

A Health Education Program for Mothers to Prevent Burn in Early Childhood

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ABSTRACT

Background: Burn is considered one of the most dangerous domestic home injuries in early childhood stage that causes different harmful effects. **Objective:** The current study aimed to evaluate the effect of health education program for mothers to prevent burn in early childhood.

Subjects and methods: *Design:* A quasi experimental design was conducted. *Setting:* The study was conducted at Maternal and Child Health Center in Menouf City. *Sample:* Convenience sample of 167 mothers from the previously mentioned Maternal and Child Health Center. *Tools:* Structured interview questionnaire composed of three parts; mothers demographic Characteristics, mothers' knowledge about burn, and mothers' reported practices to prevent burn at early childhood. **Results:** Before program implementation about 60% of mothers had poor knowledge score about burns. On the other hand, 90% of mothers have good knowledge score at immediate post health education program implementation (P= 0.001). Only 30% of mothers reported done practice before program, and improved to 70% after the health educational program (P= 0.001). **Conclusion:** Continuous health educational programs for mothers to enhance their knowledge and practice about burn prevention are needed.

Keywords: Health Education Program, Mothers, Burn, Early childhood.

INTRODUCTION

Burns are tissue damage caused by heat, overexposure to sunlight or other radiation, chemical or electrical contact, or other reasons. Burns might result in minor medical difficulties or significant medical problems. The burn therapy is determined by the site and extent of the damage. The majority of sunburns and mild burns may be treated at home. Severe or extensive burns necessitate immediate medical attention. Some patients will need follow-up care as well as therapy at specialized burn centers. First aid after a burn improves results and decreases issues⁽¹⁾.

Early childhood burn injuries are common due to young children's limited understanding of burn protection, first aid, and injury recognition. In addition, because young children's visceral organs, particularly their immune and respiratory systems, are still developing, this may cause more severe symptoms and outcomes than in older children. According to the World Health Organization (WHO), burns and scalds are the sixth most common cause of sickness and death in young children worldwide, particularly in impoverished nations⁽²⁾.

Because they create and shed heat more quickly than adults, young children are considerably more sensitive to changes in the weather. Because they are usually too busy playing and having a good time to notice when they are getting too hot before issues arise. Mothers must shield their children from the sun's rays, from heat, and from hot objects that may burn them. Educating and educating moms in burn first aid helps to lessen the negative consequences and problems associated with burns⁽³⁾.

The community health nurse (CHN) plays a significant role in the prevention of burns in young children by focusing on a number of key areas, including health education for first-time mothers on

how to care for their child, improving mothers' knowledge of home injuries, particularly burn definition, causes, risk factors, ways of prevention, and safety measures, and it's essential to teach them the proper first aid after burn. The availability of health services helps the community health nurse do her duty efficiently, and community home visits might contribute to the promotion of health and the avoidance of sickness⁽⁴⁾.

Because bacteria can enter any broken skin, burn injuries can result in complications of any degree. However, third- and fourth-degree burns have the highest risk of complications, including scarring, infection, dehydration, low body temperature (hypothermia), contractures, muscle and tissue damage, low self-esteem, emotional distress, and psychological distress because burn scars can negatively impact a person's self-confidence or self-esteem, especially when they are present⁽⁵⁾.

Burn injuries are a leading cause of mortality and disability worldwide. To better study burn injuries globally, the World Health Organization⁽⁶⁾ established the Global Burn Registry (GBR). There were 800.640 pediatric and adult patients from 20 different countries, of which 42 percent were children (0–18 years old) from middle-income nations. Scald burns accounted for 62% of childhood injuries, whereas flame burns accounted for 14%. Despite the fact that more than half of pediatric patients (52% of whom had significant burns with 15% or more of their total body surface area) and 48% of whom underwent surgery for wound healing while they were hospitalized, 23% of pediatric patients had critical care capability that was "restricted"⁽⁶⁾.

Around 250,000 individuals in Egypt get severe burns annually, and around 90,000 of them pass away within the first six hours of their injuries due to inadequate first assistance, making Egypt the country

with the greatest rate of burn-related fatalities globally. About 3,500 children die each year from burns, which are the sixth most prevalent cause of unintentional death in both children and adults. Of the children hospitalized for burn-related injuries, 65% had scald burns, 20% had contact burns, and 9% had chemical burns (7).

According to the Collier *et al.* (8), scalds account for around two thirds of all burns in children under the age of five who are treated in specialist burn facilities. 20% more burns are caused by coming into touch with a hot item, and 1% more are caused by chemical burns. About 50% of burns in children between the ages of 5 and 16 are caused by fire or flames, while 33% are caused by scalds, and 1% is caused by chemicals (8).

The aim of this study was to evaluate the effect of health education program for mothers to prevent burn at early childhood through: (1) Assessing mothers' knowledge and reported practices to prevent burn at early childhood. (2) Designing and implementing health education program for mothers to prevent burn in early childhood. (3) Evaluating health education program for mothers to prevent burn in early childhood.

SUBJECTS AND METHODS

Research design: A quasi experimental design was conducted.

Setting: The study was conducted at Maternal and Child Health Center in Menouf City, Menoufia Governorate (Egypt).

Subjects: Convenience sample of 167 mothers from the previously mentioned Maternal and Child Health Center from the beginning of February 2022 to the end of July 2022 (6 months) and agreed to participate in the study.

Sample size:

$$n = \frac{N}{1+N(e)^2}$$

Where N=Total population, n= sample size, e=level of precision =0.05

$$n = \frac{1000}{1 + 1000(0.0025)} \\ n = \frac{1000}{6} = 166.7 \sim 167 \text{ mother}$$

Total number = 167 mother.

Tools of data collection:

Data was collected through structured interview questionnaire composed of three parts:

Part I. Mothers' demographic Characteristics such as age, occupation, residence, educational level, number of family members, age of children, economic level, and marital status.

Part II. Mothers' knowledge about burn as: meaning of burn, causes, types, degree, signs and symptoms, risk factors and complications of burn.

Scoring system: Knowledge of mothers regarding burn was classified as correct answer was scored 1 and incorrect was scored zero.

Total knowledge classified as:

- Good <75%.
- Average 50% - >75%.
- Poor >50%.

Part III. Mothers' reported practices to prevent burn at early childhood as: ways to prevent burn in the (kitchen, eating room, living room, caring of child) and first aid if burn occurs.

Scoring system was classified as done practice was scored 1 and not done practice was scored zero.

- Done reported practice >50%.
- Not done practice <50%.

Validity: A panel of 5 professionals from Community Health Nursing staff from the nursing faculties of Helwan University and Menoufia University evaluated the tool's validity by looking at its comprehensiveness, comprehension, and application.

Reliability: The investigator used reliability to examine the internal consistency of the tool by giving the identical tools to the same people again, 15 days apart, in comparable circumstances. Test-retest reliability was 0.82 for knowledge and 0.86 for practice, while Cronbach's Alpha reliability was 0.890 for the answers from the repeated testing.

Operational item: The operational item included preparatory phase, pilot study and fieldwork.

A. Preparatory Phase: In order to construct the instruments for data collection, the preparatory phase involved analyzing previous, present, national, and worldwide related literature as well as theoretical understanding of many areas of the study. The researcher visited the chosen location during the planning phase to get to know the staff and study surroundings. The tool was created with supervision and professional advice was taken into account.

B. Pilot study: The tool's questions were tested for clarity, application, practicality, and understanding by 10% of the moms (17 mothers) in the pilot phase. The interview questions and time frame were improved thanks to the pilot study's findings. The primary study sample includes the pilot study's participants.

C. Field work: The director of the Maternal and Child Health Center gave authorization before starting the investigation. When the researcher met moms, he or she described the purpose of the study to them. Before gathering data, we obtained their verbal agreement after informing them.

The data gathering process began at the beginning of August 2021 and was finished 6 months later, at the end of January 2022. The investigator visited the aforementioned location from 9 am to 12

pm on two days each week (Saturday and Tuesday) to gather data. The investigator distributed and filled out the questionnaire. About 45 minutes were spent in each session. Appropriate instructional resources were created specifically for the curriculum (booklet).

Every Saturday and Tuesday, the researcher visited moms at the Maternal and Child Health Center facility, and the programme was implemented through group discussions. The investigator then gave the moms time to complete the questionnaire after explaining the results of the survey to them.

The answers of the pretest questionnaire sheet were used to construct the health education programme. Throughout the whole session, the researcher gave moms the identical information. In order to ensure that all moms got the same programme material utilizing the same teaching techniques and booklet, the health education programme was then launched on the predetermined timetable.

Preparatory Phase. Utilizing readily available books, papers, and magazines, data collecting techniques were developed through an assessment of historical and present related literature addressing various elements of burn prevention in the early infancy period. Six months were spent on the fieldwork, and there were four stages to the study's execution: assessment, planning, implementation, and evaluation.

Assessment Phase. Before beginning the planned health education programme, the research methods were used to evaluate mothers' accurate knowledge of and reported practices toward early childhood burn prevention. The study sample was given a pretest questionnaire to gauge their degree of proper knowledge and reported burn prevention measures; the information gathered during this stage was viewed as the foundation for future health education.

Planning Phase. The investigator develops the programme about prevention of burn in early infancy based on the assessment questions with simple Arabic language to be understandable after determining the requirements of moms in the assessment phase. It emphasized on knowledge about burn meaning, causes, risk factors, types, degrees, signs & symptoms of burn, complications, and methods of prevention, first aid and management of burn. Mothers reported practice regarding burn prevention in early childhood.

Implementation Phase. Health education program was carried out in Menouf Maternal and Child Health Center. The mothers were divided to 8 groups, each group contained 20 mothers. The investigator met mothers every Saturday and Tuesday.

The first session began with greeting the mothers, followed by an introduction to the programme and its goals. The last sessions began with greeting the mothers, followed by a recap of the previous session

and a discussion of the new session's content. Finally, the session concluded with a question asking the mothers for their feedback. The health education programme was implemented over the course of seven sessions, which lasted between 30 and 45 minutes each.

An introduction to the study's aims and the program's aim is given at the start of the first session. The time, duration, location, and topic of the programme sessions were also explained to the moms. The necessity of consistent attendance and engaged engagement was emphasized by the investigator.

Various teaching and learning techniques, such as lectures, discussions, and brainstorming, were employed during the sessions. One of the teaching strategies is the booklet. The health education programme was given in an easy-to-read format for use as a reference in the future.

Each session began with a recap of the last session's goals and the current session's objectives in language that was extremely basic and appropriate for moms while yet including motivational and reinforcement strategies. At the conclusion of the training, each mother receives a copy of the booklet for future use. Mothers were welcome to inquire about any topic covered throughout the sessions. Mothers were discussed at the conclusion of each session to clear up any misunderstandings.

Evaluation Phase. A posttest was administered following implementation in order to gauge the degree of change in the mother's knowledge and reported usage. The post test was completed as soon as the health education program's sessions ended, using the identical instruments as the pretest evaluation.

D Administrative item: The director of the aforementioned setting received a formal consent letter from the dean of the nursing faculty at Helwan University that detailed the purpose of the study. The Maternal and Child Health Center manager provided official consent, and the research was given the go-ahead. After a brief discussion of the research's goal and anticipated results, gather the data required for the present study used authorized personnel's channels of contact in the right manner. Individual interviews were conducted after obtaining moms' written agreement to participate.

Ethical considerations:

The Faculty of Nursing at Helwan University's Ethics of Scientific Research Committee gave its clearance for the study. Before beginning, the mother participants in the study were given a clear explanation of the study's goals by the investigator. Before include the mothers in the study, oral agreement was sought from them; a concise explanation was given in line with their level of comprehension. All collected information

was kept private and solely utilized for research. The confidentiality and maintenance of anonymity of the study's participant data were guaranteed to the investigator. Mothers were informed that they may opt to participate in the research or not, and that they had the option to discontinue participation at any time. Cultural and ethical norms were upheld.

Statistical analysis

The collected data were introduced and statistically analyzed by utilizing the Statistical Package for Social Sciences (SPSS) version 24 for windows. Qualitative data were defined as numbers and percentages. Chi-Square test and Fisher's exact test were used for comparison between categorical variables as appropriate. Quantitative data were tested for normality by Kolmogorov-Smirnov test. Normal distribution of variables was described as means and SD, and independent sample t-test was used for comparison between groups. To compare the mean score between the investigated variables before and after the intervention, Paired t test was performed. Additionally, correlation coefficient (r) test was utilized to determine how closely related the variables were to one another. P value ≤ 0.05 was considered to be statistically significant.

RESULTS

Table 1 summarizes the demographic characteristics of studied mothers. Regarding to mothers, 51.7% of them live in rural area.

Table (1): Demographic Characteristics of studied mothers (n=167).

Variables	No.	%
Age:		
<25		19.8
25		74.5
>35		5.7
Mean age \pm SD 26.01+ 6.043		
Family members:		
< 3		19.8
> 3 :		68.3
> 7		11.9
Child age\years		
< 1		19.8
> 1 -		56.9
> 3 -		23.3
Number of child in the family:		
1		17.1
2 -4		79.5
>4		3.4
Child had		25.0
Participate workshop regarding		
Yes		2.8
No		96.4

Figure 1 shows that before program implementation about 60% of mothers had poor knowledge score about burns. On the other hand 90% of mothers have good knowledge score at immediate post health education program implementation (P= 0.001).

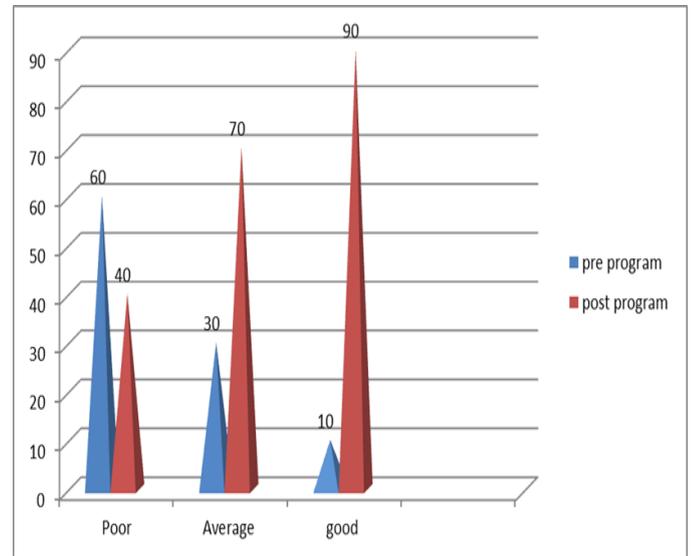


Figure (1): Distribution of mothers according to total correct knowledge regarding burn pre and post health educational program (N=167).

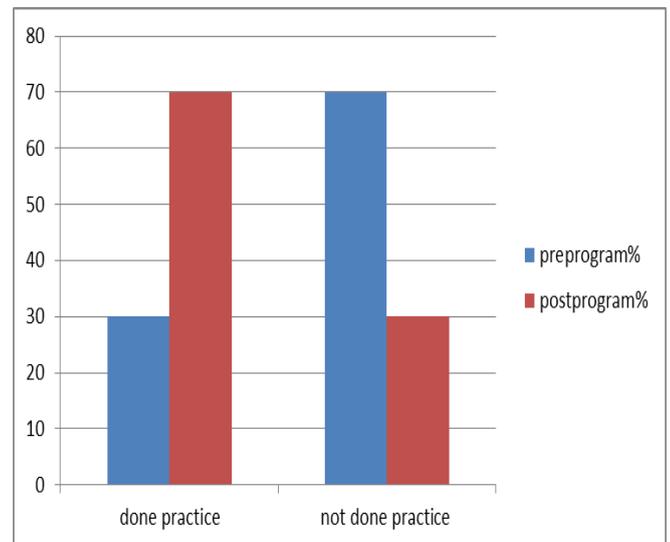


Figure 2 shows that only 30% of mothers reported done practice before program, and improved to 70% after the health educational program (P= 0.001).

Figure (2): Frequency distribution of mothers according to total done practices regarding burns pre and post health educational program (N=167)

Table 2 reflects that there is a highly statistically significant relation between mothers total knowledge score and demographic characteristics of the studied sample (P <0.01).

Table (2): Mean and standard deviation of mothers’ total knowledge scores regarding burn and demographic characteristics of the studied sample (N=167).

Demographic characteristic	Mothers total knowledge		t test	P value
	Pre-program	Post program		
	Mean ± SD	Mean ± SD		
Age	13.08 ± 2.308	19.22 ± 3.02	25.486	<0.001**
Occupation	7.86 ± 1.627	11.94 ± 2.42	28.004	<0.001**
Residence	7.16 ± 1.586	12.47 ± 1.93	29.554	<0.001**
Level of education	6.48 ± 1.095	11.40 ± 2.262	30.236	<0.001**
Family members	62.73 ± 8.042	98.68 ± 14.41	37.882	<0.001**
Child age	17.22 ± 2.316	11.87 ± 2.529	31.486	<0.001**
Number of child in the family	17.02 ± 2.399	12.34 ± 3.142	33.004	<0.001**
Child had burned before	25.49 ± 2.630	16.58 ± 4.085	31.554	<0.001**
Monthly Income	15.43 ± 1.763	9.92 ± 2.406	34.236	<0.001**
Mothers Participate any	75.17 ± 6.187	50.48 ± 10.850	35.884	<0.001**

Significant: <0.05

Table 3 reflects that there is a highly statistically significant relation between total done reported practice score and demographic characteristics of the studied sample (P <0.01).

Table (3): Mean and standard deviation of Mothers’ Total done practice scores regarding burn and demographic characteristics of the studied sample (N=167).

Demographic characteristic	Mothers total done practice		t test	P value
	Pre –program	Post program		
	Mean ± SD	Mean ± SD		
Age	19.22 ± 3.02	20.68 ± 2.33	25.486	<0.001**
Occupation	11.94 ± 2.42	13.51 ± 1.51	18.527	<0.001**
Residence	12.47 ± 1.93	13.08 ± 1.67	25.486	<0.001**
Level of education	11.40 ± 2.262	12.30 ± 1.89	28.004	<0.001**
Family members	98.68 ± 14.41	106.86 ± 9.60	29.554	<0.001**
Child age	13.08 ± 2.30	19.22 ± 3.02	30.236	<0.001**
Number of child in the family	7.86 ± 1.62	11.94 ± 2.42	37.88	<0.001**
Child had burned before	7.16 ± 1.58	12.47 ± 1.93	24.88	<0.001**
Monthly Income	6.48 ± 1.09	11.40 ± 2.262	22.992	<0.001**
Mothers participate any workshop about burn	62.73 ± 8.042	98.68 ± 14.41	24.752	<0.001**

Significant: <0.05

Table 4 displays that there is an inverse association between mothers’ total score of knowledge and total done practice. As reflected when knowledge and practice improved at post program the mothers prevent childhood burns (P <0.01).

Table (4): Correlation between total knowledge and total practice of mothers' pre & post of health educational program

Items	Mothers Total knowledge			
	Pre program		Post program	
	R	P value	R	P value
Total done Practice	0.22	0.790	- 0.013	0.877

Significant: <0.05

DISCUSSION

Burns are one of the most frequent home injuries, especially among young children. They are harmful because they put the kid at risk for medical, psychological, and social problems, and they may even result in death. Early childhood children are more prone to burns due to their natural curiosity about the world and inability to defend themselves against threats, thus it is the job of parents to maintain a safe atmosphere at home, take precautions, and closely monitor them in order to minimize mishaps ⁽⁵⁾.

The most effective strategy to prevent mishaps with objects that burn is to supervise children and to promote burn safety by implementing child safety precautions. Burns are a possible concern in any home. The main recommendations for preventing burns in young children include raising mother awareness of burn causes and risk factors, maintaining a safe environment at home, keeping things that cause burns out of children's reach, keeping an eye on kids as they begin to crawl, and teaching mothers how to treat burns properly so they can save their kids ⁽⁹⁾.

Concerning demographic characteristics of the studied mothers, Regarding to mother's age, the current study revealed that two thirds of mother's were between 25-35 years. Similar results were found by **Jansson et al.** ⁽¹⁰⁾ in the kingdom of Saudi Arabia KSA, who reported that 48.7% of the investigated mothers were between the ages of 25 and 34. The earlier findings ran counter to a research by **Carlsson et al.** ⁽¹¹⁾ in Sweden that revealed that 60% of mothers were over 35 years old. According to the study, the greatest time for moms to have children is between the ages of 25 and 35 since during this time; their health is excellent enough for them to care for young children.

According to mother's occupation, the current studies revealed that majority of mothers were housewives; in agreement with **Jeethu** ⁽¹²⁾ who claimed that 68% of moms in China were housewives. These findings were at odds with an Indian research by **Keshri and Jagnoor** ⁽¹³⁾, which revealed that more over half of the mothers in the study were employed. According to the study, the high cost of living forces moms to leave their children's homes and childhood behind in order to find employment that would allow them to support themselves and their families.

Relating to mother's place of residence, the present study showed that half of mothers were living in rural community. According to **Stewart et al.** ⁽¹⁴⁾ study in Ghana, which revealed that 65% of participants were from rural areas, the current study is consistent with their findings. These findings conflict with a research by **Bailey et al.** ⁽¹⁵⁾ conducted in Bangladesh, which claimed that 50.7% of the women who took part in the study resided in an urban region. According to the study, the absence of health facilities in rural regions causes both delays in administering first aid and subpar treatment results.

Considering mother's educational level of, the present study revealed that majority of mothers had basic education. The findings were comparable to those of a research carried out by **He et al.** ⁽¹⁶⁾ in Bangladesh, which discovered that 70% of mothers had completed primary school. These findings contrasted with a research conducted in Asia by **Kawalec** ⁽¹⁷⁾, who reported that 53% of the participating moms had advanced degrees. According to the research, individuals in rural regions only received a basic education due to a lack of educational facilities and the high expense of schooling in metropolitan areas.

Concerning to childhood's age, the present study showed that two thirds of childhoods were between 1 to 3 years old. The current study is comparable to **Elrod et al.** ⁽¹⁸⁾ research from Switzerland, which found that 46% of children were under the age of three. This is in contrast to a study by **Sengoege et al.** ⁽¹⁹⁾ who found that 60% of children in Africa were between the ages of 4 and 6 years old. According to the study, this age group is at a greater risk for burn injuries since kids start learning about the world by touching everything.

Regarding monthly income, the present study illustrated that the majority of mothers' income wasn't enough. The results of a study conducted in Africa by **Rybarczyk et al.** ⁽³⁾, titled "A systematic review of burn injuries in low- and middle-income countries: Epidemiology in the WHO-defined African Region," support this conclusion. They discovered that 85% of the study's participants said their income wasn't sufficient to cover their needs. In contrast, **Keshri and Jagnoor** ⁽¹³⁾, researchers from India, discovered that the majority of participants—75%—mentioned having enough money to maintain their daily life. According to the investigator, this is a result of Egypt's high level of life and growing cost of living.

As regards mother's participation in workshops about burn, the current study showed that less than quarter of mothers participated in workshop about burn. This is consistent with a research conducted in Egypt by **Nageh et al.** ⁽²⁰⁾, which found that barely 10% of moms attend health education programmes. The findings of the current study contradict with those of **Nor et al.** ⁽²¹⁾ who said that 50.4% of mothers were interested in attending health

education workshops in Malaysia. According to the researchers, the majorities of the participating moms lived in rural areas and were thus unable to attend seminars to advance their understanding of burn prevention.

In relation to source of mother's knowledge about burn, the present study displayed that more than third of mothers use the internet as their source of knowledge. This finding is consistent with a research conducted in Baghdad by **Jamil and Ali** ⁽²²⁾, who found that 48.8% of mothers utilize the internet as a source of information. In contrast, **Halperin et al.** ⁽²³⁾ found that 42.6% of mothers in China get their information from nurses and doctors. According to the researcher, the growth of the Internet in Egypt has increased moms' awareness of burns.

Regarding mothers' total correct knowledge about burn pre and post health program, the present study clarified that before program implementation less than half of mothers had correct knowledge scores while after the program implementation more than three-quarters of mothers had correct knowledge. This outcome was in line with the findings of **Lknur and Havva** ⁽²⁴⁾, who observed that burn prevention levels rose as a result of this study in New Zealand. Programs for health education, in the investigator's opinion, had a positive effect on mothers' awareness of how to prevent burns in young children.

Regarding total done practice scores pre and post health educational program, the current study demonstrated that more than quarter of mothers done reported practice preprogram that improved to three quarters after implementation of health educational program implementation. According to **Elashry et al.** ⁽²⁵⁾ in Egypt, who found that 85% of moms changed their practice following instructing class, this outcome was consistent with their findings. According to the study, mothers' stated practices have improved because health education programmes assist mothers in changing negative burn behaviors and customs as well as instructing them in effective burn first aid.

Regarding relation between mother's total knowledge scores about burn and demographic characteristics, the present study reflected that there was a highly statistically significant relation between mother's total knowledge scores and mothers' education, age and place of residence of the studied sample ($P < 0.01$). This finding was in line with that of **Morrongiello and Kiriakou** ⁽²⁶⁾ in Algeria, who demonstrated a highly statistically significant relationship between the demographic traits of the mother and their degree of education.

Concerning to relation between mother's total done reported practice scores regarding burn and demographic characteristics, the current study showed that there was a highly statistically significant relation between mother's done reported practice and demographic characteristics of the sample ($P < 0.01$).

This finding was in line with that of **Forjuoh et al.** ⁽²⁷⁾ in Africa, who showed that there was a strong statistical correlation between demographic traits and done reported practice. According to the researcher, educating moms more has a good impact on their adoption of burn prevention practices at home.

Regarding correlation between total knowledge and practice of mother's pre& post of health educational program, after the implementation of the health educational program, about three quarters of mothers improved their done reported practices than preprogram due to improvement of their knowledge. This study supports the findings of a study by **Tajiki et al.** ⁽²⁸⁾ who found that health belief models may be used to teach mothers about the prevention of childhood burns and to increase their knowledge.

CONCLUSION

The findings of the current study shows that improvement 60% of mothers' poor knowledge scores preprogram improved to 90% after health educational program. The findings of the study show that improvement of 30% of mothers reported done practice before program improved to 70% after health educational program. Also, there are significant statistical difference between pre and post health educational program in total correct knowledge and reported done practice ($P = 0.001$).

RECOMMENDATIONS

On the basis of the result of the study, the following recommendations are suggested.

1. Continuous health educational programs for mothers to improve their awareness about burn prevention.
2. Disseminating health education pamphlet to increase mother's knowledge and practice about safety measures of burn.
3. Further researches are needed on a wide scale especially in the countryside to assess the factors that cause burn accidents and improve their knowledge and practice to prevent burn.

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