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Effect of an Educational Guideline Program on Mothers' Performance regarding Shaken Baby Syndrome Prevention

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Abstract
Background: Shaken baby syndrome (SBS) is an extremely problematic form of physical violence endured by newborn infants. It is resulting in brain trauma and probably eventual neurological squeals. Despite its danger, it can be prevented by improving the mothers' performance, which includes their knowledge, attitudes and beliefs regarding prevention of SBS in a very simple way. **Aim:** evaluate the effect of an educational guideline program on mothers' performance regarding shaken baby syndrome prevention. **Design:** A quasi experimental design was utilized. **Sample:** A purposive sample of 150 mothers who confessed to inpatient and outpatient pediatric and obstetric departments at Beni-Suef University Hospital. **Tool of data collection:** three tools were utilized: **Tool 1:** mothers' interviewing questionnaire for Sociodemographic characteristics. **Tool 2:** mothers' knowledge about SBS. **Tool 3:** adopted mothers' beliefs and attitudes regarding Shaking Baby Syndrome prevention sheet (pre/post and follow up tests). **Results:** Increased Percentage distribution of total mothers' performance (knowledge, attitudes and beliefs) after educational guideline program implementation regarding shaken baby syndrome prevention. **Conclusion:** Mothers' performance regarding the prevention of shaking baby syndrome improved after implementation of the educational guideline program. **Recommendation:** Routinely services awareness to avoid shaking baby syndrome in all counseling programs for new mothers' preparation and provide them with brochures on how to deal with an angry infant especially throughout the first months of life.

Keywords: Educational Guidelines, Performance, Prevention & Shaken Baby.

Introduction
Shaken baby syndrome (SBS), too known as abusive head trauma, is a kind of traumatic brain damage that happens when a newborn infant is forcibly shaken (AHT). SBS is a group of symptoms and indicators induced by intense shaking that include subdural hematoma, retinal hemorrhages, and encephalopathy **(Alshahrani et al, 2018).** The American Academy of Pediatrics (AAP) has recently coined the term AHT to distinguish a non-accidental head injury caused by shaking, impact trauma, or a mixture of the two **(Mann et al, 2015).** In wealthy countries, 24.6 to 39.8 per 100,000 newborn newborns suffer from abusive brain trauma **(Allen, 2014).** Although less common than other figures of child abuse, such as ignore and seeing family violence, AHT can have additional serious consequences; mortality occurs in 12% to 36% of cases, and 13% to 60% of survivors have lasting motor, visual, cognitive, and behavioral difficulties **(Ornstein et al, 2016).**

The most prevalent cause of shaking and violence among parents is their newborn wailing during the first few months of life **(Adham et al, 2019).** Shaken Baby Syndrome is responsible for 95% of all dangerous brain injuries in children under the age of one. It can happen quickly; just 3 seconds of shaking be able to result in brain damage, paralysis, blindness, cognitive and behavioral issues, or yet death. The average age of SBS fatalities is 6 months. Due to underreporting and misinterpretation, shaken baby syndrome problems are difficult to identify. There is no set of symptoms that can be used to diagnose SBS **(El Sayed & Mahmoud, 2020)**. Children with specific needs, multiple siblings, or illnesses are extra likely to develop SBS. Males' sex is more likely than girls to be victims of SBS, and children from low-income families are more vulnerable to these injuries (**Baratschat et al, 2016 & Valliammal & Ramachandra, 2016**).

The newborn baby has a huge, hefty head and weak neck muscles **(El Sayed & Mahmoud, 2020).** A newborn's crying is the only method for him or her to express themselves at delivery and in the early hours stages of life, as well as set up communication with the environment **(Cansever et al, 2012 & Baykan et al, 2016 & Alagoz, 2013).** Usual weeping begins in the early few weeks after labor and can last up to 2.5-3 hours per day by the 6th or 8th week **(Didisen et al, 2019).** Parents find infant wailing extremely aggravating in the early few months of life and it is the most prevalent cause of shaky and aggression **(Adham et al, 2019)**.

But extreme crying is a very common sign of complaining in the first three months following birth **(Baykan et al, 2016 & Zengin et al, 2016).** In most newborn infants, crying and restlessness impulsively decrease and disappear in the 3rdand 4thmonths after labor **(Didisen et al, 2019).**

Signs and symptoms of SBS are extreme agitation, lethargy, poor feeding, respiratory issues, convulsions, vomiting, and pale or bluish skin (**Vandali & Goted, 2019).** Subdural hemorrhages, retinal hemorrhages, injury in the spinal cord and neck, and rib and bone break are all common occurrences in SBS. Shaken baby injuries are far more difficult to recover from. Damage to the retina of the eye can cause blindness. The greater part of infants who survive severe shaking will increase neurological or mental abnormalities, such as cerebral palsy or mental retardation that may not be completely noticeable until they are 6 years old and may require lifetime medical care **(Valliammal & Ramachandra 2016).**

The pediatric nurse plays an important role in prevention, early detection, and intervention for families who are at risk of SBS in a range of clinical settings. Nurses can help with urgent conditions and emergency treatment in a shaken baby, mainly by connecting life-sustaining interventions including breathing support and

surgical procedure to halt internal hemorrhage, especially in the brain. Prevention through parent, caregiver, and community-wide education initiatives is the sole option for newborn infants at risk of SBS **(Altman et al, 2011).** Any professional working with children and families, as well as every individual caring for a newborn infant or young kid, has a responsibility to prevent SBS (**Susamma, 2016).**

The pediatric nurse can assist caregivers in dealing with a crying newborn and prevent SBS from becoming irreparable **(El Sayed & Mahmoud, 2020).** The transmission of a clear, forceful message by nurses to parents, particularly women, at various times during pregnancy, birth, and medical follow-up visits is a major component of SBS prevention. The pediatric nurse's role is to inform and educate health care professionals, parents, caregivers, and the general public about the dangers of shaking, the normality of baby crying, a variety of soothing and calming strategies for both infants and caregivers, and how to safely reduce the burden of caring for newborn infants, as well as other support services **(Tasar et al, 2014).**

Significance of the Study

Shaken baby syndrome is the most ordinary cause of death among newborn infants, accounting for more than half of all accidental injuries. Every year, 21-74 per 100,000 newborn infants worldwide are victims of shaken baby syndrome, with 25 percent to 30 percent of all shaken babies dying as a result of their injuries. The remaining 75% of people are at risk of severe brain injury. According to the International Society for the Prevention of Child Abuse and Neglect (ISPCAN), around 60% of SBS victims die from their damages later in adulthood or have lasting (**Meinck et al, 2020).**

In one universal study, the predominance of shaking infants ranged from 20% to 63 percent in five populations as Brazil, Chile, Egypt, India, and the Philippines. In the United States alone, it is expected that between 1,400 and 10,000 cases of shaken infant syndrome happen each year **(Adham et al, 2019).** The majority of newborn infant morbidities, deaths, and neurological or mental disabilities are caused by parents' lack of knowledge, beliefs, and attitudes, particularly among women about maternal and neonatal care through this period. Morbidity, death, and neurological or mental dysfunction in newborns pose significant concerns for both health care providers and families **(Adib-Hajbaghery & Khosrojerdi, 2017).** As a result, the aim of this study was to evaluate the effect of an educational guideline program on mothers' performance in terms of shaken baby syndrome prevention by identifying defects in their knowledge, attitudes, and beliefs, as well as the work required to correct these defects, by developing and implementing a well-designed instructional program based on identified needs and observations to enrich mothers' knowledge and modify their beliefs and attitudes about shaken baby syndrome. Improving mothers' knowledge, beliefs, and attitudes towards shaken baby syndrome prevention will, directly or indirectly, lead to a reduction in shaken baby syndrome complications and an increase in the rate of newborns and infant wellness.

Operational definition:

Performance is described as already given information, beliefs, and attitudes to a human; as a result, a person can accomplish the action, achievement, or fulfillment of obligations on this foundation **(Supril, Rachmawaty & Syahrul, 2019)**

Aim of the Study:

This study aimed to evaluate the effect of an educational guidelines program on mothers' performance regarding shaken baby syndrome prevention.

Objectives :

- Assess mothers' performance (knowledge, beliefs and attitude) about shaken baby syndrome prevention.

- Develop an educational guideline program based on mothers' needs regarding shaken baby syndrome prevention.
- -Implement an educational guideline program based on mothers needs regarding shaken baby syndrome prevention.
- Evaluate the effect of the educational guideline program on mothers' performance (knowledge, beliefs and attitudes) regarding prevention of shaken baby syndrome

Hypothesis:

It was hypothesized that; the educational program will have a positive effect on mothers' performance regarding shaken baby syndrome prevention.

Subjects and Method:

Research design:

A quasi-experimental design was used to conduct this study

Setting:

This study was carried out at inpatient and outpatient pediatric and obstetric departments at Beni-Suef University Hospital.

Subjects:

A purposive sample of 150 mothers from the previous settings. A purposeful selection of mothers meeting following criteria.

Inclusion criteria:

Mothers of children who are:-

- From birth up to one year
- Free from congenital diseases.
- Free from physical or mental disabilities.
- Full-term babies.

Tools of data collection:

Three tools were used in this study:

Mothers' interviewing questionnaire sheet (pretest only) include 6 items to collect data regarding to Sociodemographic characteristics of the studied mothers which included; age, number of siblings, income level, educational level, residence and sources of information.

Mothers' knowledge interviewing questionnaire sheet; which include 8 multiple choice questions (MCQ), (pre / post and follow up tests). it was designed and planned by the researchers in the light of the relevant literatures **(Waltz-Feher et al., 2005 & Adham et al, 2019)** it was written in a simple Arabic language and include: definition of shaken baby syndrome, age at risk for being shaken, causes of baby's crying, causes, signs and symptoms of baby shaking, complications of shaken baby, preventing measures of baby shaking and other dealing strategies with crying baby.

Scoring system: Knowledge items were divided into 8 questions and each question was gave to three score levels: Complete and/or correct answer was scored (3), while incomplete correct answer was scored (2), and don't know or wrong answer was scored (1). The total score was classified into either satisfactory level (from 70% and more) or unsatisfactory level (less than 70%) from total score (39). Alpha Cronbach test = 0.85.

Mothers' beliefs and attitudes form: (pre-post, and follow-up testing), adapted from **Russell and Britner, (2006)** comprised 15 items that deliberated mothers' beliefs and attitudes regarding shaken baby syndrome prevention.

Scoring system: contains of 15 items and scores as follows: (3) scores for agree, (2) scores for neutral and (1) score for disagree. The total scores level of beliefs and attitude was classified into: Positive beliefs and attitude: From 70% and more, and negative beliefs and attitude: Less than 70% **(Russell & Britner, 2006)**.

Validity and reliability of the study tools:

Content validity was determined by a group of experts (5) including 3 professors of Pediatric Nursing, 2 professors of pediatrics. Their estimation was elicited regarding to the tools format layout, consistency, scoring system. The tools content was tested regarding to the knowledge accuracy, relevance and competence. Reliability of all items of the tools was completed. The reliability test was found by using the Cronbach alpha to assess internal consistency construct validity. Cronbach alpha r= 0.87.

Administrative design:

An official approval was gained from the administrators of the mentioned settings to conduct the study. A clear explanation was given about the aim, nature, importance and predictable outcomes of the study.

Pilot study:

A pilot study was carried out on 10% of the total study sample (15) mother. Those who participated in the pilot study were excluded from the study. The main purpose of the pilot study was to analysis the applicability and suitability of the setting, clarification and the feasibility of the study tools. In adding, it served to estimation the time needed to fill in the tools. It also helped to recognize any obstacles or problems that might interfere with data collection. Based on the findings of the pilot study, modifications were conducted accordingly

Ethical considerations:

Permission of the previous chosen settings directors was done to conduct the study. All mothers who agreed to participate and met the inclusion criteria were informed about the study's goal as well as their ethical rights to participate or not engage in the study. They then gave their permission to take part in the study.

Procedure:

- The study was started and completed within six months from beginning of March 2021 to end of August 2021.
- The aim of the study was simply explained to mothers who met the inclusion criteria.
- The researchers started to gather data from the mothers at the selected location.
- Data were collected 2 days every week (Sundays & Tuesdays) during the morning period from 9.00 a.m. to 1.00 p.m.
- The tools were completed by the researchers according to health condition of mothers because most of them were postpartum mothers, each mother was interviewed individually and filled out sheets before implementing the program, immediately and in the follow-up one month later after implementation of the educational guideline program. Half an hour was taken for each mother, otherwise about 10 minutes for attitude and behavior scale.
- The guidelines were developed based on a pretest assessment of the mothers real needs. The researchers developed the guidelines program's content in plain Arabic, then compared it to the linked literature and the mothers' comprehension level. The mothers were located into groups ranged from (9–10). Two theoretical sessions were applied for each group.
- The theoretical sessions were divided into two sessions (each lasting 30 minutes) and covered the following topics: definition of shaken baby syndrome, children's age at risk for being shaken, causes of baby crying, causes, signs and symptoms of baby shaking, complications of shaken baby syndrome, prevention measures for baby shaking, and strategies to deal with crying babies to be calm.
- The program's sessions included lectures, demonstrations, and group discussions. Learning aids and resources are tailored to the level of education, needs, and circumstances of the participants in the study. Baby doll models, mobile movies, and photos are examples of tools employed. At all occasions, full, precise descriptions were used in the classroom. In some circumstances, ambiguous words and expressions can lead to miscommunication or failure to grasp precise meanings. Power point presentations and posters were employed by the researchers as useful means of disseminating information. For illiterate and low-educated women, a guideline booklet was prepared and supplied as a reference to be used after the guideline program was implemented, as well as sharing mobile videos and images.
- Mothers of newborns and infants were advised to call the researchers by phone if they needed any assistance.
- Using the pre-constructed tools to assess the effect of the educational guideline program on the mothers who were studied
- A posttest was conducted immediately following the implementation of the guideline program, and one-month follow-up test using the same tools.

Statistical Design:

Statistical Package for Social Sciences was used to organize, sort, tabulate, and analyze the data acquired (SPSS). Numbers, percentages, averages, standard deviations, t–tests, and Chi-square tests were utilized to describe them in tables and figures. The significance level was set at $p = 0.05$.

Results

Table (1): Percent distribution of Socio-demographic characteristics of the studied mothers (n=150)

Characteristics	No	%
Age / year		
<20	20	13.3
20<25	40	26.7
25<30	55	**36.7**
≥30	35	23.3
	29.32±2.86	
Income level		
Low	55	36.7
Moderate	65	**43.3**
High	30	20.0
Educational level		
Illiterate	70	**46.7**
Primary to secondary education	60	40.0
High education	20	13.3
Occupation		
Work	67	44.6
Housewife	83	**55.3**
Number of children		
One	55	**36.7**
Two	30	20.0
Three	40	26.7
Four	25	16.6
Residence		
Rural	70	46.7
Urban	80	**53.3**

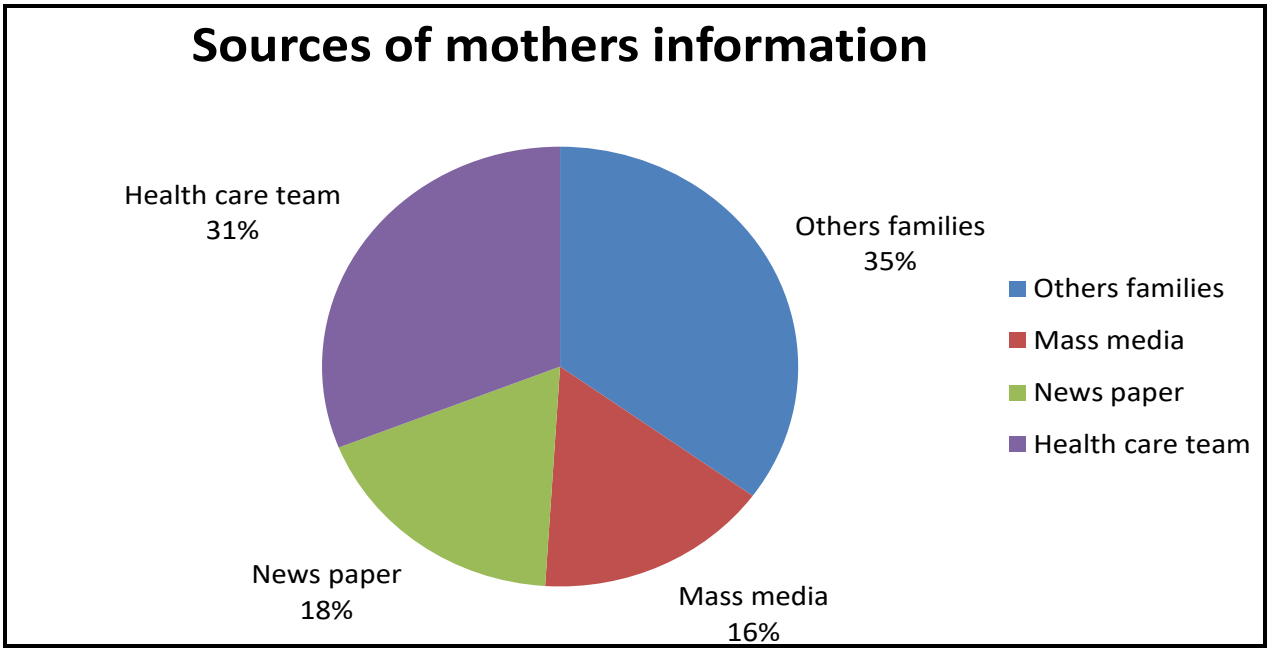

Figure (1): Distribution of Mothers Regarding the Sources of information about shaken baby syndrome. (n=150)

Table (2): Levels of Mothers' Knowledge about shaken baby syndrome (SBS) pre, post and one month later (follow up) after the educational guideline program implementation (n = 150).

Knowledge related to (SBS)	Pre- educational guideline program implementation		Immediately Post-educational guideline program implementation		Follow up	
	Satisfactory	Unsatisfactory	Satisfactory	Unsatisfactory	Satisfactory	Unsatisfactory
	%	%	%	%	%	%
1. SBS definition	5.0	95.0	88.0	12.0	85.0	15.0
2. Children`s age at risk for SBS	3.0	97.0	95.0	5.0	92.0	8.0
3. Causes of SBS	5.0	95.0	95.0	5.0	92.0	8.0
4. Common causes of baby crying	40.0	60.0	95.0	5.0	92.0	8.0
5. Signs and symptoms of SBS	10.0	90.0	90.0	10.0	85.0	15.0
6. complications of SBS	3.0	97.0	95.0	5.0	92.0	8.0
7. Preventing measures of SBS	5.0	95.0	88.0	12.0	85.0	15.0
8. Dealing strategies with crying baby to be calm	30.0	70.0	95.0	5.0	92.0	8.0
X2 **1**= 16.6 pre- guideline vs. post- guideline						<0.001**
X2 **2** = 22.8 pre - guideline vs. follow- up						
X2 **3** = 15.4 post - guideline vs. follow- up						

** Statistical significance when P ≤0.05* ***High statistical significance when P< 0.001*

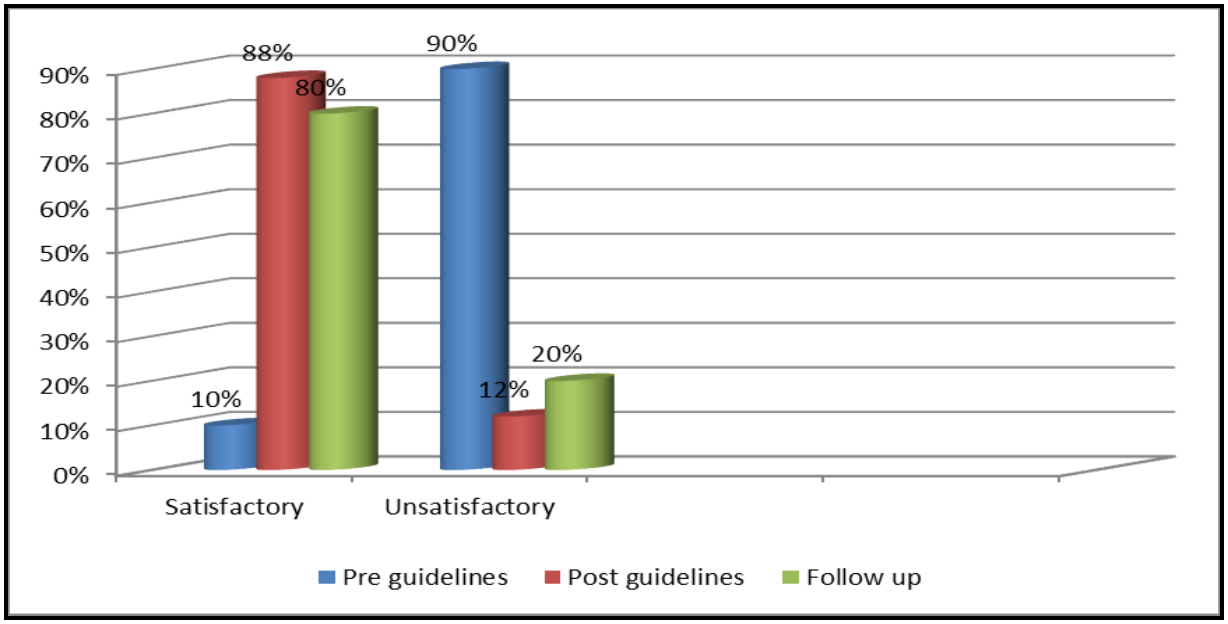

Figure (2): Percentage Distribution of Total Knowledge Score of the Studied Mothers about Shaken Baby Syndrome Prevention Pre, Post, and Follow Up Educational Guideline Program Implementation (n = 150).

Table (3): Percentage Distribution of the Studied Mothers regarding to their beliefs and attitudes about SBS prevention throughout pre, immediately post and one month later (follow up) after the educational guideline program implementation (n = 150).

Attitude and beliefs related to SBS prevention	Pre- educational guideline program implementation		Immediately Post-educational guideline program implementation		Follow up	
	Positive	Negative	Positive	Negative	Positive	Negative
	%	%	%	%	%	%
1. Appropriate way to discipline babies is hitting or striking	40.0	60.0	80.0	20.0	87.0	22.0
2. Spanking is an appropriate way to discipline babies	43.0	57.0	75.0	25.0	75.0	25.0
3. Shaking is an appropriate way to calm babies	25.0	75.0	96.0	4.0	96.0	4.0
4. Shouting or screaming is an appropriate way to discipline babies.	42.0	58.0	85.0	15.0	82.0	18.0
5. Feeding is an appropriate way to calm babies	59.0	41.0	90.0	10.0	85.0	15.0
6. Walking with holding a baby is an appropriate way to calm babies	30.0	70.0	85.0	15.0	82.0	18.0
7. Singing is an appropriate way to calm babies	65.0	35.0	75.0	25.0	75.0	25.0
8. Holding is an appropriate way to calm babies	70.0	30.0	94.0	6.0	92.0	8.0
9. Let baby cry may causing die, so he should be shaken roughly to stop crying	20.0	80.0	80.0	20.0	87.0	22.0
10. Shaking a newborn infant can reason of serious health problems or even death	11.0	89.0	75.0	25.0	75.0	25.0
11. Mothers who are frustrated or stressed can react to an upset baby appropriately	35.0	65.0	96.0	4.0	96.0	4.0
12. Mothers who are angry can take action to an upset baby appropriately	40.0	60.0	90.0	10.0	85.0	15.0
13. Rocking in a rocking chair is an appropriate way to calm newborn babies	52.0	48.0	90.0	10.0	85.0	15.0
14. An important role of mothers is to making sure that persons who take care of their infant know about the dangers of shaking an infant.	9.0	91.0	85.0	15.0	82.0	18.0
15. There is a possibility the baby may get hurt when caregivers hold him for calming	20.0	80.0	80.0	20.0	87.0	22.0
T-test P value	**$X^2$1 =28.2 pre- guideline vs. post- guideline**					<0.001**
	$X^2$2 = 54.1 pre - guideline vs. follow- up					
	$X^2$3 = 23.2 post - guideline vs. follow- up					

***High statistical significance when P< 0.001*

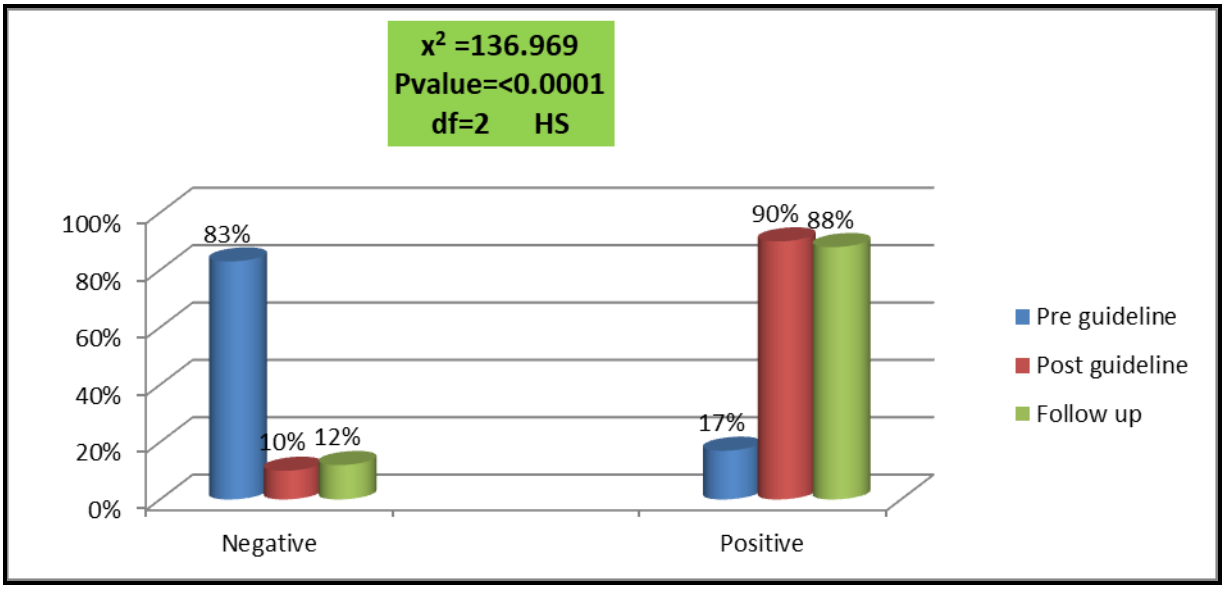

Figure (3): Percentage distribution of total beliefs and attitude of the studied mothers about shaken baby syndrome prevention throughout the pre, post and one month later (follow up) educational guideline program implementation (n = 150).

Table (5): Relationship between Mothers' total Knowledge, Beliefs, and Attitude regarding SBS and their Sociodemographic Characteristics Pre, Immediately Post And Follow Up The, Educational Guideline Program Implementation (n=150).

Variables		Age		Level of educational		Residence		Income level	
		R	P	R	P	R	P	R	P
Knowledge	Pre guidelines program	0.71	0.05*>	0.135	0.05*>	0.42	0.05*>	0.72	0.05*>
	Post guidelines program	0.524	0.001	0.228	0.001	0.132	0.05*>	0.031	0.05*>
	Follow up	0.441	0.001	0.344	0.001	0.70	0.05*>	0.142	0.05*>
Beliefs and attitude	Pre guidelines program	0. 24	0.05*>	0.52	0.05*>	0.31	0.05*>	0.021	0.05*>
	Post guidelines program	0.423	0.001	0.425	0.001	0. 54	0.05*>	0.140	0.05*>
	Follow up	0.242	0.001	0.234	0.001	0.23	0.05*>	0.54	0.05*>

** Statistically insignificant (p> 0.05)* *** Highly statistical significant correlation (P< 0.001)*

Table (1): Regarding ages of studied mothers; shows that 36.7% of them their ages ranged from 25 < 30 with mean age 29.32±2.86 years. 43.3% of mothers had moderate income, less than half of them (46.7%) were illiterate, more than one third of mothers (36.7%) had only one child and slightly more than half of them 55.3%, 53.3 were housewives and living in urban area respectively..

Figure (1): Shows that other family members, the health-care team, the newspaper, and the mass media were the main sources of information for mother (35, 31, 18 and 16 %) respectively.

Table (2): Clarifies that there were enhancements in all aspects of mothers` knowledge about shaken baby syndrome immediately post and at the follow up of the educational guideline program implementation with highly statistically significance difference, P value <0.001**.

Figure (2): explains the total knowledge score of the mothers who were studied. The majority of them (90%) had an unsatisfactory level prior to the implementation of the educational guideline program, which improved in the immediate post and follow up tests, 88%, 80% of them had satisfactory level of knowledge respectively, with a highly statistically significant difference (P<.0001).

Table (3): points out that there are highly statistically significant improvements from negative to positive mothers' beliefs and attitudes in all aspects of shaken baby syndrome prevention following the implementation of the educational guideline program, both immediately and at the follow-up phase (P<.0001).

Figure (3): Shows that before the guideline educational program was implemented, the majority of the mothers' total beliefs and attitudes score (83

percent) were negative, but that this improved for the majority of them (90, 88) % to have positive beliefs and attitudes scores immediately post guideline implementation, and at the follow up phase, with a highly statistically significant difference (P<.0001).

Table (5): Reveals a statistically significant positive relationship between knowledge, beliefs, and attitudes scores and mothers' age and educational level during the post-implementation and follow up of the educational guideline program implementation $p < 0.05$. However, this table reveals that there are no statistically significant between knowledge, beliefs, and attitudes scores and mothers' residence and income pre, immediately post and follow up of the educational guideline program implementation $p > 0.05$

Discussion:

Increased numbers of shaken babies syndrome can be explained by a lack of awareness among mothers or caregivers, as well as a negative attitude and beliefs (SBS). Mothers' education and training as primary caregivers would raise their understanding of SBS prevention and reduce risks. From then, the study was designed and conducted to determine the effect of educational guidelines on mothers' performance which included their knowledge, attitudes and beliefs about SBS prevention.

The present findings revealed that less than half of the mothers their ages was ranged from 25 to 30years, with a mean age of 29.32±2.86 years and less than a quarter of them , their ages were less than 20 years. This results was consistent with those of those obtained by **Adham et al, (2019),** who found in study about "Mothers' Knowledge, Believes and Attitudes regarding Shaken Baby Syndrome Hazards" that 34.3 % of studied mothers their age was from 25 to 30 years old who were participated in the study. Nonetheless, this finding contradicts with findings of **El Sayed & Mahmoud (2020) studies about).**"Effect of Educational Materials on Mother's Awareness, Knowledge and Behavior Regarding the Dangers of Shaken Baby Syndrome." who found that the vast majority of mothers (96 percent) were between the ages of 20 and 40 years in their study. Only two of mothers were under the age of 20 years. Similarly, in their study "Assessment of parental awareness of the shaken baby syndrome in Ireland," **(Mann et al, 2015**) discovered that the majority, of the mothers age was constituted between 26 - 35 years and just 2 mothers were under 20 years old.

Early marriage was the cause of this younger age frequency. Early marriage occurs as a result of bad economic circumstances in some households, which prevents females from continuing their education and forces them to marry young. This is corroborated by the results of the current study, which revealed that more than three quarters of the mothers were illiterate and had only had elementary and secondary school, and that more than three quarters of them were from poor and moderate socioeconomic backgrounds. Furthermore, in some locations, such as rural areas, there are incorrect cultural ideas and customs that females must marry young or they will be called spinsters if they reach the age of 20 without marrying. So, most of young mothers who had low educational level may deal improperly with newborns and infants, and can caused to them Permanent disability as SBS.

In terms of mothers' understanding of SBS, the current study's findings demonstrated that mothers' knowledge was unsatisfactory before implementation of educational guideline program. This finding was the same like results done by **El Sayed & Mahmoud (2020)**, who found a lower total mean score of pre-intervention awareness of mothers about SBS. Similarly, **(Alshahrani et al, 2018**) who made a study entitled "Evaluation of Knowledge regarding Shaken Baby Syndrome among Parents in Tabuk City" and found that 67.39 percent of parents were unaware of the dangers of a shaken baby throughout the first year of life. Furthermore, roughly more than two thirds (70%) of the respondents stated that they had in no way heard of SBS.

Meanwhile, **(Rodrigues & Cavalcanti, 2018) study's about "**Pediatric Abusive Head Trauma Prevention Initiatives: A Literature Review. TRAUMA, VIOLENCE, & ABUSE" that emphasized that abusive head trauma (AHT) is a severe problem or form of child maltreatment that happens in every community and that must be prevented or avoided in order to improve prognosis and prevent complications through appropriate awareness and good knowledge among mothers, as well as community and professional experience among health care providers. Mothers of neonates with SBS or mothers of newborns need help and guidance in caring for their babies, and early intervention improves care quality and outcomes. The study's main purpose about "A randomized clinical trial of the building on family strengths program: an education program for parents of children with chronic health conditions" was to improve studied mothers knowledge, which helped them obtain more experience and support **(Kieckhefer et al, 2014).** Those newborns require more care and direct supervision than normal neonates so; mothers require adequate training in dealing with these cases in a study entitled Impact of obstetrical brachial plexus injury on parents for **Firat et al, (2012).**

Before the educational guideline program was implemented, the majority of the mothers 90% had an unsatisfactory total knowledge score about the prevention of shaking baby syndrome. **El Sayed & Mahmoud (2020)** also corroborate this finding that there is a substantial lack of understanding regarding SBS among mothers. It's a big part of putting mother's SBS prevention programs in place, because they are so important in SBS prevention. According to the Shaken Baby Syndrome National Center, non-accidental head traumas decreased by 47 percent in New York over a three-year period after all parents of newborn babies were given information about SBS in the hospital **CDC, 2012**. However, there was satisfactory knowledge immediately following the implementation of the educational guidelines program and during the follow-up phase. These findings are in the same line with **Stewart et al., 2011** study's about "Shaken baby syndrome and a triple dose strategy for its prevention" who found that the educational program increased the great majority of participants' knowledge. Parents' understanding improved greatly after the program intervention, as pointed by **Simonnet et al, (2014)** in study about "Parents' behavior in response to infant crying: abusive head trauma education" Furthermore, according to (**Suleiman, 2015**) who clarified in study about "Parental Knowledge of Shaken Baby Syndrome: Effects of a High Risk Parent Teaching Program on Incidence of Abusive Head Trauma", that the interventional group that established the SBS supplemental education program have less rate of SBS knowledge than those who do not receive the supplemental education program. From the researcher's perspective, the study's major goal was to enhance mothers' knowledge of the dangers of shaken baby syndrome, and the improvements reported in this study revealed that knowledge was achieved.

As regard the source of information on SBS, this study's findings revealed that fewer than three-quarters of the participants' information came from other families or the health-care team (Fig.1). This could be related to the fact that many mothers are dismissive of those who inquire about details as a result of insular societies. This finding is supported by (**El Sayed & Mahmoud, 2020**), who found that the majority of mothers (80%) did not hear anything about SBS, while the minority (20%) of those mothers who had heard about SBS did so from a health care provider, and the majority of those mothers learned about SBS from sources other than health care workers. Furthermore, in the same context **(Mann et al., 2015)** discovered that Fifty-four percent of participants had in no way listened of SBS, and of those who had heard reported that media was the commonest source and less than 1 % of members of the study who obtained information through a health care providers. Consequently, for this cause, it is significant to approach the subject, so that educational guideline program could bring significant enhancement in their knowledge, attitude and beliefs about SBS prevention, so communication with mothers is a necessary issue in solving shaking baby syndrome hazards demands.

In relation to mothers' attitude and beliefs; results of the present study showed that; there were statistically significance enhancements in mothers' attitude and beliefs immediately post- educational guideline program implementation and the follow up. **Nahara et al, (2018)**, stated in a study entitled "Assessment of a Brief Intervention with Parents to Prevent Shaken Baby Syndrome" that it was raising in mothers' knowledge about consequences of shaking, important of caregiver's wellbeing, caregiver strategies to deal with crying, beliefs about newborn care and about disciplining and raising infants were observed in the experimental group at posttest, indicating the effectiveness of the intervention program. Moreover, **Rodrigues & Cavalcanti (2018)** mentioned that parental education about newborn infant crying and risks of shaking a baby stands out for its empirical evidence. Newborn or infant with SBS are dependent on mothers to assist and caring in their daily activities therefore, the importance of improving mothers' attitude and beliefs provide them with experience regarding caring or how to deal with their infant. In difference with results of the study about "Measuring Shaken Baby Syndrome awareness: preliminary reliability of a caregiver attitudes and beliefs survey" carried out by (**Beth & Preston, 2014**), who stated that, mothers had believes and attitudes that holding is an suitable way to calm babies, when calming an distress baby, there is a possibility the baby may acquire hurt when caregivers hold them is harmful soothing, and caregivers who are frustrated, stressed or anger can react to an upset baby suitably is danger indicated. Therefore, the research about "Effect of modified constraint induced movement therapy on improving arm function in children with obstetric brachial plexus injury" performed by **Abdel-Kafy et al, (2013)** and study about "Effect of Educational Guideline on mothers' Knowledge and Practice regarding neonates and Young Children with Brachial Plexus Injuries" performed by **Faheim & Amer (2019);** illustrated that mothers were supplied with skillfulness activities they would typically practice by fitting them into their everyday habit that help develop function of the affected extremity while maintaining the infant's well-being.

Mothers play an important role in helping their newborns and infants and caring them effectively. Anywhere, guidance mothers about attitude and beliefs or how to deal with newborns related to SBS hazards as appropriate way to discipline babies is Feeding rather than hitting or striking to calm babies. Mothers taught how to gently calm babies, feeding encouraged babies to be calm. Additionally, normal developmental activities explained to mothers and helped them to perform total care for their infants without any risk (**National Institute of Neurological Disorders & Stroke, 2014).** The essential of providing mothers of newborn with an evidence-based educational program to teach essential skills of newborn and clarify that shaking baby syndrome hazards was one of mentioned issues. An evidence-based practice intervention program aiming to improve mothers' knowledge attitude and beliefs and children outcomes in a study about "Stillbirths: economic and psychosocial consequences" performed by **(Heazell et al, 2016)** & **(Faheim & Amer, 2019).** Unfortunately most of mothers' awareness, attitude and beliefs that appropriate way to deal with crying babies is hitting or striking. Feeding appropriate way to calm them, enhance better interaction with mothers and their infants and provide mother with confidence about effective care providing.

The present result demonstrated that, there was a statistically significant positive effect relation between overall knowledge, attitude, and beliefs of mothers with their age, and educational level at the post- and follow-up after implementation of educational guideline program. This result is in the same line with **(Adham et al, 2019**), who discovered a positive relationship between mothers' age and knowledge, beliefs, and attitudes about shaken baby syndrome dangers, as well as a negative relationship among parent education and occupation and mothers' knowledge, and a positive relationship between family income and knowledge, beliefs, and attitudes about shaken baby syndrome risks. Other than, it is in dissimilarity with a study of **Beth & Preston (2014)**, who stated that no significant relation among demographic characteristics of parent and knowledge and attitude about SBS.

The researcher point of view recommended that mothers must be mindful of their knowledge, attitude, and beliefs regarding SBS threats, because newborn care is their primary responsibility. This lends credence to the study's hypothesis. Additionally, the findings of the present study, revealed that application of the educational guideline program had an important role in increasing mothers' knowledge, attitude, and beliefs about SBS prevention and risks education. Furthermore, the current study found that after the program was implemented, mothers' knowledge, attitude, and beliefs about SBS dangers improved. This could be due to the importance and success of training courses in improving mothers' knowledge, attitudes, and beliefs, all of which have a role and function in the quality of care provided and the efficiency of outcomes.

Conclusion

The current study concluded that there is an improvement with an highly statistical significant relation in mother's knowledge, beliefs and attitudes regarding SBS prevention in immediately post, follow up of educational guideline program implementation.

Recommendations

1- Routinely awareness services to prevent shaking baby syndrome in all counseling programs for new mothers preparations.
2- Provide all new mothers with written information and painted brochures on how to deal with a crying newborn infants especially throughout the first months of life.
3- Ensure that all health care workers dealing with newborn infants, mothers are aware of the SBS prevention and hazards; through periodic evaluation and educational program.

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