

Effect of Mothers' Educational Instructions Regarding First Aid for Nosebleeds on Quality of Life of their Children with Idiopathic Epistaxis

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Abstract:

Background: Idiopathic epistaxis is a nasal bleeding that has no specific cause. It is one of the most common Ear, Nose and Throat (ENT) emergencies. Children with epistaxis reporting a significant impact on quality of life. **Aim:** the current study aimed to evaluate the effect of mothers' educational instructions regarding first aid for nosebleeds on quality of life of their children with idiopathic epistaxis. **Subjects and Method: Design:** Quasi- experimental research was used. **Sample:** A purposive sampling of 80 mothers and their children with Idiopathic Epistaxis. Setting: Pediatric Outpatient Ear, Nose, and Throat (ENT) clinic of Tanta Main University Hospital. **Tools of data collection:** Tool (I) Mothers ' Knowledge Regarding Epistaxis, Tool (II) Mothers' Reported Practice regarding First Aid of Epistaxis, Tool (III) Children's Quality of Life Questionnaire. **Results:** The majority of mothers had high level of knowledge about epistaxis post educational instructions compared to a few percentage of them pre education. Most of the mothers and more than two thirds of them had satisfactory practice immediately after education and one month post education respectively compared to none of them pre education. **Conclusions:** The educational instructions were effective in improving mother's knowledge and practices regarding first aid of their children with idiopathic epistaxis. Quality of life of children with epistaxis was improved immediately and after one month as compared to pre educational instructions. **Recommendations:** Develop public awareness program about first-aid management and control of epistaxis to minimize complications.

Keywords: Children, Educational instructions, First aid, Idiopathic epistaxis, Mothers, Nosebleed, Quality of life

Introduction

Epistaxis is brought on by a ruptured blood vessel. It is one of the most frequent ENT (ear, nose, and throat) emergencies seen in emergency rooms or primary care settings caused by bleeding from the nasal septum. Although epistaxis rarely poses a serious risk to life, it can nonetheless be very concerning, particularly for parents of young children (**Bamimore & Silverberg, 2021**).

Epistaxis symptoms can resemble those of various medical disorders. It may be accompanied by tachycardia, tachypnea during episodes of heavy or recurring bleeding, lethargy, dizziness, blurred vision, fatigue, and loss of energy. The primary sign of epistaxis is blood leaking or streaming from the nose. Additionally, epistaxis can be brought on by benign behaviors like a child cleaning their nose, blowing their nose too forcefully, or being knocked down while playing. It can also be brought on by environmental variables including dust, dry climates, inflammatory conditions, other sensitive reasons, but it is frequently idiopathic (**Send et al., 2021**).

Nasal bleeding without a known cause is referred to as idiopathic epistaxis. An examination of the child's nose anatomy is necessary to evaluate a child who has recurrent idiopathic epistaxis. Crusting, nasal vestibulitis (an infection of the skin of the nasal vestibule causing soreness, inflammation, fissuring, and encrustation), and/or digital trauma ('nose picking') are the usual causes of childhood recurrent idiopathic epistaxis, though in many cases no clear cause can

be identified (**Qureishi & Burton, 2016**).

The precipitating factor of epistaxis can be due to local, systemic, environmental and medications causes. It may be idiopathic in the majority of cases, 80-90% of children do not have identifiable cause. Localized trauma resulting from nose-picking or foreign bodies stuck in the nose is one of the causes of epistaxis. Additional reasons include damage to the face, deviated septum, and improper or overuse of topical nasal sprays. In children, inflammation responses and infrequently intranasal tumors can also cause epistaxis (**Côte et al., 2018**).

Clinically, there are two types of epistaxis: anterior and posterior. Over 90% of epistaxis episodes occur along the anterior nasal septum, making anterior bleeding more common. While posterior bleeding is more dangerous and rare in children. Approximately 10% of epistaxis occurs posteriorly. The anterior region of the nose is affected by anterior epistaxis, and the rich arterial anastomoses of the nasal septum, which are supplied by Keisselbach's plexus at a location called Little's area, are typically the source of bleeding (**Luke, 2021**).

Recurrence prevention and bleeding management are the main goals of treating pediatric epistaxis. If a considerable amount of blood is swallowed during a severe nosebleed, it may cause vomiting or difficulties breathing. The child has to get help from medical professionals and go to the closest emergency room. Topical vasoconstrictive nasal sprays (e.g.,

oxymetazoline, epinephrine) are simple drugs used for the treatment of epistaxis. If medication is not effective, endoscopic electrocoagulation through nasal cautery or packing may be required (**William et al., 2020**).

Quality of life (QoL) is a comprehensive belief that often combines subjective assessments of life's positive and negative aspects. The standard of children's lives essential because it is an investment in society's future. Quality of life in pediatric is crucial. Epistaxis has a worse health-related quality of life because it is negatively affected on the child physically, socially, psychologically and emotionally (**Ruzevicius, 2014**).

Nurses play a crucial role in the management of epistaxis. They are responsible for providing child's care, increasing mothers' awareness, help mothers to complete understanding and coping with epistaxis. They are responsible for increase children and mothers' knowledge, enforce positive attitude and correct practice regarding epistaxis which have negative effect on child's health. Nurses' role towards epistaxis management initiate on home care through first aid. This can be achieved through health education, counseling and awareness raising campaigns (**Hakim et al., 2018**).

Epistaxis management has lot of interest from mothers to learn which came gradually from first aid, cautery, packing or surgical intervention according to condition. During first aid of epistaxis, mothers learn how put their children in sitting position with head in slightly forward position, pressure on

cartilage area of nose in two directions for continuous 5-10 minutes during this time child breath through mouth and ice pack use on forehead, neck or upper nose have rapid effect to stop bleeding. If the bleeding continues for more than 20 minutes, mothers go to the emergency room (**Datta, 2017**).

Epistaxis is a medical condition that is easily prevented. A child's nasal passages can be kept moist by applying saline nose drops or spray two to three times a day to each nostril. Place a humidifier in child's bedroom at night, get air more humid. Use a cotton swab to apply water-soluble nasal gels or ointments to child's nostrils, just make sure the swab goes no deeper than 1/4 inch into the child's nose. Mothers should teach children to always keep their fingernails short, to avoid putting anything solid, even fingers, in their noses, and to sneeze through an open mouth (**Kliegman et al., 2020**).

Significance of the study:

Epistaxis can be unpredictable that may impact the quality of life of the children and their families. It is considered the most common health problem between children in Egypt as a result of spearing dust, hot, dry weather and respiratory infection. General awareness about first aid and management of epistaxis is lacking amongst children and their mothers. Raising awareness of simple management strategies among mothers could significantly reduce epistaxis associated quality of life issues (**Ala'a et al., 2018**).

Epistaxis is a common condition among both children and young adults. It rarely occurs in children less than 2 years of

age but is commonly observed in children between 3 and 8 years of age and the incidence increase with age, 30% of all children aged 0-5, over half of the children have had at least one attack of epistaxis by the age 10 and nearly two third by age of 15. Worldwide, epistaxis is estimated to occur in 60% of children during their lifetime, 50% of all adult individuals had been presented with epistaxis during childhood (Ebrahim et al., 2022).

Aim of the Study

Evaluate the effect of mothers' educational instructions regarding first aid for nosebleeds on quality of life of their children with idiopathic epistaxis.

Research Hypothesis:

H₁: Educational instructions are expected to improve mothers' knowledge and practice regarding first aid for nosebleeds of their children with idiopathic epistaxis.

H₂: Quality of life for children with epistaxis is expected to be improved after implementation of mothers' educational instructions regarding epistaxis first aid.

Subjects and Method

Research design:

A quasi-experimental research design was used in the current study.

Setting:

This study was conducted at Pediatric Outpatient Ear, Nose, and Throat (ENT) clinic of Tanta Main University Hospital, which Affiliated to the Ministry of Higher Education and Scientific Research.

Subjects:

A purposive sampling of 80 mothers and their children with Idiopathic Epistaxis was included. The total number of children attended in the previously mentioned setting is about 200 children in the last 6 months. Epi-info software statistical package to determine sample size as follow:

- Confidence level 95%.

- Margin of error 0.07.

Inclusion criteria for children:

-Children's ages are between 5-12 years.

-Children with severe, persistent, or recurrent epistaxis.

Exclusion criteria:

Children with nasal or naso-pharyngeal tumor, vascular mal- formation, recent facial trauma, recent sinus and / or nasal surgery.

Tools of data collection:

Three tools were used to collect data.

Tool (I): Mothers ' Knowledge Regarding Epistaxis:

It was developed by the researcher to assess mother's knowledge about epistaxis. It was divided into three parts as follow:

Part (1): Socio-demographic Characteristics of the studied mothers

It covered the personal characteristics of mothers including age, level of education, occupation, residence and number of children.

Part (2): Socio- demographic characteristics of studied children

It included data about:

A- Child's age, gender, birth order and educational grade.

B- Child's medical history of epistaxis: age at first time of epistaxis, precipitating factors of nasal bleeding,

frequency, duration of epistaxis, amount of blood loss and season.

Part (3): Mothers' knowledge regarding epistaxis

It was developed by researcher after revision of the related literature (**Saleem et al., 2018; Ebrahim et al., 2022**). It involved 10 multiple choice questions that covering the following data:

A- Meaning, precipitating and risk factors, signs and symptoms, measures to stop nosebleeds, treatment, and complications of nosebleed.

B- Knowledge related to first aid of epistaxis as: appropriate position of the child during bleeding, site of nasal compression and knowledge related to prevention of nosebleeds and when to seek medical advice.

Scoring system of mothers' knowledge:

-Correct & complete answer scored (2).

-Correct & incomplete scored (1).

-Wrong or don't know scored (0).

Total score for mothers' knowledge were calculated and classified as follows:

-Low level of knowledge less than 60 % (0<12 score).

-Moderate level of knowledge from 60 - 75 % (12 -16 score).

-High level of knowledge more than75% (16-20 score).

Tool (II): Mothers' Reported Practice regarding First Aid of Epistaxis:

It was developed by the researcher after reviewing the related literatures (**Saleem et al., 2018; Ebrahim et al., 2022**). It involved 28 multiple choice questions that were divided into five parts: Measures to stop bleeding, nasal compression, Child's position,

Prevention of nosebleeds recurrence and Nose and mouth care.

Scoring system of mother's reported practice:

-The reported practice that is correct was scored (1).

- The reported practice that is incorrect or not done was scored (zero).

The total scores were calculated as follow:

-The total number of items was 28.

- Unsatisfactory practice less than 70% (range 0-20).

- Satisfactory practice from 70 -100% (range 21-28).

Tool (III): Children's Quality of Life Questionnaire:

It was developed by researcher based on the KINDL Quality of life questionnaire (Parents 'version) that was developed by (**Sieberer U, Bullinger et al., 2008**).

Mothers were asked to report the children's quality of life from their own point of view. It was a Likert-Scale composed of six dimensions including, physical wellbeing, emotional wellbeing, self-esteem, family dimension, friends dimension and daily activity. The Likert-Scale scored as follows 1 = Never, 2 = Sometimes & 3 = Very often.

Quality of life scoring system as follow:

-Each dimension contains four items. The total number of items was 24 with a total score of 72.

-Low quality of life < 70% (24-50).

-High quality of life >70% (51-72).

Method:

The study was accomplished through the following steps.

Administrative process: An official permission to conduct the study was obtained from the Dean of the Faculty of Nursing and the administrators of the setting at Pediatric Outpatient Ear, Nose, and Throat (ENT) clinic to carry out the study.

Ethical considerations:

-Ethical and legal approval was obtained from Faculty of Nursing Scientific Research Ethical Committee (Code No 2015/3/2023).

-Children's privacy and confidentiality were taken into consideration. After informing the mothers and their children about the study purpose and their ability to withdraw from it at any time and they gain their agreement to participate.

-Nature of the study would not cause any harm or pain to the samples.

Tools development:

Three tools were used for data collection.

Content Validity: The tools were presented to a jury of five experts in the area of specialty to check content validity and clarity of questionnaire. The content validity index was 98%.

A Pilot study:

It was carried out on 10% of the sample to test clarity, visibility, and applicability of the study tools and the necessary modifications were done. This pilot was excluded from total sample of the study because some questions were added and others were deleted or modified.

Reliability:

Internal consistency was used to test the reliability of the tools used. The value of Cronbach's alpha coefficient was

0.934 for Tool (I), 0.979 for Tool II and 0.812 for Tool (III).

Data collection and educational instructions were carried out for mothers and their children within six months, started from the beginning of July 2023 to the end of December 2023.

Phases of the study: The study was conducted in four phases:

1- Assessment phase:

It was done by the researcher for all studied subjects to identify children who met inclusion criteria to be involved in the study. Mother's knowledge questionnaire regarding epistaxis was used to collect socio- demographic data of mothers' and their children and knowledge regarding epistaxis using tool (I). Afterward, the researcher collect data related to mothers' reported practice about first aids of epistaxis using tool (II). Finally, children's quality of life assessment was done using tool (III). The time needed for fulfilling Tool I data was 10-15 minutes. Reported practice was fulfilled with 10-15 minutes and quality of life for 10-15 minutes.

2- Planning phase:

This phase included analysis of the assessment phase and based on literature review which included the following:

-Setting specific objectives.

-Preparation of the content of educational instructions.

-Different methods and materials were used including interactive lectures, colored booklet, group discussion, demonstration and re-demonstration for the educational instructions. It was developed and planned by the

researcher in Arabic language based on the needs assessment and after reviewing the medical research guidelines regarding epistaxis. It covered the theoretical knowledge about epistaxis, as well as practical mothers' procedures regarding care of children with epistaxis.

-The studied mothers were divided into 10 groups of 8 mothers in each session.

-Preparation of the environment: good ventilated rooms were maintained with minimal noise and free from any spillage to promote child safety.

3-Implementation phase:

Data collection started from the beginning of July 2023 to the end of December 2023. The researcher attended 9am till 12pm every Saturday, Sunday and Monday in the previously mentioned setting to collect data and meet the mothers and their children in the waiting area. Educational instructions were implemented by the researcher for all study subjects using interactive lectures and colored booklets with illustrated pictures. It was achieved through 3 sessions at a period of 3 day/week. The time for each session was ranged from 30-45 minutes. Each session started by a summary of the content of the previous session for 10 minutes revision followed by the content of session. Every mother had the opportunity to ask questions and share information with the research and with each other.

The sessions were as follow:

First session:

Mother's knowledge regarding epistaxis (Theoretical session).

This session focused on: orientation and explanation of the aim and the importance of designed educational instructions and gave an overview about idiopathic epistaxis including meaning of epistaxis, precipitating factors, signs and symptoms of epistaxis, prevention of recurrence and complications of epistaxis.

Second session:

First aid of epistaxis (practical session).

This session concentrated on: educating mothers first aid of epistaxis including measures to stop nosebleeds through keeping child calm and reassured then positioning child in appropriate position with head slightly forward, gently pinches the tip of the child's nose onto the soft cartilaginous part between two fingers and ask child breathe through mouth, continue to apply pressure for continuous 5-10 minutes.

Third session:

Prevention of recurrence of epistaxis (Theoretical session). This session was focused on: prevention of epistaxis recurrence for their children through increasing child's room humidity with a humidifier, decrease presence in dry and smoke places, avoid putting anything solid into nose including fingers and always keep the child's fingernails short. Also, this session focused on how to perform children's mouth and nose care through clean nose with cotton sponge moist in saline or tap water, clean each nostril in circular motion and avoid deep insertion, repeat until complete clean nose. Also, rinse mouth and wash several times to keep mouth clean or use piece of gauze around finger and clean mouth sides.

4-Evaluation phase:

After implementation of educational instructions for mothers. The researcher started to assess mothers' knowledge and their reported practice. Quality of children's life was evaluated before and after completing the educational instructions and then after one month. The results of posttest (both immediately and one month later) was compared by the pre-test using the same instruments of the pretest Tool (I) part 3, Tool (II) and tool (III).

Statistical analysis:

The collected data were organized, tabulated and statistically analyzed using SPSS software. Qualitative data were described using number and percentage. Quantitative data were described using range mean and standard deviation. The tests used where ANOVA test was used to compare between more than two periods. Friedman test to compare between more than two periods. Pearson coefficient to correlate between two normally distributed quantitative variables. A significance was adopted at $P < 0.05$ for tests of significance (*). Also, a highly significance was adopted at $P < 0.01$ for tests of significance (**).

Results

Table (1): Shows socio-demographic characteristics of the studied mothers. Regarding age, it was evident that 42.5% of studied mothers were $25 < 35$ years old. Concerning education, 42.5% of the mothers had secondary education and 30% had university education. In relation to occupation, it was clear that more than half (55%) of mothers were house wife, three quarters of them (75

%) lived in rural area , 72.5% had 1-3 children while 2.5% had 6 children.

Table (2): Illustrates children's socio demographic characteristics. It was clear that more than half (55%) of children were between $5 < 7$ years old. More than two thirds (67.5%) of the children are male. Most of the studied children (87.5%) were in primary level of education.

Table (3): Demonstrate percentage distribution of the studied children according to history of nose bleeding. It was noticed that mean \pm SD of duration of nose bleeding was (4.15 ± 0.92) . As regarding precipitating factors, it was clear that 36.2% of the children had indefinite cause, less than half of them (43.7%) has nose bleeding in winter. Concerning duration of nose bleeding, it was revealed that half of the children (50%) had bleeding between 1-5minutes and 55% of them had family history of epistaxis.

Table (4): Clarified mothers' knowledge about nose bleeds. It was clear that 71.3% of the mothers had low level of knowledge about epistaxis before educational instructions. Meanwhile, 81.3% and 78.8% of them had a high level of knowledge of epistaxis immediately after and after 1 month of educational instructions, respectively. There were highly statistically significant differences regarding mothers' total knowledge and mean score knowledge pre, immediately and one month after educational instructions ($p=0.001$).

Table (5): Shows mothers' overall reported practice regarding first aid of epistaxis. It was revealed that the

majority of studied mothers (85% and 67.5%) had satisfactory practice immediately post and after one month of educational instructions compared to none of them before educational instructions. The mean score of the mothers reported practice regarding first aid of epistaxis was 7.80 ± 4.33 pre educational instructions compared to 23.75 ± 4.03 and 22.80 ± 5.23 immediately after and one month after educational instructions. There were highly statistically significant differences between pre, immediately post and after one month of educational instructions related to practice regarding first aid of epistaxis ($p=0.001$).

Table (6): Shows percentage distribution of the studied children according to quality of life as reported by mothers. It was clear that all of the children (100%) had low level of quality of life before educational instructions. Meanwhile, 97.5% and 93.8% had high level of quality of life immediately post and after one month of educational instruction, respectively. There were statistically significant differences regarding quality of life pre, immediately and one month after educational instructions ($p=0.001$).

Table (7): Show correlations between mothers' knowledge, reported practice and quality of life before, immediately and after one month of educational instructions. There were positive statistically significant correlations between mothers' knowledge and their reported practice before, after and after 1 month of educational implementation (< 0.001).

It was also observed that there was a highly statistical positive correlation between mothers' knowledge and children's quality of life after one month ($p= 0.001$) ** and between mothers reported practice and children's quality of life after one month of the educational instructions ($p=0.001$)**.

Table (1): Percentage Distribution of the Studied Mothers According to Socio-Demographic Characteristics (n = 80)

Mothers' Socio-demographic Characteristics	No.	%
Age in years		
<25	12	15.0
25–<35	34	42.5
35≤ 45	30	37.5
More than 45	4	5.0
Mean ± SD.	33.90 ± 7.39	
Level of education		
Illiterate	2	2.5
Read and write	2	2.5
Basic education	18	22.5
Secondary education	34	42.5
University education	24	30.0
Occupation		
Works	36	45.0
House wife	44	55.0
Place of residence		
Rural	60	75.0
Urban	20	25.0
Number of children		
1–3	58	72.5
4–5	20	25.0
6 child	2	2.5

Table (2): Percentage Distribution of the Studied Children's According to Socio Demographic Characteristics (n = 80)

Children's Socio demographic characteristics	No.	%
Age in years		
5 <7	44	55.0
7 <9	22	27.5
9–12	14	17.5
Mean ± SD	6.99 ± 1.96	
Sex		
Male	54	67.5
Female	26	32.5
Birth order		
First	38	47.5
Second	24	30.0
Third	14	17.5
Fourth	4	5.0
Educational level of the child		
Primary	70	87.5
Preparatory	10	12.5

Table (3): Percentage Distribution of Studied Children according to History of Nose Bleeding (n = 80)

History of nose bleeding	No.	%
Duration of nose bleeding/year		
Less than 1 year	14	17.5
1 < 3	34	42.5
3-6	32	40.0
Mean ± SD.	4.15 ± 0.92	
Precipitating factors of nasal bleeding		
Injury to the nose	14	17.5
Dry air	4	5.0
Insertion of a foreign object into the nose	6	7.5
Allergic rhinitis and frequent nasal infections	17	21.3
Crooked nasal septum	10	12.5
Indefinite cause	29	36.2
Frequency of nose bleeding		
More than once during the same day	2	2.5
Every day	4	5.0
Once a week	24	30.0
Once a month	42	52.5
More than one month	8	10.0
Season of nose bleeding		
Winter	35	43.7
Summer	25	31.2
Fall	6	7.5
Spring	14	17.5
Duration of epistaxis last		
<1min	36	45.0
1 < 5 min	40	50.0
5 < 10 min	4	5.0
Family history of epistaxis		
Yes	44	55.0
No	36	45.0

Table (4): Percentage Distribution of Mothers Overall Knowledge about Nose Bleeds (n = 80)

The mother's knowledge about nosebleeds	Pre		Post		After 1 month		Test of Sig.	P
	No.	%	No.	%	No.	%		
Low level	57	71.3	5	6.3	6	7.5	Fr.= 107.942*	<0.001**
Moderate level	12	15.0	10	12.5	11	13.8		
High level	11	13.8	65	81.3	63	78.8		
Total score (0–20)							F= 276.116*	<0.001**
Mean ± SD.	7.65 ± 5.31		17.80 ± 3.77		17.24 ± 3.75			

Fr: Friedman test F test (ANOVA) with repeated measures

p: p value for comparing between the studied periods

* Statistically significant at $p \leq 0.05$

** Highly statistically significant at 0.001

Table (5): Percentage Distribution Mothers' Overall Practice regarding First Aid of Epistaxis (n = 80)

Tool (II):Mothers' Reported Practice regarding First Aid of Epistaxis	Pre		Immediately Post		After 1 month		Test of Sig.	P
	No.	%	No.	%	No.	%		
Unsatisfactory (<70%)	80	100.0	12	15.0	26	32.5	Fr= 109.939*	<0.001*
Satisfactory (70 - 100 %)	0	0.0	68	85.0	54	67.5		
Total score							F= 677.029*	<0.001*
Mean ± SD.	7.80 ± 4.33		23.75 ± 4.03		22.80 ± 5.23			

SD: Standard deviation

Fr: Friedman test F: F test (ANOVA) with repeated measures

p: p value for comparing between the studied periods

*Statistically significant at $p \leq 0.05$

**Highly statistically significant 0.001

Table (6): Percentage Distribution of Children Overall Quality of Life as Reported by Mothers (n = 80).

Quality of life of a child with epistaxis	Pre		Immediately post		After 1 month		Test of Sig.	P
	No	%	No	%	No	%		
Low level	80	100.0	2	2.5	5	6.3	Fr=146.475*	<0.001**
High level	0	0.0	78	97.5	75	93.8		
Total score (24 – 72)							F=1895.126*	<0.001**
Mean ± SD.	40.43 ± 3.17		68.33 ± 3.30		67.35 ± 4.02			

Mean ± SD: Standard deviation

Fr: Friedman test

F: F test (ANOVA) with repeated measures

p: p value for comparing between the studied periods

*: Statistically significant at $p \leq 0.05$

Table (7): Correlation between Mothers Total Knowledge, Total Practice and Children's Quality of Life pre, immediately and one month after Educational Instructions

Correlations	Pre		Immediately Post		After 1 month	
	r	P	r	P	r	P
Knowledge vs. Practice	0.760	<0.001*	0.825	<0.001*	0.726	<0.001**
knowledge vs. quality of life	0.105	0.353	0.070	0.535	0.386	<0.001**
Practice vs. quality of life	0.115	0.309	0.139	0.220	0.362	0.001*

r: Pearson coefficient

*: Statistically significant at $p \leq 0.05$

**Highly statistically significant 0.001.

Discussion

Epistaxis is one of the most significant medical emergency cases associated with the ear, nose, and throat that are reported in emergency departments. Many parents coping with epistaxis in wrong way so that, epistaxis might cause many complications to children. Recurrent epistaxis is a common cause of hospital referral for children. In the majority of pediatric epistaxis, bleeding originates in

the little's area, located in the antero-inferior part of the nasal septum (Yan & Goldman 2021).

Although, most pediatric epistaxis is self-limiting, responds to symptomatic therapy with no medical attention, it affect on quality of life of children. Epistaxis may affect physical activities of children. Children may suffer from pain, headaches and exhaustion. Epistaxis may also, affect on emotional status such as feeling angry,

sadness, anxiety, irritability and depression when bleeding occur. Social activities and school activities may also be affected by epistaxes which in turn affect children's quality of life (**El-Baz et al., 2022**).

Concerning the precipitating factors of nasal bleeding, the results of the current study clarified that more than one third of the children had history of epistaxis of indefinite cause followed by allergic rhinitis and nose injury. This finding was matched with **Ata, (2019)**, who studied "Depression and anxiety levels in mothers of children with epistaxis: A controlled study" and founded that the majority of epistaxis cases are idiopathic, followed by digital trauma. The current result was relatively in the same line as **Misra, (2016)**, who mentioned that "Management of pediatric epistaxis in different age group in a tertiary care center" and reported that most common cause of epistaxis was trauma, followed by idiopathic causes and inflammatory causes.

Regarding to frequency of nose bleeding, the present study showed that more than half of studied children had epistaxis once a month and about one third of them had epistaxis once a week. This may be attributed to the age of the children involved in the study as nearly two fifth of the children either in the age from 1<3 or 3-6 years. This age is characterized by repeated infection especially rhinitis that leads to irritation of nasal mucous membrane precipitating epistaxis. Also, uncontrolled muscle coordination of the young children may expose them to trauma and injury that precipitate nosebleeds.

This result was agreed with **El-Baz et al., (2022)**, who studied "Risk factors of epistaxis in primary school children in Dakahlia Governorate, Egypt" and mentioned that more than half of the children had epistaxis once a month. On the contrary, a study done by **Hayama et al., (2021)** about "Epistaxis limits the performed activities of daily living in proportion to its severity: a cross-sectional survey among patients with hereditary hemorrhage" revealed that more than one third of children had epistaxis several times per day.

As regard, season of nose bleeding, the current study revealed that less than half of the children had epistaxis during winter. This may be attributed to increase use of air heating, low humidity, increase frequency of upper respiratory tract infection that occurs in winter and decrease coagulation time in colder temperatures both of these factors may increase the prevalence of epistaxis.

This finding was compatible with **Said and Mohasseb, (2020)**, who performed a study entitled "Epistaxis among children in Lower Egypt: frequency and risk factors" and reported that epistaxis was more frequent in winter followed by autumn. Another study by **Cohen et al., (2017)** was in the same line with the current findings. They studied "Early and Late Recurrent Epistaxis Admissions: Patterns of Incidence and Risk Factors" and reported that most cases of epistaxis admissions were in the winter season.

On contrary, the current finding was incompatible with **Jelavic, (2015)**, who reported that "Idiopathic epistaxis and meteorological factors: case-control study"

and reported that the highest percentages of epistaxis occurred during spring. Also, another study done by **EL-Baz et al., (2022)**, whose results contradict with the present finding as they found that more than half of epistaxis cases occurs in summer.

Concerning total mothers' knowledge of epistaxis, it was revealed that about three quarters of the mothers had low level of knowledge pre-educational instructions. This may be attributed to the relatively young age as less than half of the participated mothers were 25<35 years and three quarters of them lived in rural area that may interfere with attending health educational awareness. So, it is not easy to reach healthcare services and gain knowledge from medical and nursing staff. This finding was in agreement with **Alam et al., (2023)**, who studied "Parents' knowledge regarding first-aid management of epistaxis in children in Taif, Saudi Arabia" and clarified that more than two thirds of parents had a moderate level of knowledge before educational instructions. Additionally, more than three quarters of the studied mothers had high knowledge in post educational instruction. This may be due to the importance of educational instructions in improving mothers' knowledge as it provides them with the necessary knowledge about epistaxis and first aid of nosebleed. This finding was congruous with **Ebrahim et al., (2022)**, who reported that nearly three quarters of the studied mothers had good knowledge in post educational instructions implementation.

Concerning total reported practices of the studied mothers in pre/post educational

instructions. The majority of mothers had satisfactory practice related to total first aid in post educational instructions. This may reflects the importance of conducting educational instructions for improving mothers' practice and identify mothers' needs about epistaxis management in the pretest assessment because mothers are responsible in dealing with child's epistaxis and provide first aid for nosebleeds.

This finding was similar to **Alhejaily et al., (2019)**, who studied "Evaluation of knowledge, attitude and practice of epistaxis among the general population of Tabuk City, Saudi Arabia" and a study **Tunkel et al., (2020)**, who studied "Clinical practice guideline: Nosebleed (Epistaxis)" and founded that majority of participants had satisfactory practices in post educational instruction implementation.

Considering children's quality of life, the current study revealed that the majority of the studied children had high level of quality of life in immediately post and after one month of educational instructions as compared to none of them in pre-educational instructions. This result may be attributed to the effectiveness of gaining knowledge and skills for nosebleeds preventions, first aid of epistaxis, and management of bleeding at home that minimize the incidence of epistaxis and the duration of bleeding after awareness program. This finding was similar to **El-Baz et al., (2022)** who reported that epistaxis affected on all domains of quality of life among children had epistaxis and there was statistical

significance decrease in all QoL scores before educational instructions.

Regarding correlation between knowledge and practice of participant, the current study revealed that there was highly statistical significant relation between mothers' knowledge and their practice pre, post and after one month of educational instructions. This may be due to knowledge provided to mothers helped them to acquire the basic skills needed for epistaxis management for practice their children. This finding was matched with **Mohammad et al., (2020)**, who found that there was positive correlation between knowledge and practice of participant in their study.

Conclusions

The study concluded that educational instructions were effective in improving mothers' knowledge and practice regarding first aid for nosebleeds of their children with idiopathic epistaxis. Besides, quality of life of children with epistaxis was improved immediately and after one month as compared to pre educational instructions regarding epistaxis immediately and after one month of the educational instructions.

Recommendations

Based on the findings of the present study, the following recommendations are suggested:

-Develop public awareness program about first-aid management and control of epistaxis to minimize complications.

-Construct periodic training and educational program for mothers and children about first aid of epistaxis at health care settings.

-Educational booklets, pamphlets and posters about first aid of epistaxis must be available at Ear, Nose and Throat (ENT) Units.

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