

First Aid Training Program for Mothers of Blind Children

Hala Mohamed Mohamed Hussein¹, Ebtesam A. Elsayed²

¹Assist. Prof. of Community Health Nursing, Faculty of Nursing/ Ain Shams University, Egypt

²Lecturer of Community Health Nursing, Faculty of Nursing/ Ain Shams University, Egypt

Abstract: Injuries are a common problem among blind and visually impaired children, therefore first aid measures for blind children must be performed properly to prevent further complications and potentially saving their life. **This study aimed to** evaluate the effect of a first aid training program for mothers of blind children. **A research design** that used was a quasi-experimental study. **Setting:** The study was carried out at the Model Centre for the Care and Guidance of the Blind, affiliated to the Ministry of Social Solidarity. **Sample** All mothers accompanying their blind children (42 mothers) who were attended in the previously mentioned setting over 6 months period. **For data collection one tool was used;** a structured interviewing questionnaire to assess the blind children and their mothers' demographic characteristics, mothers' knowledge and reported practices related to first aid for injuries. **Results** of the study revealed that; wounds, dislocation, fractures, and epistaxis are the most common injuries that occurred among blind children. There were statistically significant differences between pre/post the first aid training program related to mothers' total knowledge about first aid to injuries, where about three-quarters of studied mothers had unsatisfactory total knowledge pre program compared to slightly more than a quarter of them had unsatisfactory total knowledge post-implementation. Additionally, the majority of studied mothers had inadequate total reported practices pre program compared to more than two-thirds of them had adequate total reported practices post-implementation **Conclusion:** The first aid training program led to significant improvement in the knowledge and practices of studied mothers related to injuries and first aid measures applied for their blind children. **Recommendation:** Health education program must be conducted for mothers of blind children on injuries prevention and first aid measures as a routine service at all rehabilitation centers of the blind children.

Keywords: Blind children, first aid, training program and mothers

Date of Submission: 06-12-2019

Date of Acceptance: 23-12-2019

I. Introduction

Childhood blindness is one of the most critical problems notable globally and developing countries in particular. Blindness and low vision are major causes of disabilities that have profound effects on life for many children, they inhibit the children's mobility and physical activity and affected as well as their families. Blindness in children is a complex problem, which requires multi-disciplinary collaboration from community, education and medical services¹.

According to the **World Health Organization (2018)**², childhood blindness is a group of diseases and conditions taking place in childhood and early adolescence, which a visual acuity of less than 3/60 in the better eye. Around the world, there are 39 million blind people about 1.4 million of them are children (less than 14 years of age). Furthermore, WHO reported that the major causes of blindness in children vary among regions, it mostly determined by socioeconomic development and the availability of primary health care services related to eye care. Around 19 million children below the age of 15, are estimated to live with visual impairment or blindness

Childhood blindness deserves attention in public health where more than 50% of cases can be avoided, and this means that if effective measures are taken, the quality of life can be improved by facilitating natural growth and the physical burden on the child, family, society and public health system³.

Injuries among blind children are a growing public health problem which represents a significant area of concern from the age of one to fourteen years⁴. Childhood injuries lead to about 16,000 deaths annually around the world, 70% of these injuries resulting from home injuries⁵. Blind children are vulnerable to many types of home injuries, such as wounds, falls, burns, choking and suffocation, poisoning, and electrical shock. Although these injuries could be prevented, its occurrence may result in death or significant disability⁶. Blind children are particularly high risk to injuries especially in home due to their innate desire to explore their world and the inability to perceive the dangers of their actions, so minor injuries are inevitable but providing a safe environment can reduce the risks, coupled with close mother supervision and appropriate first aid once they have occurred⁷. As highlighted by **Boguszewski**⁸, home injuries among blind children are often serious, but are largely preventable and controlled with appropriate information and safe practices and increasing mothers' awareness about home environmental safety measures and first aid practices to save their blind children's lives.

According to **Hepler**⁹ first aid is the treatment of any sudden injury or illness given as soon as possible to a person who is injured or who suddenly develops illness before providing professional medical assistance moreover, it prevents deterioration of the condition, rapid recovery, and preservation of life. Therefore, first aid is an important part of daily life at home

Community health nurses can make significant contributions to meet the health care needs for mothers of blind children by educating them on how to strengthen safety measures to prevent home accidents, applying practices to deal with damage, eliminating risk before exposure occurs, and examining environmental risks that may threaten child health¹⁰. Furthermore, the **World Health Organization**¹¹ elaborated that nurses providing community health services play key roles in identifying populations, families, and individuals who may benefit from various health promotion programs, or who are at risk of disease, injury, disability, or premature death.

Significance of the Study:

The American Foundation for the Blind (2018)¹², asserted that injuries among blind children are a major public health problem that requires urgent attention. In the United States, 50% of children's injuries occur at home. Every year, about 60 children die, 40,000 are hospitalized, and 450,000 go to emergency departments due to accidental injuries. These injuries have enormous financial, emotional, and social impacts not only on the child and the family but also on community and society as a whole. Childhood injuries are the leading cause of death among children and adolescents. Worldwide, more than 875,000 children between the ages of 18 die every year from injuries mostly in low and middle-income countries, it accounts for 13% of all diseases among children aged 15 years¹³.

In Egypt, injuries have turned into a general public health issue and the main cause of disabilities in children. However, community development and increase awareness in the Egyptian community had a great obvious effect in minimizing rates of injuries, as in the year 1998 it was 72.5%, changed to 50.3% in the year 2003 and 39.8% in the year 2014¹⁴.

Sight is one of the senses organs which considered as a "primary channel" in receiving stimuli from the external environment especially for children therefore, severe impairment or complete loss of sight has a great impact on the child's cognitive abilities moreover the risk of having an injury is higher for children who are visually impaired or blind compared with fully sighted children. For that, it is important to focus on planning and implementing different measures needed to reduce the risk of injuries occurring in the home and in the general environment such as first aid programs⁸. As mothers considered a key person in ensuring the well-being of their blind children; it is important to increase their knowledge and improve their practices' needed for reducing and controlling injuries among their blind children^{9, 10}. Therefore, the application of first aid training program for mothers of blind children helps in improving their basic knowledge and practices regarding first aid measures.

Aim of the study:

This study was aimed to evaluate the effect of the first aid training program for mothers of blind children through:

1. Assessing mothers' knowledge and practices related to first aid for injuries to their blind children.
2. Designing and implementing the first aid training program for mothers of blind children according to their needs.
3. Evaluating the effect of the first aid training program on mothers' knowledge and practices regarding first aid for injuries to their blind children.

Research Hypothesis:

There are statistically significant differences between pre/post-implementation of the first aid training program related to knowledge and practices for mothers of blind children regarding first aid to injuries.

II. Material and Methods

Research design: A quasi-experimental design was utilized to carry out this study.

Setting: This study was conducted at the Model Centre for the Care and Guidance of the Blind, affiliated to the Ministry of Social Solidarity, located in Masr Al-Gadida District. This center established in 1953, it occupies the first place in North Cairo for the rehabilitation of the blind. The center includes nursery for rehabilitation of preschool blind children, it accepts the blind children with the following regulations:

- The blind children aged from 3 up to 6 years.
- The blind children without other handicapped.
- The mothers of blind children must be remaining with them during the rehabilitation time in the nursery from 9.0 a.m. to 1.00 p.m.

Sample: All mothers accompanying their blind children (42 mothers) who were attended in the previously mentioned setting over 6 months, after excluded 5 mothers for pilot study.

Tool of data collection: One tool was used for data collection (pre/post first aid program); structured interviewing questionnaire, which designed by the researchers based on the recent literature review and experts' opinions.

It composed of the following four parts:

- **Part I:** Designed to assess the demographic characteristics for mothers of blind children, which composed of four closed-ended questions such as age, educational level, occupation, and monthly income.
- **Part II:** Designed to assess demographic data of the blind children, it composed of three closed-ended questions such as; age, sex and previous exposure to injuries.
- **Part III:** Devoted to the mothers of blind children knowledge regarding first aid to injuries, it included:
 - A. Mothers' knowledge about injuries such as meaning, causes, types, common places, vulnerable group and prevention of injuries.
 - B. Mothers' knowledge regarding first aid such as; meaning, aim, principles, skills, priority, and contents of the first aid bag.

Scoring System for knowledge:

This part of the interviewing questionnaire was carried out according to the following scoring system; the correct answers were predetermined according to the literature review, a correct answer was scored 2 and the incorrect one was scored 1. For each item of knowledge, the scores of the items were summed-up and the total divided by the number of the items. These scores were converted into a percent score. The total score of mothers' knowledge was 24 points, classified into satisfactory $\geq 50\%$ (12-24 points) and unsatisfactory $< 50\%$ (1-<12 points).

- **Part IV:** Designed to assess mothers of blind children reported practices related to first aid to injuries, it was adopted from **Keith (2012)**¹⁵. It covered the following practices included cardio-pulmonary resuscitation (CPR), first aids for wound, bleeding, burn, choking, poisoning, epistaxis, eye and head injuries, fracture, fainting, and bites.

Scoring System for practices:

Each procedure was scored according to the weighing of each step that makes a total score equal to 100%. The total score of practices was evaluated and compared with the ideal action in the list; accordingly, it was categorized as follows:

- Adequate reported practice $\geq 60\%$
- Inadequate reported practices $< 60\%$

Validity and reliability:

The tool was tested for their content validity by a jury of five experts in the Community Health Nursing speciality. The required modifications were carried out accordingly. Then, test-retest reliability was applied. The tool proved to be strongly reliable ($r=0.8222$).

Operational Design:

Preparatory Phase

During this phase, a review of the literature was done by reviewing the available national and international related literature to be oriented with various aspects of the research problem and developing the study tool of data collection.

Pilot study:

A pilot study was conducted on 5 mothers of blind children, who were then excluded from the main sample population. The pilot study was carried out in order to ensure the applicability of the developed tool and clarity of the included questions, as well as to ascertain the time required for accurate data collection.

Ethical considerations:

All the mothers of blind children's rights were secured; each one was informed about the aim of the study and the nature of the expected outcomes. They were also informed that participating in the study was entirely voluntary and that they had the right to withdraw from the study at any time. Finally, all mothers were assured of their absolute right to confidentiality informing them that all information will be used only for the research purpose.

Field work:

- The actual fieldwork was carried out over a period of 6 months from the beginning of December 2017 up to the end of May 2018.
- The researchers were available in the study setting 2 days/week from 9.0 a.m. to 1.00 p.m.
- Data were collected from the mothers of blind children through individual interviews at the waiting room in the nursery for preschool of blind children using the pre-constructed tool. Each interview took about one hour.
- Preparation for assessment took one month for developing the data collection tool which obtained from the literature review. Collecting the data, filling in the questionnaire and implementing the first aid training program took 4 months.

- Evaluation for mothers of blind children took one month. It was started immediately after completing the baseline assessment for mothers of blind children.

First aid training program development included 3 phases:

Phase I: Preparation for assessment: (1month): Based on the preparatory phase for developing the data collection tool obtained from the interviewing questionnaire, as well as a literature review (pre/post-test).

Phase II: Design and implementation: (4 months): The first aid training program was designed based on the analysis of the actual needs of mothers in pre-assessment by using the pre-constructed tools. The first aid training program was developed through determining the general objective, contents, teaching methods and aids used.

The general objective: was to improve the knowledge and practices of the mothers of blind children regarding first aid to injuries

Content: Content was designed to meet the needs of mothers and fitting into their interests and levels of understanding.

Teaching methods used in the theoretical part were lectures with presentation and group discussions, while the practical part was conducted through demonstration and re-demonstration.

Teaching aids included: laptops, posters, booklet, and types of equipment for first aid.

Sessions: The sessions took place in the waiting room in nursery for preschool of blind children. The total number of sessions' hours was 11 (3 hours theoretical and 8 hours practical). Each session took about 45 minutes integrated with teaching points and before going to a new topic; the researchers took the feedback from mothers by asking the questions to be sure that the mother understood the covered material. The sessions included the following two parts: **Part 1:** improvement mothers' of blind children knowledge about first aid to injuries, the researchers provided information related to injuries such as its meaning, causes, types, common places, vulnerable group, and prevention; in addition, meaning, aim, principles, skills, priority, and contents of bag of first aid.

At the beginning of the first session, an orientation about the program and its purposes were given. Starting from the second session; a summary of what was given through the previous session and objectives of the new one was presented, taking into consideration to use simple and clear language that suits the level of all mothers.

By the end of each session, a summary was done and time was allocated for questions and answers, then a plan for the next session was presented. Also, the researchers arranged with the mothers for the next session. Except for the last session; the termination of sessions through feedback was done. **Part 2:** concerned with the practices which included, cardio-pulmonary resuscitation (CPR), first aid for wound, bleeding, burn, choking, poisoning, epistaxis, eye and head injuries, fracture, fainting, and bites. The mothers were given an educational booklet, designed by the researchers, in the Arabic language, to be as a referral guideline for them. The educational booklet was evaluated for its content validity and clarity by a panel of experts, professors in the field of community health nursing. In the light of their comments, the necessary modifications were carried out and the final form of the educational booklet was used.

Phase III: Evaluation of the first aid training program: (1month): The same tool was used immediately post-implementation of the first aid training program to evaluate the outcome.

Administrative design:

Official permission to carry out the study was obtained through an issued letter from the Dean of the Faculty of Nursing, Ain Shams University, to the Director of the Model Centre for the Care and Guidance of the Blind, for permitting of data collection and conducting the study. The letter included the title, aim and the expected outcomes of the study.

Statistical analysis:

The data were analyzed using the Statistical Package for Social Sciences (SPSS) Version 20. For descriptive statistical analysis; frequencies and percentages were used for all variables included in the study, this was supplemented by arithmetic means and standard deviations. For inferential analysis, the Chi-Square test and Pearson correlation coefficient (r) were used in order to assess the relationship and association between examined variables. The significance of the results in this study was considered as follows: there was no statistically significant difference when $P > 0.05$, while there was a statistically significant difference when $P < 0.05$ and $P < 0.001$.

III. Results

Table (1) clarifies that the age of studied mothers ranged from 20 - >40 years with a mean age of 34.3 ± 7 years, and 50.0% of this sample ranged from 30 - < 40 years. As regards the educational level, 33.4% of them had a secondary level of education, this result shows also that 73.9% of the mothers were housewives. Meanwhile, 78.5% of them had not enough income.

Figure (1) demonstrates that 54.8% of the blind children were female and 45.2% were male.

Figure (2) elaborates that, the age of the blind children ranged from 3 - 6 years with a mean age of 4.6 ± 0.89 years, and for 45.2% of them ranged from 5 - 6years and 31% of them their age ranged from 4- <5years while, 23.8% of them ranged from 3 -< 4years.

Figure (3) shows that wounds, dislocation, fractures, and epistaxis are the most common previous injuries that occurred among blind children as represented by 36.0%, 32.0%, 26.0%, and 21.0% respectively.

Table (2) displays that, there are statistically significant differences ($p < 0.001$), in all items of mothers' knowledge regarding injures between pre/post-implementation of the first aid training program. 78.5%, 76.2%, 83.3% & 85.8% of studied mothers had incorrect knowledge regarding meaning, common places, vulnerable group and prevention of injuries respectively pre-implementation of the first aid training program, compared to 95.2%, 92.9% and 88.0% of them had correct knowledge respectively post-implementation.

Table (3) reveals that there are statistically significant differences ($p < 0.001$) between pre/post-implementation of the first aid training program regarding mothers' knowledge about all items related to first aid. Where 92.9%, 88.0% and 83.3% of mothers had correct knowledge regarding meaning, aim, the content of bag and skills of first aid respectively post-implementation of the program compared to 12.0%, 14.2%, 21.5% and 0.0% of them respectively pre-implementation.

Figure (4) illustrates that there is a statistically significant difference ($X^2 = 19.05$ at $p < 0.001$) between pre/post-implementation of the first aid training program regarding mothers' total knowledge about first aid to injuries, where 73.9% of studied mothers had unsatisfactory total knowledge pre-implementation of the first aid training program compared to 26.1% of them had unsatisfactory total knowledge post-implementation.

Table (4) shows that there are statistically significant differences ($p < 0.001$) in all items of mothers' reported practices regarding first aid to injures, where 92.9% of studied mothers had inadequately reported practices of CPR, first aid for choking and bites pre-implementation of the first aid training program compared to 31.0%, 26.1% and 12.0% of them post-implementation respectively. As well, 85.8% of studied mothers had inadequately reported practices of first aid for bleeding and eye injuries pre-implementation of the program compared to 12.0% and 7.1% of them post-implementation.

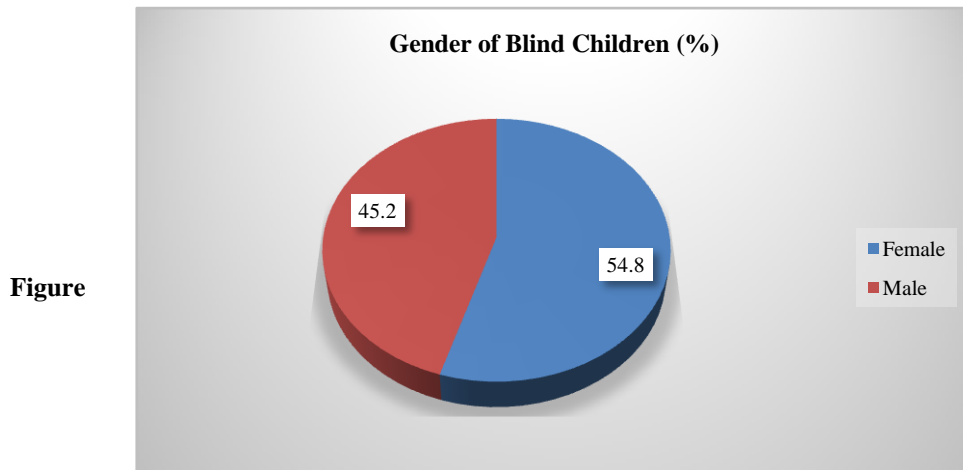
Figure (5) clarifies that there is a statistically significant difference ($X^2 = 23.53$ at $p < 0.001$) between pre/post-implementation of the first aid training program regarding mothers' total reported practices about first aid to injuries, where 83.3% of studied mothers had inadequate total reported practices pre-implementation of the first aid training program compared to 69.0% of them had adequate total reported practices post-implementation.

Table (5) describes that there is a strong positive correlation ($r = 0.497$ & $P < 0.001$) between mothers' total knowledge and their total practices regarding first aid to injures pre-implementation of the first aid training program. As well, there is a strong positive correlation ($r = 0.593$ & $P < 0.000$) between the mothers' total knowledge and their total practices post-implementation of the first aid training program.

Table (1): Distribution of Studied Mothers According to their Demographic Characteristics (n =42).

Mothers Characteristics	No	%
Age / years of mothers:		
20 - < 30	9	21.5
30 -< 40	21	50.0
>40	12	28.5
Mean \pm SD 34.3 \pm 7		
Level of Education:		
Not read and write	8	19.0
Primary school	11	26.1
Secondary school	14	33.4
University education	9	21.5
Occupation:		
House wife	31	73.9
Working	11	26.1
Monthly income:		
Not enough	33	78.5
Enough	9	21.5

Figure (1):Percentage distribution of Blind Children According to their Gender (n =42).



(2):Percentage distribution of Blind Children According to their Age (n =42).

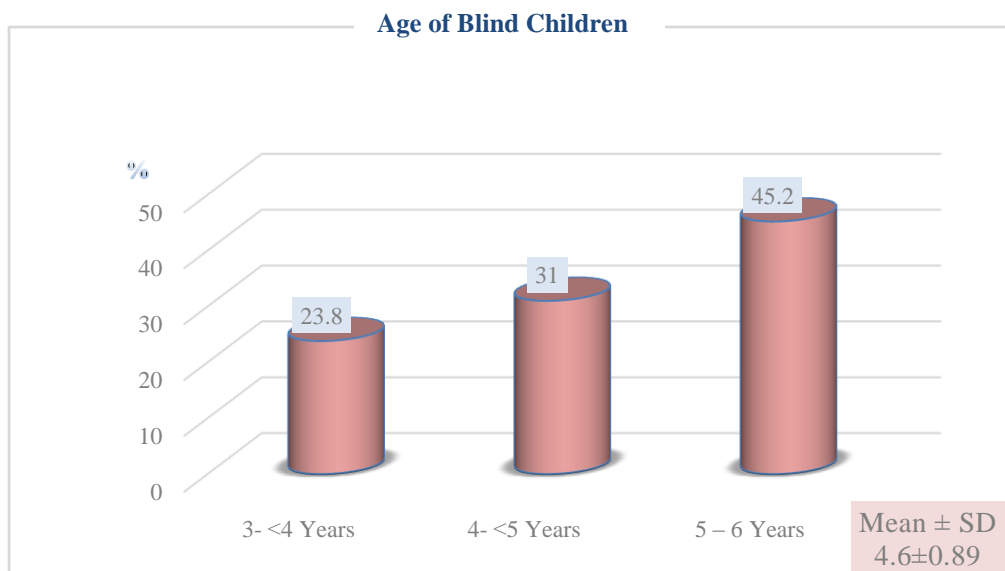
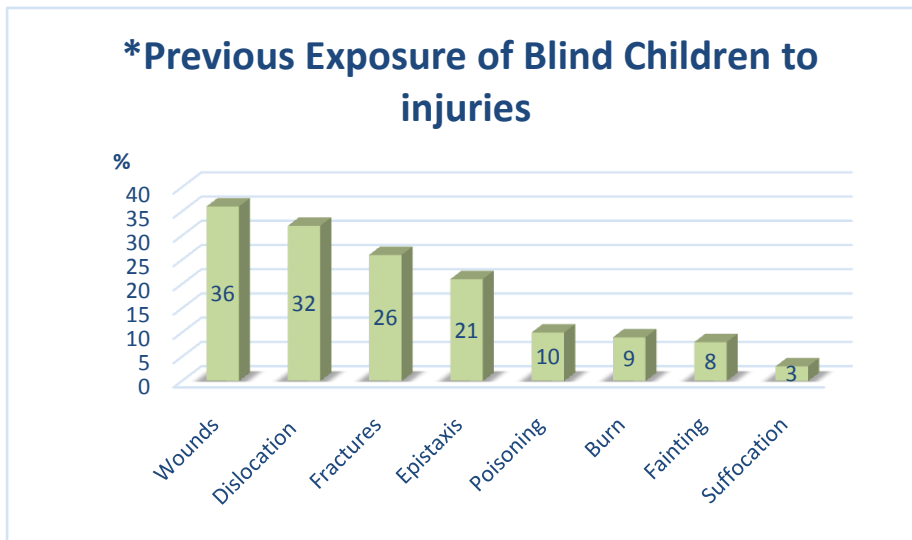


Figure (3):Percentage distribution of Blind Children According to Previous Exposure to Injuries (n =42).



* Items are not mutually exclusive

According to the research hypothesis:

Table (2):Statistical difference between Pre/Post First Aid Training Program According to Knowledge of Studied Mothersabout Injuries (n =42).

Mothers Knowledge about injuries	Pre first aid program				Post first aid program				X ²	P-value
	Correct knowledge		Incorrect knowledge		Correct knowledge		Incorrect knowledge			
	No	%	No	%	No	%	No	%		
Meaning	9	21.5	33	78.5	40	95.2	2	4.8	47.1	<0.00*
Causes	11	26.1	31	73.9	37	88.0	5	12.0	32.9	<0.00*
Types	13	31.0	29	69.0	36	85.8	6	14.2	25.9	<0.00*
Common places lead to injuries	10	23.8	32	76.2	39	92.9	3	7.1	41.2	<0.00*
Vulnerable group for injuries	7	16.7	35	83.3	39	92.9	3	7.1	49.2	<0.00*
Prevention of injuries	6	14.2	36	85.8	37	88.0	5	12.0	45.8	<0.00*

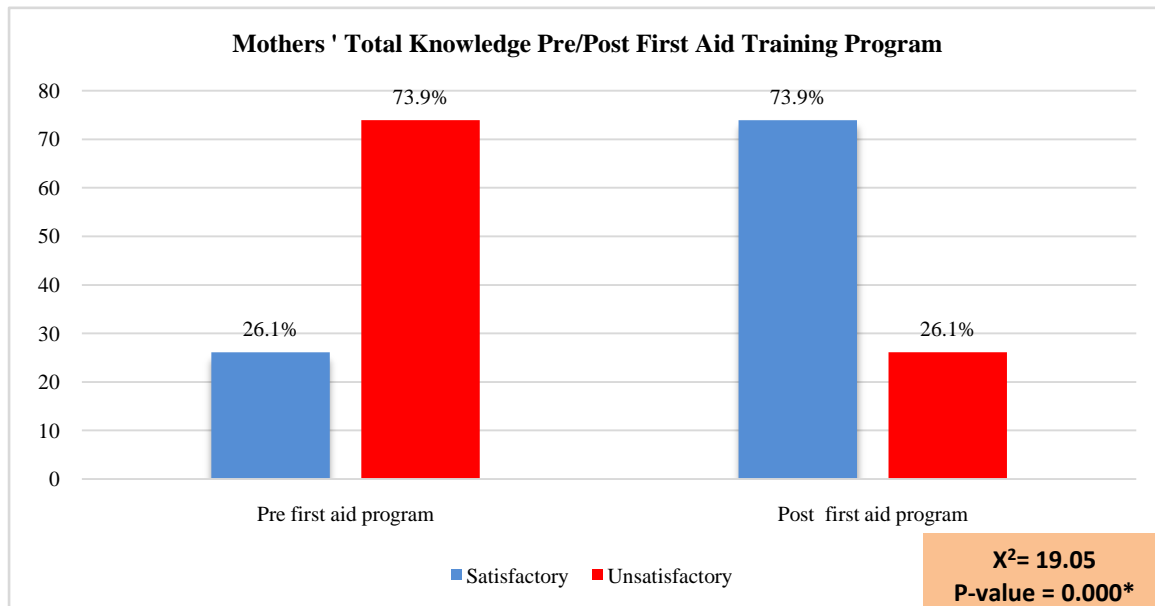
*Statistical significant difference

Table (3):Statistical difference between Pre/Post First Aid Training Program According to Knowledge of Studied Mothersabout First Aid (n =42).

Mothers Knowledge about first aid	Pre first aid program				Post first aid program				X ²	P-value
	Correct knowledge		Incorrect knowledge		Correct knowledge		Incorrect knowledge			
	No	%	No	%	No	%	No	%		
Meaning	5	12.0	37	88.0	39	92.9	3	7.1	55.2	<0.00*
Aim	6	14.2	36	85.8	37	88.0	5	12.0	45.8	<0.00*
Principals	3	7.1	39	92.9	35	83.3	7	16.7	49.2	<0.00*
Skills	0	0.0	42	100	32	76.2	10	23.8	51.7	<0.00*
Priority	0	0.0	42	100	31	73.9	11	26.1	49.1	<0.00*
Contents of first aid bag	9	21.5	33	73.9	37	88.0	5	12.0	37.7	<0.00*

*Statistical significant difference

Figure (4): Mothers' Total Knowledge Related to First Aid to Injuries Pre/Post Implementation of the First Aid Training Program (n=42).



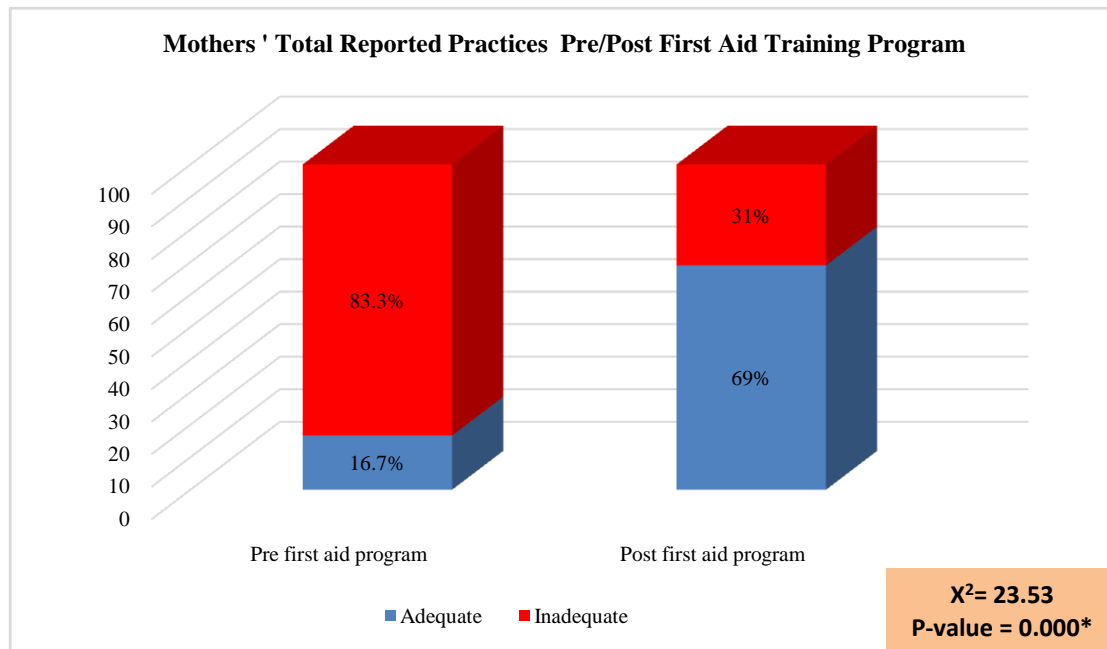
*Statistical significant difference

Table (4): Statistical difference between Pre/Post First Aid Training Program According to Reported Practices of Studied Mothers about First Aid to Injuries (n =42).

Mothers' Reported Practice	Pre first aid program				Post first aid program				X ²	P-value
	Adequate reported practices		Inadequate reported practices		Adequate reported practices		Inadequate reported practices			
	No	%	No	%	No	%	No	%		
Cardio- pulmonary resuscitation (CPR)	3	7.1	39	92.9	29	69.0	13	31.0	34.1	<0.00*
First aid for wound	11	26.1	31	73.9	39	92.9	3	7.1	38.7	<0.00*
First aid for bleeding	6	14.2	36	85.8	37	88.0	5	12.0	45.8	<0.00*
First aid for burn	7	16.7	35	83.3	36	85.8	6	14.2	40.1	<0.00*
First aid for choking	3	7.1	39	92.9	31	73.9	11	26.1	38.7	<0.00*
First aid for poisoning	10	23.8	32	76.2	36	85.8	6	14.2	32.4	<0.00*
First aid for epistaxis	9	21.5	33	73.9	35	83.3	7	16.7	32.3	<0.00*
First aid for eye injuries	6	14.2	36	85.8	39	92.9	3	7.1	52.1	<0.00*
First aid for head injuries	13	31.0	29	69.0	37	88.0	5	12.0	28.4	<0.00*
First aid for fracture	10	23.8	32	76.2	37	88.0	5	12.0	35.2	<0.00*
First aid for fainting	5	12.0	37	88.0	39	92.9	3	7.1	55.2	<0.00*
First aid for bites	3	7.1	39	92.9	37	88.0	5	12.0	55.2	<0.00*

*Statistical significant difference

Figure (5): Mothers of Blind Children' Total Reported Practices Related to First Aid to Injuries Pre/post Implementation of the First Aid Training Program (n =42).



*Statistical significant difference

Table (5): Correlation between Total Knowledge and Total Practices of Mothers of Blind Children Regarding First Aid to Injuries Pre/post First Aid training Program(n =42).

Mothers' Total reported practice	Mothers' Total knowledge			
	Pre		Post	
	r	P	r	P
Pre	0.497**	0.001	-	-
Post	-	-	0.593**	0.000

*Correlation is significant at p< 0.05

IV. Discussion

Mothers of blind children need to have sufficient information and strategies that can help them come to terms with having a child with blindness so that they can help their children live more effectively. Also, the mothers of blind children especially require reliable information about accessing services to meet their blind children's needs, communicating with health professionals, interacting and finding support from the community¹⁰. **The Annual Report about Visual Impairment and Blindness (2018-2019)**¹⁶ asserted that the Vision Health Initiative (VHI) designed to promote vision health and quality of life for all blind children, throughout all stages of life, by preventing and controlling eye disease, eye-related injury and reduce vision-related accidents.

Research studies highlighted an urgent need to raise the issue of blind child injures prevention as a matter of public concern and promote an understanding of its impact on children, families, and communities. Also, emphasized the need for awareness programs for parents on important issues related to the safety of blind children¹⁷.

Considering profile of the studied sample, table 1 clarifies that, the age of studied mothers ranged from 20 - >40 years with a mean age of 34.3± 7 years, and for 50.0% of this sample ranged from 30 - < 40 years, and one-third of mothers had studied up to secondary level of education, while slightly more than quarter of them had primary level of education whereas, more than fifth of them were graduated from university and about fifth of them not read and write. These findings are to some extent in agreement with those of **Ibrahim (2014)**¹⁸, who found in a study entitled "Counseling program to increase mothers' awareness toward daily living activities of their blind child", in Egypt, that the age of the mothers ranged between 25-45 years with a mean age of 33.45±6.60 years and 23% of mothers were graduate from university, 42% of them had diploma and 13% of them were illiterate. As well, these results are consistent with **Salah-Eldeen (2015)**¹⁹, who studies entitled "Parents care to their blind children with using counseling program", that 73.7% of the mothers were aged between 25 and 40 years & 41.9% of the mothers had secondary education and 20.7% of them were illiterate. Furthermore, this result is consistent with those of **Shrivastava, et al. (2014)**²⁰, who reported, in their study

about "Prevention of childhood blindness: Strengthening primary health care", in India that, the mothers of the blind children were in the age group 20- < 50 years. These results may be due to that this is the age of reproduction among women.

Considering occupation and monthly income; the present study results revealed that, less than three-quarters of the study sample were housewives and more than three-quarters of them had not enough monthly income (table I). These findings are supported by those of **Solebo, et al. (2017)**²¹, whose study "Epidemiology of blindness in children" clarified that blindness constitutes a significant economic burden for the family; the economic effects of blindness can be divided into direct and indirect costs. The direct costs are those related to the treatment including medical health services while the indirect costs including visual aids, equipment, home modifications, and rehabilitation. As well, the results of the present study supported by **Khandekar (2015)**³, who study "Visual disabilities in children Including childhood blindness, in the Middle East African, reported that blind children are more likely to live in socio-economic deprivation.

As well, these results are consistent with **Ibrahim (2014)**¹⁸, who found that 69.3% of the mothers were housewives and 81.9% of them had a low and very low socioeconomic level. These results could be due to that the blind children need their mothers most of the time to care for them; as well they need continuous rehabilitation so, the mothers preferred to stay for the care of their blind children.

Regarding the blind children's demographic characteristics, the present study found that more than half of the blind children were female with a mean age of 4.6 ± 0.89 years (Fig. 1 & 2). This finding is to some extent in agreement with those of **Salah-Eldeen (2015)**¹⁹, in Egypt, who found that the age of the blind children ranged from 2 – 6 years with a mean age of 5.25 ± 1.41 years. Also, these results are consistent with **Soleimani-sefat et al., (2016)**²², whose study about "The Needs and problems of students with visual impairment" in Iran, found that out of 120 students with visual impairment, 52% of them were females and 48% were males. As well, the results of the present study supported by **Global Initiative for the Elimination of Avoidable Blindness, Action Plan (2006–2011), Vision 2020, The Right to Sight**²³, which asserted that childhood blindness remains a high priority because of the expected number of years to be lived in blindness. About one-half of the estimated 1.4 million cases of blindness in children below the age of 10 years. Also, studies consistently found that child females in every region of the world have a significantly higher risk of being blindness than males.

These finding are also parallel to that of **Samuel, et al., (2015)**²⁴, whose study about "Causes of blindness and severe visual impairment among children enrolled in an early intervention and preschool program of a school for the blind in the Philippines" found that 69.8% of the blind children their age below 6 years. In contrast to the previous results **Kotb et al., (2011)**²⁵, whose study about "Self-esteem and quality of life among visually impaired children in Assiut City", in Egypt, found that the age of visual impairment child ranged from 12 – 18 years with a mean age of 15.87 ± 3.03 years and 57.0% of them were male. This result could be due to that the number of girls' births has been increasing in recent years than males' births.

As regards the previous exposure of blind children to injures, the present study clarifies that wounds, dislocation, fractures, and epistaxis are the most common previous injuries that occurred among blind children (Fig. 3). The present study finding is in the same line with those of a study done by **Ramaiah & Maraiah (2014)**²⁶, whose reported in their study about "Prevalence of Traumatic dental injuries among blind school children in South Karnataka", that blindness is the major reason behind the high prevalence of fracture among blind children. As well, this result is consistent with **Boguszewski et al., (2012)**²⁷, whose found that in their study about "Susceptibility to injury during a fall among blind children", that the majority of children participating in the research 88% claimed to have fallen at least once in the last three years, in total, the research children declared 578 falls and 176 personal injuries (resulting from the falls). Blind children suffered from more injuries resulting from collapsing to the ground ($p=0.001$), the most common injuries were wounds and abrasions (in average – 1.15 per child), the most severe injuries, such as bone fractures usually occurred in blind children (in average 0.33). This may be explained, blind children are particularly vulnerable to such injuries due to their innate desire to explore their environment and the inability to perceive the dangers of their actions as other children learn through experience.

Regarding the mothers' knowledge, about injuries and first aid, the results of the current study indicated that there are statistically significant differences in all items of mothers' knowledge post-implementation of the first aid training program compared to pre-implementation regarding meaning, causes, types, common places, vulnerable group and prevention of injuries and, as well as, first aid related knowledge as; meaning, aim, principles, skills, priority, and contents of first aid bag (tables 2 & 3).

The present study findings are the same extent supported by those of a study done in Egypt, by **Sabea et al., (2019)**²⁸, about "Educational program for informal caregivers about home accident prevention", found that the total scores' knowledge of informal caregivers toward home accident prevention and first aid among preschool children at pre and post-test, 78.13% of the studied subjects had poor knowledge level regarding home accident prevention for children and only 3.12% had good level. However after the educational program,

40.6% of them had a fair level of knowledge, and 59.4% of them had a good level of total knowledge with a highly statistically significant difference between pre and post-tests

As well, this finding is corresponding with that of **Mohammed et al. (2013)**²⁹, which revealed that in their study about "Supportive strategies regarding accidents prevention for mothers of children under five years old", in Egypt, that there were significant differences between pre and post supportive strategy in mothers' knowledge in relation to definition, causes, risk factors and common types of accidents (P value= 0.03, $\chi^2= 0.12$). This result could be due to that the mothers of blind children have been realized the importance of acquiring knowledge in order to minimize the dangers of exposure of their blind children to injuries and the appropriate early intervention to these injuries.

Regarding to the mothers of blind children total knowledge, the result of the present study indicated that there is a statistically significant difference ($X^2 = 19.05$ at $p < 0.001$) between pre/post-implementation of the first aid training program regarding mothers' total knowledge about first aid to injuries, where about three-quarters of studied mothers had unsatisfactory total knowledge pre-implementation of the first aid training program compared to slightly more than quarter of them had unsatisfactory total knowledge post-implementation (Fig. 4). The results of the present study were supported by **Megahed, et al. (2016)**³⁰, in Egypt, whose study entitled "Knowledge, attitude and practice of rural mothers towards home injuries among children under 5 years of age in Menouf District- Menoufia Governorate; An educational program", in Egypt, found that who found that there was a remarkable improvement in mothers' level of knowledge as regards home injuries (causes, prevention, and first aid) after the program ($P < 0.001$) in comparison with that before the program. The mean knowledge score was statistically highly significant after the program ($P < 0.001$). This improvement in mothers' total knowledge justified the research hypothesis, and attributed it to the fact that the first aid training program was planned after assessment of mothers' identified knowledge gaps and needs and the mothers of blind children were willing to get more information to protect their blind children from the inevitable injury.

Concerning mothers' reported practices related to first aid to injures, the results of the present study revealed that there are statistically significant differences ($p < 0.001$) in all items of mothers' reported practices regarding first aid to injures, where most of the studied mothers had inadequately reported practices of CPR, first aid for choking and bites pre-implementation of the first aid training program compared to less than one-third of them post-implementation. As well, the majority of studied mothers had inadequately reported practices of first aid for bleeding and eye injuries pre-implementation of the program compared to less than a fifth of them post-implementation (table 4).

Consistent with the findings of the present study, **Megahed, et al., (2016)**³⁰, in Egypt, reported that mothers' practice of first aid as regards burn, choking, wounds, fracture, and poisoning were obviously improved after the intervention of the program. The incidence of mothers who reported good practice before the intervention was 48.5, 38.2, 18.8, 12.7, 26.1, 30, and 26.7%, respectively, and the incidence after the intervention was 70.1, 73.3, 85.4, 96.2, 63.6, 64.7, and 70%, respectively. There was a highly statistically significant difference before and after intervention as regards mothers' practice.

This improvement reflected the importance of first aid training program for the mothers of blind children; this could be due to that the study mother became aware of the importance of first aid for their blind child, so they have the desire to overcome the problems and complications if first aid practices not done properly.

As regards the total practices of studied mothers about first aid to injuries the present result clarifies that there is a statistically significant difference ($X^2 = 23.53$ at $p < 0.001$) between pre/post-implementation of the first aid training program regarding mothers' total reported practices about first aid to injuries, where 83.3% of studied mothers had inadequate total reported practices pre-implementation of the first aid training program compared to 69.0% of them had adequate total reported practices post-implementation (Fig. 5). This finding indicates that the first aid training program was successful in improving mothers' practices about first aid and justified the research hypothesis. This result goes in line with the result of **Sabea et al., (2019)**²⁸, in Egypt, found that 90.6% of their studied subjects had poor reported practices of the first aid regarding the home accidents. while after educational program 59.38% of them had average reported practice and 40.62% had a good reported practice of first aid among preschool children injuries, with a highly statistically significant difference between pre and post-test ($P < 0.0001$).

Regarding correlation between mothers' total knowledge and their total practices regarding first aid to injures the present study proves that there is a strong positive correlation ($r = 0.497$ & $P < 0.001$ - $r = 0.593$ & $P < 0.000$) between mothers' total knowledge and their total practices regarding first aid to injures pre and post-implementation of the first aid training program respectively (Table 5). This result supported by **Amin & AbdElmnm (2018)**³¹, whose study "Effect of home care program for mothers having children with burn injury" found that a positive correlation between total knowledge of the studied mothers and their total practices regarding home care of children with burn at $r = 0.57$, and 0.91 for pre and post-program implementation respectively and P -value < 0.05 . This finding is in contrast with those of **Ibrahim (2014)**¹⁸, who found in was

no statistically significant difference between total mother's knowledge and their practices related to caring of their blind children in pre, post and follow up counseling program implementation ($t = 0.107, P > 0.568$).

V. Conclusion

Based on the results of this study and research hypothesis it can be concluded that, there are statistically significant differences pre/post implementation of the first aid training program regarding mothers of blind children' knowledge and practices about first aid to injures. Whereas, about three quarters of studied mothers had unsatisfactory total knowledge pre-implementation of the first aid training program compared to slightly more than quarter of them had unsatisfactory total knowledge post implementation, additionally, majority of studied mothers had inadequate total reported practices pre program compared to more than two third of them had adequate total reported practices post program.

VI. Recommendations

Based on the results and conclusion of the present study, the following recommendations are suggested:

- Guidelines or simplified booklets containing basic information about the prevention of injuries among blind children and first aid measures should be designed and be available for the mothers of blind children.
- Health education programs must be conducted for mothers of blind children, on injury prevention and first aid as a routine service at all rehabilitation centers of the blind.
- Further researches are required involving a larger study sample of mothers of blind children at different study settings, throughout Egypt, in order to generalize the results.

References

- [1]. Saxena, R., Vashist, P., Singh, D., and Tandon, R. Preventing childhood blindness: Synergy between ophthalmology and community medicine, *Indian Journal of Community Medicine*. 2015;Volume 40,Issue 3,Page : 149-151.
- [2]. World Health Organization. Blindness and vision impairment prevention, Global data on visual impairment, 2018
- [3]. Khandekar, R., Visual Disabilities in Children Including Childhood Blindness, *Middle East African journal of ophthalmology*, 2015; Vol 15, No 3-4 at: <https://www.researchgate.net/publication/50268335>.
- [4]. World Health Organization. Unintentional Childhood Injuries, Children's Health and the Environment. WHO, Training Package for the Health Sector. 2010. www.who.int/ceh.
- [5]. National Safe Kids Campaign..National safe kids' campaign promoting child safety to prevent unintentional injuries, 2018.
- [6]. Poureslami, H., Nazarian, M., Horri, A., Sharifi, H., & Barghi, H. Comparison of the traumatic dental injuries between visually impaired and their peer sighted children in Kerman, Iran. *JOHOE/Summer & Autumn 2013*; Vol. 2, No. 2 75.
- [7]. Maurer, F.A. and Smith, C.M. *Community/Public Health Nursing Practice: Health for Families and Populations. Responsibilities for care in community/public health Nursing*. 5th ed., Elsevier com. Canada..2013; Pp. 15-17.
- [8]. Boguszewski, D., Zablocka, M., Grzegorz, J., and Boguszewska, K. Evaluation of Susceptibility to Injuries Resulting From Falls of Children with Visual Impairment, *European Federation of Adapted Physical Activity, European Journal of Adapted Physical Activity*, 2013;6(1), 7-16.
- [9]. Hepler, L., Introduction to first aid, Deborah Weatherspoon, CRNA, 2018 <https://www.healthline.com/health/first-aid>.
- [10]. England, M. J., Liverman, C. T., Schultz, A. M. and Strawbridge, L.M. *Promoting Health and Understanding*. Committee on the Public Health Dimensions of the vision disability; Board on Health Sciences Policy; Institute of Medicine Washington, DC: The National Academies Press. USA.2015 <https://books.google.com>
- [11]. World Health Organization. *Enhancing the Role of Community Health Nursing for Universal Health Coverage*, Human Resources for Health Observer Series 2017;No. 18
- [12]. American Foundation for the Blind. Meeting the Training Needs of Parents of Visually and Multiply Handicapped Young Children and Fathers, National Institute of Child Health and Human Development, USA, *Inter-American Journal of Psychology*, 2018;Vol. 39, Num. (1), pp. 5-12.
- [13]. Halawa, E., Barakat, A., Rizk, H., & Moawad, E. Epidemiology of non-fatal injuries among Egyptian children: a community-based cross-sectional survey. *BMC Public Health* 2015;15:1248 DOI 10.1186/s12889-015-2613-5
- [14]. El Seifi, O.S., Mortada, E.M., & Abdo, N.M. Effect of community-based intervention on knowledge, attitude, and self-efficacy toward home injuries among Egyptian rural mothers having preschool children. *PLoS ONE* 2018;13(6): e0198964. <https://doi.org/10.1371/journal.pone.0198964>
- [15]. Keith, J., Breut, Q., & Limmer, D. *First aid for colleges and university*, 10th ed., Nathan: Philadelphia, pp. 20-30.
- [16]. Annual Report (2018-2019): *Visual Impairment and Blindness*, British Pediatric Surveillance Unit, BPSU; 25-26.
- [17]. Koth, A.M., Gadalla, M.A., and Marzouk, S.A. Self-esteem and quality of life among visually impaired children in Assuit city, Egypt, *journal of American science*. 2011; 7(8).pp.47-57.
- [18]. Sanders, R.M., & Morawska, A., *Handbook of parenting and child development across the lifespan*. Springer, Library of congress, Switzerland. 2018;p 313.
- [19]. Solebo, A.L., Teoh, L., & Rahi, J. Epidemiology of blindness in children. *Archives of Disease in Childhood*. 2017;102(9), 853-857. Review.
- [20]. Salah-Eldeen, M. *Parents Care to Their Blind Children with Using Counseling Program*. Doctorate thesis. High Institute for Children Studies, Ain Shams University, 2015.
- [21]. Shrivastava, R.S., Shrivastava, S.P., and Ramasamy, J. Prevention of Childhood Blindness: Strengthening Primary Health Care, *Journal of Ophthalmic and Vision Research*. 2014; vol. 9, No. 2
- [22]. Global Initiative for the Elimination of Avoidable Blindness: Action Plan (2006-2011): *VISION 2020, the Right to Sight*.

- [23]. Samuel, P. V., Mundo, D., and Emmanuel C. M. Causes of Blindness and Severe Visual Impairment among Children Enrolled in an Early Intervention and Preschool Program of a School for the Blind in the Philippines, *Journal of Ophthalmology*. 2015;40:41-46.
- [24]. Ramaiah, S., &Maraiah, P. Prevalence of Traumatic Dental Injuries among Blind School Children in South Karnataka, *IOSR Journal of Dental and Medical Sciences*. 2014;13(11):18-22 .
- [25]. Boguszewski, D., Zablocka, M., and Adamczyk, J. Susceptibility to injury during a fall among blind children, *Advances in Rehabilitation Journal*. 2012;26 (2): 63-70.
- [26]. Sabea, M.M., Abd El-Maksoud, M.M, and Hegazy, E. A. (2019): Educational Program for Informal Caregivers about Home Accident Prevention, *Academic Journal of Nursing and Health Education*. 2019;Vol.8, No.1
- [27]. Ibrahim, K. W. Counseling Program to Increase Mothers' Awareness toward Daily Living Activities of Their Blind Child, Doctorate thesis, Community Health Nursing, Faculty of Nursing, Ain Shams University, 2014.
- [28]. Soleimani-Sefat, E., Rostami, M., Amani, S.,&Movallali, G. The Needs and Problems of Students with Visual Impairment. *Journal of Social Sciences and Humanity Studies*. 2016; 2(2)8-16.
- [29]. Mohammed, R. A., Mohammed, S.N., &Byoumi, H.M. Supportive strategies regarding accidents prevention for mothers of children under five years old, *Journal of Biology, Agriculture and Healthcare*. 2013;Vol.3, No..20, p.p. 2224-3208
- [30]. Megahed, A. M., Khalil, A. N., , edalbrahem, A. R., &El Disoki, S. R. Knowledge, attitude and practice of rural mothers towards home injuries among children under 5 years of age in Menouf District- Menoufia Governorate, Egypt, *Menoufia Medical Journal*. 2016;Vol.29, No.4, p.p. 1033-1039
- [31]. Amin, M., AbdElmnem, H.H. Effect of Home Care Program for Mothers Having Children with Burn Injury, *IOSR Journal of Nursing and Health Science*. 2018;Vol. 7, No. 4 P.P. 46-57 www.iosrjournals.org.