness in children. This is due to their immature motor skills, restricted common sense, reduced emotional control, tendency to mimic adult behavior without assessing potential dangers, relative lack of knowledge, and natural curiosity. Despite the fact that many eye traumas can be prevented through simple preventive measures, a significant number of children still experience visual impairment that can significantly hinder their psychosocial development. These children may experience a lifetime of limited vision or even blindness, resulting in emotional, social, and economical costs to both the child and their family, as well as society as a whole (D'Antone et al., 2021).

Concerning mothers' total knowledge toward ophthalmological trauma, we reported that less than three quarters of mothers exhibited adequate knowledge post-guidelines compared to less than one third of mothers had adequate knowledge pre-guidelines. This finding agrees with Al Mazrou et al., (2020) who conducted a study about "Do Saudi parents have sufficient awareness of pediatric eye diseases in Riyadh?" and found that the parents generally lack awareness regarding common pediatric eye diseases and

appropriate eye care practices. Consequently, developing awareness programs that target both parents, but with a particular emphasis on mothers, is essential.

This finding is in agreement with a previous study by Carlsson et al., (2016) who performed a study entitled " Mothers' awareness towards child injuries and injury prevention at home: an guidelines study" and found that the guidelines had positively affected the mothers' awareness concerning child injuries.

Regarding to the mothers' source of information about dealing with their children when eye injuries occur, we reported that the most mothers gained their information from parents and family and neighbors. This outcome agreed with Al Mazrou et al., (2020) who indicated that the majority reported sources of information were community members (e.g., family members, relatives, friends, workplace, university, or school). In contrast, this result disagreed with Baashar et al., (2020) who discovered that most parents gained their information from the family doctor. Also, this finding contradicted with Sukati et al., (2018) who discovered that most parents had information about eye diseases from doctors. The researcher interpreted that, as variations between mothers' concepts and cultures which returned to different environments and lifestyles.

Concerning mothers' total practices about ophthalmological trauma pre and post-guidelines, the current study shows that, highly statistically significant difference post-guidelines compared to pre-guidelines regarding: Technique of eye care, application of hot compresses for affected eyes, application of cold compresses for affected eyes, technique of eye drops instillation and technique of eye irrigation. Meanwhile, there was a statistically significant difference post-guidelines compared to pre-guidelines regarding technique of eye ointment application. This finding may be from the researcher viewpoint because of the positive consequence of the designed guidelines in improving the level of mothers' practices about ophthalmological eye trauma. This finding may be from the researcher viewpoint because of the positive consequence of the designed guidelines in improving the level of mothers' practices about ophthalmological eye trauma.

This finding agreed with **Jovanovic et al., (2021)** who accomplished a study entitled "The Risk and Protective Factors for Pediatric Eye Injuries: A Case-Crossover Study". The study found that the most effective model for predicting injuries involves a combination of teaching, modifying the environment, and the watchful supervision. Further exploration and promotion of this preventive triad in practice is necessary.

Concerning the association between total knowledge and total practices scores of participated mothers, we found that there is a highly positive statistical correlation between mothers' total knowledge and their total practices scores pre and post guidelines. The reason for this could be that knowledge is a key factor in driving changes in behavior and practices. An increase in total knowledge was found to be positively correlated with the

increased total practice score. This study agreed with **Arishia et al., (2019)** who conducted a study about "Childhood eye care services in south Darfur state of Sudan: Learner and parent perspectives" and found that there was highly statistical correlation between total knowledge and total practices.

Conclusion

The research hypothesis was accepted and most participated mothers had adequate knowledge and satisfactory practice post implementation of designed guidelines as compared to pre designed guidelines with strongly significant statistical improvement.

Recommendations

- The nursing roles should prioritize educating mothers on proper care for children with ophthalmological trauma.
- Conducting periodical programs for nurses in Ophthalmology Department for continuous regular updating of their knowledge and practices regarding ophthalmological trauma.
- Follow up program for children with ophthalmological trauma should be organized and applied in the ophthalmological hospitals/ departments, for the proper application of proper management, prognosis of ophthalmological trauma on the children, relieving of the signs and symptoms and prevent complications.
- Further studies are recommended regarding implementation of educational programs about ophthalmological trauma in different health care settings.

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تأثير الإرشادات التوجيهية المصممة للأمهات فيما يتعلق برعاية أطفالهن المصابين بإصابات العيون

دعاء المغاوري عبدالحليم الشيخ- خديجة محمد سعيد عبد المطلب- حنان السيد متولي

تعتبر إصابات العيون من الأسباب الرئيسية للإعاقة والإعتلال البصري الذي يؤثر بشكل خاص على الأطفال وذلك بسبب فرط النشاط الطبيعي لهم ونقص خبرتهم الحياتية ووعيهم بالحماية الذاتية. لذلك هدفت الدراسة إلى تقييم تأثير الإرشادات التوجيهية المصممة للأمهات فيما يتعلق برعاية أطفالهن المصابين بإصابات العيون. وقد أجريت هذه الدراسة بالقسم الداخلي في المركز التخصصي لطب وجراحة العيون بمستشفيات جامعة بنها التابعة لوزارة الصحة والسكان علي عدد ٨٠ أم وأطفالهن المصابين بإصابات العيون. حيث كشفت النتائج عن أن غالبية الأمهات الخاضعات للدراسة لديهن معلومات وممارسات مرضية بعد تنفيذ الإرشادية التوجيهية مقارنة بما قبل الإرشادات التوجيهية مع تحسن كبير من الناحية الإحصائية. وأوصت الدراسة بأن هناك حاجة إلى تنفيذ برامج تعليم للأمهات بواسطة الممرضات عن طرق الرعاية السليمة لأطفالهن المصابين بإصابات العيون. وإجراء برامج دورية للممرضات في قسم العيون مع التحديث المستمر للمعلومات والممارسات فيما يتعلق بإصابات العيون. وكذلك يجب تطبيق برنامج متابعة الأطفال المصابين بإصابات العيون وتنظيمها في المستشفيات والأقسام من أجل تطبيق التعامل السليم مع الحالات وتخفيف العلامات والأعراض وتجنب حدوث مضاعفات. كما يوصى بإجراء مزيد من البرامج عن إصابات العين في أماكن الرعاية الصحية المختلفة.