Mothers' Knowledge and Practices regarding Care of their Children with Xerophthalmia

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Abstract

Background: Xeropthalmia is a wide range of ocular symptoms due to vitamin A deficiency that can affect school performance and social behaviors of children. **Aim of the study** was to assess mothers' knowledge and reported practices regarding care of their children with xerophthalmia. **Research design:** A descriptive research design was utilized to conduct this study. **Settings:** outpatient clinics of Benha Ophthalmology Hospital and Ophthalmology Clinics of Benha University Hospital. **Sample:** A purposive sample (n=130) of all available mothers regardless of their characteristics with their children suffering from xerophthalmia. **Tools of data collection:** Two tools were used, **tool I:** A structured interviewing questionnaire sheet including characteristics of the studied mothers, characteristics of the children, medical history of children with xerophthalmia and mothers' knowledge assessment sheet and **tool II:** Mothers' reported practices assessment sheet. **Results:** Less than two-thirds of the studied mothers had poor total knowledge score, while less than one-third of them had good total knowledge score. Also, more than two-thirds of the studied mothers had inadequate level of reported practices regarding care of their children with xerophthalmia, while less than one-third of them had adequate level of reported practices regarding care of their children with xerophthalmia. **Conclusion:** There was a positive statistical significant correlation between total knowledge scores and total reported practices scores of the studied mothers regarding care of their children with xerophthalmia. **Recommendations:** Posters and leaflets should be available in children's hospitals and pediatric outpatient clinics regarding xerophthalmia.

Keywords: Children, Mothers, knowledge, Practices and Xerophthalmia

Introduction

Xeropthalmia is a progressive ocular disease as a result of vitamin A deficiency (VAD). Night blindness and Bitot's spots are common ocular signs of VAD, as are corneal xerosis, ulceration, and keratomalacia that can lead to blindness. Although the daily need for vitamin A is considered a minute, its deficiency is still a global health problem. Taking this into account, it is of utmost importance to determine the clinical signs and symptoms related to VAD for early detection and prompt treatment. Children are more susceptible to VAD and xerophthalmia due to their higher vitamin A requirements for growth. Furthermore, children are at risk to intestinal infestations and infections, which can decrease vitamin A absorption **(Feroze & Kaufman, 2022).**

Xerophthalmia is a major health problem in the developing countries and is considered a leading cause of preventable blindness. In addition to the myriad ocular manifestations, it may also be associated with increased morbidity, increased mortality and can have an adverse effect on the growth of the affected children. It is the main contributing factors for childhood blindness in the developing courtiers. Around 250 million preschool children are at risk of vitamin A deficiency,

mainly in developing countries **(WHO, 2021)**. Currently, it is estimated that there are about 1.5 million blind and 5 million visually disabled children worldwide due to the problem. About 350 thousand children become blind every year as a result of xerophthalmia **(Whither et al., 2019).**

Vitamin A is a fat-soluble vitamin that plays a vital role in cell development, metabolism, immune function, vision, and reproductive function. Particularly in the eye, vitamin A has an essential part in the retinal pigment epithelium's visual cycle. It also takes an important part in the growth of the epithelium and the differentiation of the limbal stem cells on the eye's surface. Fish oil, leafy green vegetables, carrots, and apricots are natural sources of vitamin A, whereas cod liver oil and beef or turkey liver are the foods richest in vitamin A **(Mehra and Le, 2020).**

Vitamin A is crucial for mucin-producing conjunctival goblet cells. Dysfunction of these cells can lead to the development of severe dry eye disease and associated complications. Therefore, as the disease progresses, the conjunctiva becomes dry with a wrinkled, skin-like appearance known as conjunctival xerosis. This is a reflection of underlying keratinized metaplasia. Bitot's spot is considered a unique manifestation of VAD with a dry, triangular white foamy appearance that is usually near the temporal conjunctiva and it may be present in addition to conjunctival xerosis. If VAD persists, corneal xerosis may develop, leading to a cloudy cornea, ulceration, or keratomalacia, in which part or the entire cornea is liquefied **(Han et al., 2019).**

Vitamin A deficiency remains one of the leading causes of blindness worldwide, estimated to blind half a million children each year. Although VAD is rarely seen in developed countries, it remains a public health concern in more than half of all countries, mostly affecting young children in impoverished regions. World Health Organization **(WHO, 2022)** estimates that 228 million children have VAD, causing 1-3 million childhood deaths and 5-10 million cases of eye disease. VAD is especially prevalent in Africa and South-East Asia, where young children and pregnant women in low-income countries are disproportionally affected. VAD usually involves a malabsorptive process, such as inflammatory bowel disease or post-gastric bypass surgery, or a severely restrictive diet **(WHO, 2021& Hodge & Taylor, 2021).**

Although xeropthalmia is the commonest cause of childhood blindness worldwide, it is preventable via nutritional measures and reversible with a good visual prognosis once treated early. Treatment aims to restore vitamin A to a normal level. This can be achieved through vitamin A supplementation, vitamin A fortification of food (e.g., fortification of cooking oil/cereal product with vitamin A), and dietary diversification. Referral to a dietitian/nutritionist is important to educate parents regarding the proper diet that the patient should take, especially dietary products rich in vitamin A. For ocular treatment, intense topical lubricants, topical prophylactic antibiotics, or management of perforation should be commenced if indicated. However, the real challenge in the treatment is to persuade the child to consume and adhere strictly to a proper diet **(Hodge & Taylor, 2021).**

Pediatric nurses play an important role regarding controlling xeropthalmia among children through instructing mothers about factors that aggravate the condition such as exposure to dust, sun and smoke. The nurse should review information about medications to be taken at home. It is necessary to counsel mothers about vitamin A supplement to prevent further complications. Also, the nurse should educate mothers about dietary diversification to include vegetables and fruits for long-term

sustainability in improving the vitamin A status of children **(Mishra et al., 2017).**

Significance of the study:

Xerophthalmia is an ocular disease that is caused by severe Vitamin A deficiency (VAD) and continues to be a leading cause of preventable blindness in developing countries. Unfortunately, xerophthalmia signifies a severity of VAD that causes significant morbidity and mortality from malnutrition and increased susceptibility to mucosal infections **(WHO, 2021)**.

Although different types of vitamin deficiencies have been described classically, xerophthalmia is probably the only vitamin deficiency disease to reach epidemic levels and cause major concerns to the public health personnel. The WHO estimated that about 254 million children have VAD and 2.8 million children have xerophthalmia. It is the most common cause of childhood blindness, with 350,000 new cases every year. Studies have shown that xerophthalmia not only causes blindness, but also affects growth, general morbidity, and mortality. VAD causing 1-3 million childhood deaths and 5-10 million cases of eye disease **(Vijayaraghavan, 2018)**.Therefore, the present study aims to assess mothers' knowledge and reported practices regarding care of their children with xerophthalmia.

Aim of the study

The aim of the study was to assess mothers' knowledge and reported practices regarding care of their children with xerophthalmia.

Research questions:

This study was carried out to answer the following questions

1- What is level of mothers' knowledge regarding care of their children with xerophthalmia?

2- What are level mothers' reported practices regarding care of their children with xerophthalmia?

3- Is there a relation between mothers' knowledge and reported practices and their personal characteristics?

Subjects and Method

Research design:

A descriptive research design was utilized to conduct this study**.**

Research settings:

This study was conducted at outpatient clinics of Benha Ophthalmology Hospital and Ophthalmology Clinics of Benha University Hospital. The Clinics of Benha Ophthalmology Hospital is affiliated to Egyptian Ministry of Health and population of Health. It includes outpatient clinics for diagnostic and optical therapy and ward ophthalmology surgeries. Both Clinics are characterized by high attendance rate of children with xerophthalmia to be treated.

Research subjects:

A purposive sample of all available mothers regardless of their characteristics (n=130) with their children suffering from xerophthalmia, in the age group of 1-18 years, both gender and attending to the previously mentioned sittings. The study was carried out through a period of six months.

Tools of data collection:

Data of the current study was conducted through using the following tools:

Tool (I): A Structured Interviewing Questionnaire:

It was developed by the researcher under supervision of the supervisors in a simple Arabic language after reviewing the related and recent literatures. It included four parts:

Part 1: Characteristics of the studied mothers such as; age, marital status, educational level, occupation, residence, and monthly income.

Part 2: Characteristics of the children as; age, gender, educational level, and child ranking.

Part 3: Medical history of children with xerophthalmia such as; onset of xerophthalmia, family history of xerophthalmia, symptoms that the child complains and performing any previous eye surgery.

Part 4: Mothers' knowledge assessment sheet:

A- Mothers' knowledge regarding xerophthalmia: It consisted of closed ended questions about definition, symptoms, risk factors, preventive measures, treatment methods and complications of xerophthalmia (6 questions).

B- Mothers' knowledge regarding vitamin A. It consisted of closed and open ended questions such as; importance, food rich in vitamin A and times when the child gets a dose of vitamin A during the period of vaccinations (3 questions).

Scoring system for mothers' knowledge

Each complete correct answer scored (2), incomplete correct answer scored (1) and incorrect or unknown answer scored (0). Mothers' knowledge was compared with a model key answer and the total level of mothers' knowledge was categorized as the following.

- Good knowledge (≥ 65%)
- Average knowledge (50% to < 65%)
- Poor knowledge (<50%)

Tools (II): Mothers' reported practices assessment sheet:

It was adopted from **Abdel-Wahab et al., (2019)** to assess the reported practices of mothers regarding care of their children with xerophthalmia. It included 33 items grouped under five basic core domains namely; eye care (9 items), nutrition (6 items), treatment & vitamin A supplement (7 items), personal hygiene (7 items), and rest and sleep (4 items).

Scoring System:

Mothers' reported practices were checked and scored as (1) degree for yes response and (0) degree for no response. The total level of mothers' practices was categorized as the following:

- Adequate level > 60%
- Inadequate level < 60%

I- Operational design:

The operational design included: preparatory phase, content validity and reliability, pilot study and field work.

Preparatory phase:

The researcher reviewed the recent local and international related literatures to be aware of various aspects of the study using text-books, periodicals and websites in order to develop the data collection tools.

Content validity:

Tools of data collection were designed in Arabic language and submitted to a jury of three experts in paediatric nursing from the Faculty of Nursing/Benha University to test the content validity of tools and judge its clarity, comprehensiveness, relevance, simplicity and accuracy. Based on experts' comments and recommendations, minor modifications had been made such as; rephrasing and rearrangements and deleting some sentences to reach the final version of the tools. The tools were regarded as valid from the experts' point of view.

Reliability:

The reliability of the developed tools was estimated using the Chronbach's Alpha co-efficient which revealed that, each of the two tools consisted of relatively homogenous items as indicated by high reliability for each tool. The internal consistency of the structured interviewing questionnaire was 0.85 and for the reported practices assessment sheet was 0.92.

Ethical considerations:

The study was approved by the Scientific Research Ethical Committee/ Faculty of Nursing, Benha University. All ethical issues

were taken into considerations during the period of the study. The researcher clarified the aim of the study and the expected outcomes to all studied mothers during the interview. Written consent was taken to participate in the study. The studied mothers were assured that all information would be confidential, their participation in the study was voluntary and they have the right to withdraw from the study at any time without giving any rational. Confidentiality of the gathered data and results were secured.

Pilot study:

A pilot study was conducted on 10% (13 mothers) of the study subjects to evaluate the clarity, feasibility, applicability of the study tools and time needed for each data collection tool to be filled in. The study subjects in the pilot study were not excluded in the main study sample because there were no modifications done in the study tools. It was done during November 2022.

Field work:

The mothers were interviewed individually to collect the personal data. The study was carried out from the beginning of December 2022 to the end of May 2023, covering six months. The researcher was available in study settings two days weekly (Saturday& Monday) from 10 A.M. to 2 P. M. The researcher introduced herself to the mothers and explained the purpose of study and took their written approval to participate in the study prior to data collection. The interviewing questionnaire sheet (Tool I) was administered to all mothers individually in order to collect personal data and to assess their knowledge regarding xerophthalmia and vitamin A.

Explanation of the questionnaire sheet was done. Then, the researcher assessed mothers' reported practices regarding care of their children with xerophthalmia (Tool II). The average number of interviewed mothers was 3-4 mothers/ day depending on their responses to fill the sheets. The average time required to complete each questionnaire was 20-30 minutes. The time required to assess mothers' reported practice ranged from 25-30 minutes.

Administrative design:

An official letter was submitted from the Dean of Faculty of Nursing, Benha University containing the title, aims, data collection tools and the study technique was provided to the administrator of the previously mentioned setting to perform data collection.

Statistical analysis:

Statistical analysis was done by using Statistical Package for Social Sciences (SPSS) version 20. Data were collected, revised, organized, coded, tabulated, and analyzed using frequencies, number, percentage, mean scores, standard deviation and correlation coefficient. Data were presented in the form of tables and figures. Quantitative data was presented by mean (X) and Standard Deviation (SD). Qualitative data was presented in the form of frequency distribution tables, numbers and percentages. Qualitative variables were analyzed by Chi- Square test (x^2) and correlation coefficient (r) to detect the relation between the variables of the study (P- value). A highly statistical significant level value was considered when ($p< 0.001$). A statistical significant level value was considered when ($p< 0.05$) and no statistical significance difference was considered when ($p >0.05$).

Results:

Table (1) shows that, more than two-fifth (40.8%) of the studied mothers were in the age group of 20-< 25 years, with a mean age of 29.33± 5.01 years. In relation to marital status, the majority of them (94.6%) were married. Regarding educational level, this table reveals that, more than half of them (57.6%) had secondary education. In addition; regarding occupation, less than

three-quarters (73.8%) of them were housewife. Also, less than two-thirds (64.6%) of mothers lived in rural areas. Moreover; the monthly income of less than two-thirds of them (60.0%) was fairly enough.

Table (2) demonstrates that, less than half (46.2%) of children were in the age group of 6- <12, with a mean age of 8.21± 3.80 years. Regarding gender, this table reflects that, more than half (50.8%) of them were females. As regards educational level, this table represents that, more than third (39.2%) of them were in primary school. Concerning child ranking, it indicates that, more than third (37.7%) of them were the third child in ranking.

Table (3) reflects that, less than three-quarters (73.1%) of children diagnosed with xerophthalmia since less than a year. Concerning family history, it was found that, the majority (85.4%) of them didn't have family history of xerophthalmia. In relation to symptom that the child complains from, this table represents that, all (100.0%) and the majority (92.3%) of children suffering from eye dryness and redness respectively. Moreover, the majority (91.5%) of them had no eye surgery before.

Figure (1) illustrates that, less than two-thirds of the studied mothers (60.7%) had poor total knowledge score, while less than one-third (30.8%) of them had good total knowledge score.

Figure (2) illustrates that, more than two-thirds of the studied mothers (67.7%) had inadequate level of reported practices regarding care of their children with xerophthalmia, while less than one-third (32.3%) of the them had adequate level of reported practices regarding care of their children with xerophthalmia.

Table (4) represents that, there was a positive statistical significant correlation between total knowledge scores and total reported practices scores of the studied mothers regarding care of their children with xerophthalmia ($p \leq 0.05$).

Table (1): Frequency distribution of the studied mothers according to their personal characteristics (n=130).

Mothers' personal characteristics	No.	%
Age/ years		
<20	29	22.3
20-< 25	53	**40.7**
25-<30	24	18.5
30- >35	24	18.5
Mean ± SD 29.33± 5.01		
Marital Status		
Married	123	**94.6**
Divorced	5	3.9
Widow	2	1.5
Educational level		
Not read & write	4	3.1
Primary education	21	16.2
Secondary education	75	**57.6**
University education	30	23.1
Occupation		
Employee	34	26.2
Housewife	96	**73.8**
Residence:		
Rural	84	**64.6**
Urban	46	35.4
Monthly income		
Enough	20	15.4
Fairly enough	78	**60.0**
Not enough	32	24.6

Table (2): Frequency distribution of the studied children according to their characteristics (n=130).

Children's characteristics	No.	%
Age (years)		
Less than one year	13	10.0
1- < 6	32	24.6
6- <12	60	**46.2**
> 12	25	19.2
Mean + SD 8.21+ 3.80		
Gender		
Male	63	49.2
female	66	**50.8**
Educational level		
Pre-nursery child	15	11.5
Nursery school	30	23.1
Primary school	51	**39.2**
Preparatory school	20	15.4
Secondary school	14	10.8
Child ranking		
First	21	16.2
Second	45	34.6
Third	49	**37.7**
Forth	15	11.5

Table (3): Distribution of the studied children according to their medical history (n=130).

Medical history of children	No.	%
Duration of disease onset		
< 1 year	95	**73.1**
One year or more	35	26.9
Family history of xerophthalmia		
Yes	19	14.6
No	111	**85.4**
Symptom that the child complains from*		
Eye dryness	130	**100.0**
Bitot's spot	20	15.4
Eye redness	120	**92.3**
Night blindness (cannot see in dim light)	3	2.3
Tingling or burning sensation	50	38.5
Feeling of sand in the eye	54	41.5
Ulcer or scar on the cornea	6	4.6
Excessive mucus production in or around the eye	65	50.0
Persistent itching in the eye	68	52.3
Crease of the outer of the eye or the conjunctiva	4	3.1
Blurred vision	77	59.2
Child undergone eye surgery previously		
Yes	11	8.5

* **Numbers are not mutually exclusive**

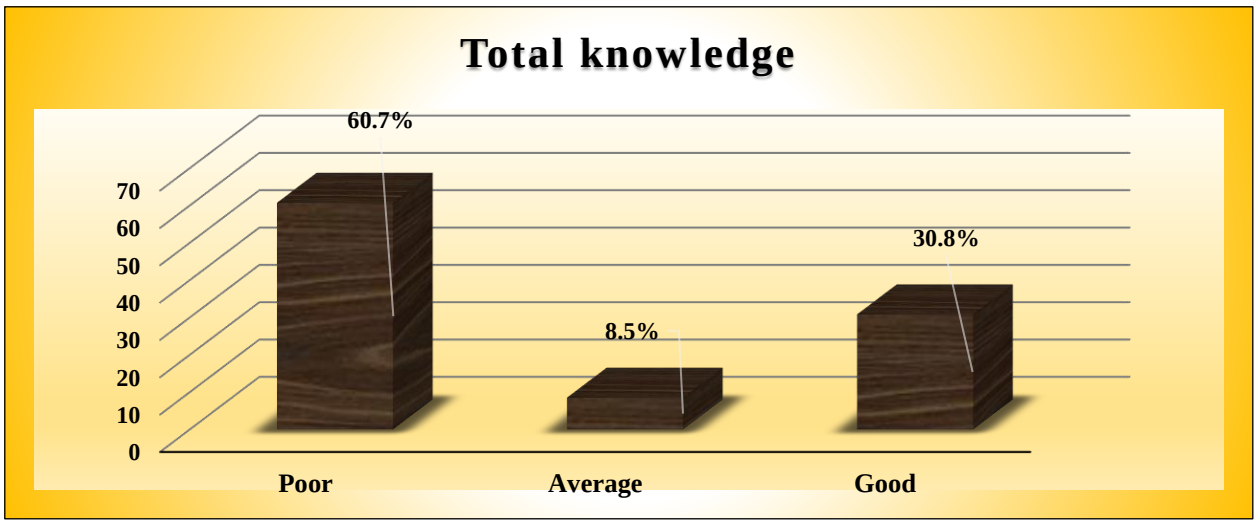

Figure (1): Percentage distribution of studied mothers' total knowledge score (n = 130).

Figure (2): Percentage distribution of studied mothers' total reported practices score regarding care of their children with xerophthalmia (n = 130).

Table (4): Correlation coefficient between the studied mothers' total knowledge and reported practices scores regarding care of their children with xerophthalmia (n = 130).

Variables	Total knowledge	
	r	P-value
Total practices	0.862	≤ 0.05 *

*A Statistically significant p ≤ 0.05 **A Highly Statistical significant p ≤ 0.001.

Discussion:

Xeropthalmia is a progressive disorder which results due to deficiency of vitamin A. It is a form of dry eye that can dry out the tears duct and eyes. It can mainly result into night blindness which is a condition when the child is unable to see in dim light and this occurs due to low serum retinol levels in the body. It can cause serious damage to cornea which is the outer layer of our eyes and eye fail to produce tears. VAD and xerothalmia particularly affect the children who are suffering from malnutrition. VAD can form white spots on the eyes and may cause ulcers on the cornea **(Alışkanlıkları, 2020).**

Regarding personal characteristics of the studied mothers, the results of the present study showed that, more than two-fifth of the studied mothers were in the age group of 20-< 25 years, with a mean age of 29.33± 5.01 years, the majority of them were married, more than half of them had secondary education, less than three-quarters of them were housewife, less than two-thirds of mothers lived in rural areas and the income of less than two-thirds of them was fairly enough.

The findings of the present study were in accordance with **Abdel-Wahab et al.,(2019)** who studied "Mothers' Knowledge, Practices and Attitudes regarding their Preschool Children with Xerophthalmia" and showed that, more than one third of mothers aged 30 -34 year with mean age of 31.2±5.22 years, the most of the studied sample were married, more than two fifths of mothers had a secondary education, approximately three-quarters of mothers were housewives, three quarters of mothers having children with xerophthalmia lived in rural areas and more than two thirds of mothers had enough income per month.

The results of the present study were nearly similar to **Abd El-Aziz et al., (2018**) in the study entitled "Mothers' Knowledge and Practices Regarding their Children with Acute Infective Conjunctivitis" who cleared that, less than half of the studied mothers aged < 20 years, with mean age were 29.1±6.08, while more than two fifths of them were read and write. Regarding occupation; more than half of mothers weren't employed. Less than three quarters of them were living in rural areas, and less than half of them had fairly enough monthly income.

These results agreed with **Nair et al., (2022)** who conducted "Compliance and Barriers of Vitamin A Supplementation for Under Five Children: A Cross Sectional Study" and stated that, majority of the sample reside in rural areas. Economic status is above poverty line for more than three quarters of the participants and two-fifth of them graduated from higher secondary school.

Likewise, **Priya et al., (2020)** who carried out a study about "A study to assess the knowledge of vitamin a deficiency among under five mothers in a selected area, west Saidapet" and illustrated that, less than half of mothers were in the age group of 26-30 years, more than one third of children were in the age group of 3-4 years, more than half of them were females, more than half of them were unemployed. This similarity in results may be related to the similarities of community features and convergence in sample size.

Increasingly, **Bantihun et al., (2020)** who studied "Child Night Blindness and Bitot's Spots Are Public Health Problems in Lay Armachiho District, Central Gondar Zone, A Community-Based Cross- Sectional Study" and mentioned that, the mean ages of the mothers were 30:05 ± 4:92 years. The majority of the respondents were married and housewife was the main occupation

of mothers. But on the contrary to the present study findings, nearly two thirds of the children's mothers were illiterate and about one-third of the respondents were poor in the wealth index. These differences in results of general characteristics between these studies and present study findings might be related to the time difference between the two studies.

In relation to personal characteristics of the studied children, the results of current study revealed that less than half of children were in the age group of 6- <12, with a mean age of 8.21± 3.80 years, more than half of them were females. As regards educational level, more than third of them were in primary school. Concerning child ranking, more than third of them were the third child in ranking.

The findings of the current study were in the same harmony with **Abdel-Wahab et al., (2019)** who clarified that, more than half of children were females, and aged 5 years, with mean age was 2.78±0.94. Regarding to the child ranking, more than one third of children were second and third in ranking. In the same harmony, **Mishra et al., (2017)** who conducted "Prospective Clinical Study to Find out Epidemiology of Xerophthalmia in Children in a Tertiary Care Centre in Indi" illustrated that, fifty-nine percent were female whereas forty-one percent were males.

In addition, **Belete et al., (2019)** who studied "Xerophthalmia and Its Associated Factors among School-Age Children in Amba Giorgis Town, Northwest Ethiopia" revealed that, about fifty percent of the study participants were between the age group of 6–8 years and more than half were females.

The findings of current study agreed with **Mohammed et al., (2018)** who studied "Assessment of Mothers' Role in Care of Ophthalmological Problems in Their Children" and concluded that, the mean age and standard deviation of the studied children was 13.8 ± 2 and more than half of them were female. Moreover, less than two-thirds of studied children were in the different stages of education and more than one third of them were ranked as second child in their family.

Contrary to the present study findings, **Abd El-Aziz et al., (2018)** indicated that, more than one quarter of the studied children aged 2 years, with mean age 3.75±1.20. More than half of them were males. less than two-thirds of them were gone to nursery school, more than one third of them were the oldest children between his siblings. This difference could be explained by the difference in age group of the studied children where the present study included all children from birth up to 18 years old.

Pertaining to medical history of the studied children, the present study results showed that, less than three-quarters of children diagnosed with xerophthalmia since less than a year. Concerning family history, it was found that, the majority of them didn't have family history of xerophthalmia. In relation to symptom that the child complains from, all and the majority of children suffer from eye dryness and redness respectively. Moreover, the majority of them had no eye surgery before.

The results of the present study matched with **Abdel-Wahab et al., (2019**) who stated that, less than three quarters of children diagnosed with xerophthalmia since less than a year, most of them had no family history of xerophthalmia, the majority of children suffering from redness of eye, more than half suffering from continuous itching in the eye, and all of children had no eye surgery before.

In the same context, **Mohammed et al., (2018)** illustrated that, the majority of studied children had pain in their eyes, while more than

three fourths of children had redness of their eyes followed by more than two-thirds of them had burning sensation in their eyes.

Opposite to current study results, **Belete et al., (2019)** indicated that, the most observed clinical sign of xerophthalmia is bitot's spot followed by night blindness. These variations can be attributed to different study populations, settings, designs, differences in the tools used and methods of data collection. Moreover, differences in the performance of health systems in different countries could also explain the differences.

In relation to mothers' knowledge, the findings of the current study represented that, less than two-thirds of the studied mothers had poor total knowledge score, while less than one-third of them had good total knowledge score. The low schooling levels of the mothers might be a factor that contributed to the poor knowledge.

The current study findings were similar to the results of **Abdel-Wahab et al, (2019)** who illustrated that, half of the mothers had correct and incomplete knowledge regarding meaning of xerophthalmia. The majority of mothers had correct and complete knowledge regarding symptoms of xerophthalmia, more than two fifths of mothers had incorrect knowledge regarding complications of xerophthalmia, more than half of the mothers had correct and incomplete knowledge regarding treatment, approximately three fifths of the mothers didn't know knowledge about importance of vitamin A for eye, one quarter of the mothers had correct and complete knowledge regarding sources of vitamin A in food.

Moreover, it is evident that, more than two-fifths of mothers had poor knowledge about xerophthalmia and vitamin A and only 23.0% of them had good knowledge about xerophthalmia and vitamin A and less than one third of them had average knowledge about xerophthalmia and vitamin A. This calls for a collaboration of the authorities to augment the mothers' education and conducting surveys to monitor the improvement.

Mishra et al., (2017) supported these results and found that less than two thirds of children received no treatment because of lack of knowledge and awareness. However, more than one quarter were taking treatment from local doctor or health worker which did not contain vitamin A supplement. So, health education is needed for dietary diversification to include vegetables and fruits for long-term sustainability in improving the vitamin A status of children of all age groups. Such an approach will improve the intake of vitamin A and other micronutrients in a balanced manner.

Increasingly, the results of the present study came in harmony with **Kananu, (2021)** who documented that, the majority of participants had inadequate knowledge. This result was in the same direction as the study of **Priya et al., (2020)** who showed that, most of them had moderately adequate knowledge, had more than one third had inadequate knowledge. Therefore, nutrition education session for mothers should be arranged; it should address knowledge of VA-rich food & vitamin A supplementation of pre-school children.

On the other hand, the present study findings disagreed with **Nigusse and Gebretsadik., (2021)** who revealed that, the majority of studied sample had good maternal knowledge. The possible explanation might be due to the fact that there are socio-demographic variations across the countries, the difference in health education, sample size and access to sources of information like television, radio and newspaper.

As regards total reported practices score of the studied mothers regarding care of their children with xerophthalmia, the current study revealed that, more than two-thirds of the studied mothers had inadequate level of reported practices regarding care of their children with xerophthalmia, while less than one-third of the them had adequate level of reported practices regarding care of their children with xerophthalmia.

These findings agree with **Rani, (2018)** who revealed that, among fifty sample level of practices more than half are inadequate, 16 % are adequate, less than one third are having moderate. Designed interventions should be implemented to enhance knowledge and practices among mothers. Moreover, **Abd El-Aziz et al., (2018)** showed that generally, more than half of the studied mothers had unsatisfactory level of practices; while more than two-fifth of them had satisfactory level of practices. So, health educational programs for mothers regarding xerophthalmia to increase mothers' knowledge and practices in ophthalmic outpatient clinics and distributation of illustrated books about xerophthalmia to enhance mothers' principle steps for care of their children are necessary.

Additionally, these results agree with **Mohammed et al., (2018)** who observed that the great majority of studied mother reported done by inadequate totaling practice-related to children, while the rest (7% &3.3%) of them reported never and done adequately practice toward caring of their children with ophthalmological problems.

Opposite to the current study results, **Abdel-Wahab et al., (2019)** who indicated that, less than two thirds of mothers had satisfactory practices regarding care of their children with xerophthalmia and two-fifth of them had unsatisfactory practices regarding care of their children. It was indicated that, more than three quarters of mothers provided the child with elements containing vitamin A such as vegetables as spinach, parsley and lettuce, more than half of mothers provided the child with milks, majority of mothers provided their children with fruits like mango and peach, more than one third of mothers didn't provide their children with meat and liver, approximately three quarters of mothers didn't supplement their children with vitamin A, more than three fifths of mothers washed child hands regularly before and after food and after playing regularly, majority of mothers been sure that the child slept a sufficient number of hours (10-13) hours per day.

The difference in the results may be due to the difference the interest in providing continuous health education for care of children with xerophthalmia and their follow-up at the time of conducting the research.

Owing to correlation between total knowledge and total reported practices scores of the studied mothers, the finding of current study reported that, there was a positive statistical significant correlation between total knowledge scores and total reported practices scores of the studied mothers regarding care of their children with xerophthalmia ($p \leq 0.05$).

The results of the present study were nearly matched with **Abd El-Aziz et al., (2018)** who cleared that, there were positive significant correlations between the studied mothers' total knowledge and practices scores ($P<0.001$). In addition, **Abdel-Wahab et al., (2019)** reported that, there were positive highly statistically significant correlations between mothers' total knowledge, reported practices and attitude score regarding xerophthalmia.

Increasingly, **Ebeigbe and Emedike, (2019)** who conducted "Parents' awareness and perception of children's eye diseases in Nigeria" found that, there were a positive correlation between total knowledge and practices of mothers. This might be due to the low level of knowledge among the studied mothers had a great effect on decreasing their level of practices. This proves that acquiring knowledge motivates better practices. Hence, more efforts need to be done to ensure effective delivery of knowledge to all mothers as it leads to a better eye care practices, regardless of their socio-demographic and clinical background.

Finally, the present study questions were answered through the present study findings.

Conclusion:

Based on the current study findings, it was concluded that:

Less than two-thirds of the studied mothers had poor total knowledge score, while less than one-third of them had good total knowledge score. Also, more than two-thirds of the studied mothers had inadequate level of reported practices regarding care of their children with xerophthalmia, while less than one-third of them had adequate level of reported practices regarding care of their children with xerophthalmia. Furthermore, there was a positive statistical significant correlation between total knowledge scores and total reported practices scores of the studied mothers regarding care of their children with xerophthalmia ($p \leq 0.05$).

Recommendations:

- Continuing in-service educational programs should be designed and implemented to improve mothers' knowledge and practice regarding care of their children with xerophthalmia.
-Availability of designed guidelines in Arabic language regarding care of children with xerophthalmia in different health settings.
- Posters and leaflets should be available in children's hospitals and pediatric outpatient clinics regarding xerophthalmia.
- The importance of vitamin A should be incorporated into the nursing curricula of nursing students in colleges, institutes, and schools.

Recommendations for further researches:

- Conducting the study in different settings of pediatric outpatient clinics to generalize the results of the study and raise the level of awareness about care of their children with xerophthalmia.

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معلومات وممارسات الأمهات تجاه رعاية أطفالهن المصابين بجفاف الملتحمة

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جفاف الملتحمة عبارة عن مجموعة واسعة من الأعراض العينية بسبب نقص فيتامين أ والتي يمكن أن تؤثر على الأداء المدرسي والسلوك الاجتماعي للأطفال. **الهدف من الدراسة**: تقييم معلومات والممارسات المبلغ عنها للأمهات فيما يتعلق برعاية أطفالهن المصابين بجفاف الملتحمة. **تصميم البحث**: تم استخدام تصميم البحث الوصفي لإجراء هذه الدراسة. **مكان الدراسة:** العيادات الخارجية لمستشفى بنها لطب العيون وعيادات طب وجراحة العيون بمستشفى بنها الجامعي. **عينة البحث**: عينة غرضية (العدد = 130) من جميع الأمهات المتاحات بغض النظر عن خصائصهن مع أطفالهن الذين يعانون من جفاف الملتحمة. **أدوات جمع البيانات**: تم استخدام أداتين، الأداة الأولى: استمارة مقابلة منظمة تتضمن خصائص الأمهات المدروسات، خصائص الأطفال، التاريخ الطبي للأطفال المصابين بجفاف الملتحمة واستمارة تقييم معلومات الأمهات والأداة الثانية: استمارة تقييم ممارسات الأمهات المبلغ عنها. **النتائج:** أقل من ثلثي الأمهات اللاتي شملتهن الدراسة حصلن على درجة معلومات كلية ضعيفة، في حين أن أقل من ثلثهن حصلن على درجة معرفة كلية جيدة. كما أن أكثر من ثلثي الأمهات اللاتي شملتهن الدراسة كان لديهن مستوى غير كاف من الممارسات المبلغ عنها فيما يتعلق برعاية أطفالهن المصابين بجفاف الملتحمة، في حين أن أقل من ثلثهن كان لديهن مستوى مناسب من الممارسات المبلغ عنها فيما يتعلق برعاية أطفالهن المصابين بجفاف الملتحمة. **الاستنتاج**: كان هناك علاقة إيجابية ذات دلالة إحصائية بين مجموع درجات المعلومات ومجموع درجات الممارسات المبلغ عنها للأمهات المدروسات فيما يتعلق برعاية أطفالهن المصابين بجفاف الملتحمة. **التوصيات:** يجب أن تكون الملصقات والمنشورات متوفرة في مستشفيات الأطفال والعيادات الخارجية للأطفال فيما يتعلق بجفاف الملتحمة.