Effect of Purple Crying Educational Program on Mothers' Performance Regarding Prevention of Shaken Infant Syndrome

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Abstract. Nurses and health care professionals caring for infants are in charge of teaching caregivers about the care of their infants. One of the most dangerous wounds that can happen during the initial one years of life is Shaken Infant Syndrome (SIS), a type of harsh head injury. **The aim of the study** Evaluate the effect of purple crying program on mothers' performance regarding prevention of shaken infant syndrome .**Subjects and method**: quesi an experimental research design was used in the study. It was carried out at Pdiatric Department at Menoufia University Hospital and Benha University Hospital. Data were collect in a period of one years .A convenient sample composed of 50 mothers .**Four tools** were used to collect the data of this study: Personal and medical data assessment sheet , Knowledge Scale included crying and shaking ,Mothers practice about crying and Behavior Scales .**The results** revealed that after the application of educational programs, it was found that a significant improvement in knowledge, practice and behavior of mothers and also in following up after one month. **Conclusion**: the purple educational program had more effect on improvement of mothers' knowledge, practice and behaviors regarding carrying and decrease infant shaking syndrome .**Recommendations** applying Shaken infant Syndrome educational Prevention Programs in hospitals should start early after birth immediately and should be reinforced with infant follow-up to improve information and interpret normal infant behaviors that can assist in abuse by caregivers. Applying Shaken infant Syndrome educational Prevention Programs in hospitals is important for the safety and quality of infant life.

Key words *Keywords:* Shaken infant Syndrome, Purple, crying, educational program and Mother

1. Introduction

Crying is a form of communication in response to pain, emotional state or a physical irritation. Feelings that can prompt crying include happiness, anger or sadness. Infant crying is prominent in the first few months of life. However as the baby grows to sooth the baby, the mother can use gentle, imparting a pacifier, singing or talking softly, taking a walk with a stroller [(1)].

Crying is a main cause for infant shaking. It is high in the early of life after birth, peaks in the 2 month, and diminishes by the 4 month. Inconsolable and unpredictable episodes of crying that occur only during the first few months after birth in the evening .These periods are a source of frustration and anger for mothers [(2)].

The Period of PURPLE crying an approach to assist caregivers with understands the period of the infant life, which is a normal for development. It is refers to the extremely ordinary formative period of an infant's life starting at around about fourteen days and proceeds until around 3–4 months old enough. All infants experience this period during this time a few infants can cry a ton and some far less, yet they all experience it. There are normal qualities of this stage or period. which are better depicted by the abbreviation "PURPLE" [(3).]

One problem associated with uneducated mothers about how dealing with the infant during crying is shaken infant syndrome (SIS). It is a type of child misuse that causes extreme cerebrum harm caused by strongly and savagely shaking an infant. Different names for this condition incorporate, damaging head injury, which can result from as meager as five seconds of newborn child shaking. The wounds may incorporate one-sided or two-sided subdural drain; two-sided retinal hemorrhages, and distributes brain injury. Shaken infant syndrome is a type of infant abuse that can result in permanent cerebrum damage or death [(4)].

Shaking infant syndrome is occurring in children less than two years, with the most of cases firstly observing before the first year of infant life. The average age is range from 3 and 8 months [(5)]. Infants have softy neck muscles to support their overwhelming heads. When infant won't stop crying the mothers or caregivers are seriously shakes an infant. At the point when an infant is powerfully shaken, their delicate cerebrum moves to and froth inside the skull, this causes injury, swelling drainage or bleeding. [(6)] Management of shaken infant syndrome may need deep care for conditions as example: visual impairments, developmental delays, learning difficult, cognitive problems, neurological disorders and Cerebral palsy [(7)].

Shaken infant syndrome can be prevented by avoid shaking under any circumstances. In any case, crying is an ordinary conduct in newborn children, and shaking is never the correct reaction. There are some medical clinic based projects that can instruct how to react when an infant cry and how to deal with mother's tress. These projects can likewise recognize and forestall the wounds related with shaken infant syndrome [(8)].

The Period of PURPLE crying program materials utilize the relationship among crying and shaken infant to teach mothers and caregivers about the threats of shaking and the significance of offering this data to different parental figures. Because shaken infant syndrome can occur by 1 to 6 weeks, information should be given to parents previously or immediately after birth [(3)].

The nurse can help to prevent SIS through involving mothers in the care of their infants and educating mothers about the normal developmental of their infants. Nurses should discuss methods of dealing with inconsolable crying and assist mothers make a crisis activity plan that can be executed if mothers start to feel overpowered, disappointed or sad when their infant is inconsolable. [9]

Significance of the Study:

Shaken infant syndrome is the main cause of death and long-term disability in infants and young children who are victims of child abuse. SIS is responsible for injuries with devastating effects. Mortality rates for SIS are as high as 30%, and 70% to 85% of survivors suffer long-term impairments which may include neuropsychological deficits, blindness, seizure disorders, motor dysfunction, spasticity and cerebral palsy. The National Center on Shaken Baby Syndrome estimates that there are between 600 and 1400 cases in the U.S. a year, and is commonplace in low and middle income countries such as India, Chile, Egypt and the Philippines. [10]

2. Aim and methods

2.1.Aim

The study aimed to evaluate the effect of purple crying program on mothers' performance regarding prevention of shaken infant syndrome

2.2 Research hypothesis:

Implementing purple crying program will expect to improve mothers' knowledge, practice and behavior regarding prevention of shaken infant syndrome.

2.3.Design:

A quasi experimental design was used to achieve the aim of the study.

2.4.Setting:

The study was conducted in inpatient Pediatric department ward in Menoufia University Hospital and Benha University hospital. Inpatient nursery ward and neonate units in Benha University Hospital is constructed from 2 rooms, each room consisted of 8 beds, while at Menoufia University Hosptal is constructed from three rooms, each room consisted of 4 beds, so the total bed capacity at both hospitals is 28 beds.

2.5.Subject:

A purposive sample of (50) mothers in pediatric ward (25) of them are from Benha University Hospital and the others (25) are from Menoufia University Hospital after having fulfilled the following criteria.

2.6.Inclusion criteria:

- Mothers with infant Age ranged from one day to one year after fulfilled the following criteria. - Both sexes- Being willing to take part in the study

2.7.Exclusion criteria: -Infant with other chronic disease or psychological problems.

2.8.Tools for data collection: Four tools were used to collect the data of this study:

2.8.1.Tool (I): Personnel characteristics: it was developed by the researchers to collect information about infant and their mothers; it was consisting of two parts:

2.8.1.1.Part I: Biosocodemographic characteristics of infant such as; age, gender, birth weight and type of feeding.

2.8.1.2.Part II: Biosocodemographic characteristics of mothers such as; Age, educational level, occupation and number of children.

2.8.2. Tool (II): Mothers' knowledge regarding crying and shaking infant syndrome, it was designed by [11], and was modified from 5 scales to 3 scales. Then translated into Arabic language**,** it consisted of questions about crying and shaking. It was divided in to 2 parts as follows:

2.8.2.1.Part (I): Mothers' k**nowledge regarding crying of infant:** Mothers were asked "How much do you agree with each statement about an infant's crying and needs in the first few months of life?" it consisted of (8) items related to crying,

- Infants cry all the more regularly in the late evening and night.
- Baby crying increase in the initial of life and arrives at a top in the initial 2 or 3 months before getting less.
- If an infant is healthy, it should not cry without a reason.
- When a newborn child cries it is constantly a sign that something isn't right.
- Some of the time a crying infant can resemble' being in pain in any part, when they are not, Sometimes newborn can cry for at least 5 hours per day.
- Great parent ought to have the option to relieve their crying newborn children.
- The parent should leave a crying infant when their crying becomes very frustrating.

2.8.2.2.Part (II): Shaking Knowledge Scale:

Mothers were asked "How much do you agree with each statement about an infant's Shaking and needs in the first few months of life?" it consisted of (5) items,

- One significant role for caregivers is to secure their infant by ensuring individuals who deal with their infant about the risks of shaking an infant.
- Shaking an infant can cause genuine medical issues or even death.
- Shaking an infant is a decent method to enable an infant to quit crying.
- Infant crying can be so baffling or upsetting that I can perceive how somebody may shake or hurt a baby.
- Shaking a baby can be very dangerous and can cause serious injuries.

2.8.2.3.Scoring system: Using a three point Likert scale as follows: (1) disagree, (2) Uncertain and (3) agree. The point (3, 4 and 7) in crying scale reverse scored and the point (3) in shaking scale reverse scored. Total scores ranged from (1-39), **Good** if the percent (≥75%) of total crying score = ≥29 point, **fair** (60%- < 75%) score =23-< 29 point and **poor** (< 60%) score = < 23point.

2.8.3.Tool (III): Mothers practice about crying and shaken infant syndrome: It was developed by the researchers based on literature review as [11]**.**to assess mothers practice about crying and it consisted of 9 items.

2.8.3.1.Practice to general crying scale.

- Pick up the infant when fused or crying ,give the infant a warm bath, massage the infant gently on the back, arms, and legs, use a white noise or rhythmic sounds ,place the infant on left side position ,wrap the infant in a blanket, look at the infant and smile ,give the baby breast feeding or bottle feeding and check the infant diaper.

2.8.3.2.Scoring system: Mother reported practice were scale by giving a score of (1) for the reported done and (zero) for the reported not done. Total scores ranged from (0-9), cut point was done at 60%=5.4 grade score and the value was calculated and the scoring system was developed by the statistician as follows; reported practice was considered satisfactory if the percent score was 60% or more and unsatisfactory if less than 60%.

2.8.4.1.Tool (IV): Behavior Scales: It was designed by [11] measuring the mothers' practice to crying,

- Response to inconsolable crying and self-talk response.

The scale consists of 12 statements grouped under 3 subscales; Responses to general crying scale. (5 items), mothers were asked, "How often did you do these things with your infant in the past month?"

- Response to inconsolable crying scale. (4 items), mothers were asked, "When your infant's crying was unsoothable, how often did you do this response in the past month?
- Self-talk responses to inconsolable crying scale. (3 items); Mothers were asked, "When your infant's crying was unsoothable, how often did you do these things with your infant in the past month"?

2.8.4.2.Scoring system:

A 3-point Likert response scale from 1= never a response, 2= sometimes a response, to 3= always a response. The total response scales ranged from (1to 36), **Good** if the percent (≥75%) of total crying score = ≥27 point, **fair** (60%- < 75%) score =21-< 27 point and **poor** (< 60%) score = < 21 point.

2.9.Methods: The study was executed according to the following steps**:**

2.9.1.Preparatory phase: It involves the following; looking into the national and international related literatures concerning the topic of the study so as to gather the tools of the study.

2.9.2. Content validity and Reliability:

Tools Validity: Tools of data collection were translated into Arabic and investigated for their content validity by three juries (two in Pediatric nursing from the Faculty of Nursing, Tanta University, and one in neurology from the Faculty of Medicine, Menoufia University who are experts' in such related field and selected to test the content validity of the instruments and to judge its clarity, comprehensiveness, relevance, simplicity, and accuracy. All of their remarks were taken into consideration; some items were re-phrased to arrive at the final version of the tools. The tools were regarded as valid from the experts' point of view.

Tools Reliability: The tools were tested for reliability by the test-retest technique by 5 mothers from the hospitals who were interviewed at an interval of one week period and

data were analyzed and compared. The reliability was evaluated in a pilot study by estimating their internal consistency utilizing Cronbach's alpha coefficient method. This turned to be (α = 0.91) for personal and medical data assessment sheet (α = 0.86) for knowledge assessment questionnaire, (α = 0. 89) for self reported practice, and (α = 0. 85) for behavior response.

2.10.Administrative and Ethical Considerations:

All the principles of ethics were used. Before starting the practical work an official letter clarifying the purpose of the study was obtained from the Deans of the Faculty of Nursing to the two hospitals directors to conduct the study and collect the necessary data. Participants' (All mothers) consent to participate was obtained after telling them about their rights to participate, refuse, or withdraw at any time. Total confidentiality of any obtained data was guaranteed. The study maneuver could not involve any unsafe effects on participants.

2.11.The Pilot Study; A pilot study was conducted to test the clarity and applicability of the study tools and estimate the time needed for each tool. It was done on 10% of the total subjects, (5) who excluded in the present study to avoid sample bias and contamination. In the light of pilot study analysis, a modification was done.

2.12.Field Work: The following phases were used to achieve the aim of the current study; assessment, planning, implementation, and evaluation phases. These phases were started from the earliest starting point of March, 2019 to the end of December, 2019 covering ten months.

2.12.1.Assessment phase: This phase involved interviews with mothers to collect baseline data, at the beginning of interview; the researchers welcomed each mother, explained the purpose, duration, and activities of the study and took written consent from their parents. After that a Pre-test was done to assess personal and medical data, mothers' knowledge, self-reported practice, and behavior response by using pre-test tools (I, II, III& IV). The average time required for finishing each questionnaire was around (10-15 minutes).

2.12.2.Planning phase: Based on baseline data obtained from pre-test assessment and relevant review of literature, the educational program was developed by the researchers as indicated by mothers' level of comprehension in simple Arabic language

2.12.3.Implementation phase: PURPLE crying program was implemented through sessions. Mothers were divided into 10 groups (3-5 mothers in each group), the program has taken from 4-5 hours for each group, distributed as the following; 3 sessions, each session kept going from 45-60 minutes, 3 days/week in the morning shift, and were implemented according to mother readiness. These sessions were repeated to each subgroup of mothers. In this way, the program took (10) weeks. The first session of program focused on the general knowledge about shaking infant syndrome as the follows (definition, etiology, symptoms, risk factor, diagnostic procedure, treatment & complications). Then the second session included knowledge about crying as following (causes of crying and Period of PURPL Crying; The PURPLE materials were developed by the National Center on Shaken Baby Syndrome [15]**.** The letters in PURPLE each represent for a property of crying in healthy infants that frustrates caregivers

P (Peak pattern, in which crying increases, peaks during the second month and then declines).

U (Unexpected timing of prolonged crying bouts).

R (Resistance to Soothing)

P (pain-like look on the child's face).

L (long crying bouts).

E (late afternoon and evening clustering).

The PURPLE materials fortify that these are ordinary character, recommend approaches to calm, underline that relieving isn't constantly expected to work, interpret why inconsolable crying is baffling to caregiver, and propose 3 guidelines when caring for a crying infant. **First**, Mothers are encouraged to utilize typical calming reaction (carry, comfort, walk and talk) with their infants. **Second**, if crying is too frustrating, it is okay to put the baby down in a safe place, walk away, calm yourself and then return to check the infant. **Third**, never shake infant. The PURPLE materials describe shaken infant syndrome, and emphasize telling mothers about the "period of PURPLE crying," the dissatisfaction of thinking about a crying infant, the risks of shaking, and the prescribed reactions to the infant crying. The materials don't guarantee that melancholy crying is consolable if mothers act properly; rather, the program recognizes the dissatisfaction that happens when an infant is inconsolable. **Finally:** the third sessions focused on reported practice as followings, (Give the infant a warm bath, massage the infant gently on the back, arms, and legs, use a white noise or rhythmic sounds, place the infant on left side position, wrap the infant in a blanket, look at the infant and smile, let the infant feeding &check the infant diaper). Towards the start of the program sessions, a direction to the motivation behind program took place and the mothers were informed about the time and place of sessions which were carried out at the Pediatric Department lecture room. Different methods of teaching were used such as video, modified lectures, and group discussion. Suitable teaching media included an educational booklet that distributed to all mothers at the first day of the program as well as audio-visual aids and role play. The researchers continued to reinforce the gained information, answered any raised questions and gave clear explanations.

2.12.4.Evaluation phase:

Evaluate the effect purple crying educational program on mothers' knowledge and practices regarding crying and shaken infant syndrome and behavior scale were carried out using the same assessment tool (Tool II, III, IV). Each mother was evaluated after one month of program implementation by utilizing the same tools of the pre-test.

The data : Collection of data was carried out in one year starting from the beginning of January 2019 to the end of December of 2020 .

Statistical analysis: The data collected were organized data were, tabulated and statistically analyzed using statistical science (SPSS) version 21 for windows. Descriptive statistics were applied (e.g. frequency, percentages, mean and standard deviation). Test of significance, Chi-square "X2", were used to test the study hypothesis. Reliability of the study tools was done using Cronbach's Alpha. A significant level value was considered when $p < 0.05$ and a highly significant level value was considered when $p < 0.001$. No statistical significance difference was considered when $p > 0.5$.

3.Results

Table (1): Percentage distribution infant related to characteristics. This table showed that half (50%) of infant age range from one day to three months with the mean age (3.400 ± 2.47). Regarding infants sex, it was observed that nearly two thirds (64%) of infants were girls. 78% of infants weighed (3< 9) km, most (82%) of infants were birth cesarean and 72. % of them was breast feeding.

Table (2) This table illustrated the percentage distribution of the studied mothers related to characteristics. It was observed that about two thirds (72%) of mothers' age were (20 -< 30) and mean of age (24.88± 5.88) .Less than half (44%) of mothers were Primary school, and 78% of them working and half of them (50%) had one child.

Table (3): Pointed that mother's knowledge about shaking infants' syndrome before and after one month of health education implementation. More than half (58%) of mother were uncertain about ensuring individuals who deal with their infant aware about the risks of shaking an infant, more than a third (48%) were uncertain that shaking an infant is a decent method to enable an infant to quit crying and more than half (60%) disagree that shaking an infant can cause genuine medical issues or even death and shaking a baby can be very dangerous and can cause serious injuries before health education implementation. This knowledge changed Post health education implementation more than half (66%), (52%), (60%) and (64%) respectively agree .It is a highly significant improvement post than pre which P value (≤0 .001)

Table (4): demonstrated that before health education, more than half (60%, 64%, 60% &64%) respectively of mothers disagree about that infants cry increases in pain when they are not, sometimes newborn can cry for 5 or more hours a day and The parent should leave a crying infant when their crying becomes very frustrating but only more than half (60%) of mothers agree that infant is healthy, it should not cry without a reason. Also, most of mothers (80%) agree about infant cries, it is always a sign that something is isn't right respectively. The knowledge changed Post health education more than half (66%, 64%, 64%, 58% & 54%) respectively of mothers agreed about those previous point, it is a highly significant which P value ≤0 .001.

Table (5): revealed that less than two thirds (66.0%) of mothers had good level scores of knowledge post one month of health education program implementation compared to10.0% pre-program. **Table (6)**: illustrated that in pre health education more than two thirds of mothers (72% &74%) didn't pick up the infant when fused or crying, didn't give the infant a warm bath & didn't wrap the infant in blanket respectively. As well as more than half (58.0%, 60%, 66% &56.0) respectively didn't massage the infant gently on the back, didn't use a white noise or rhythmic sounds, didn't place the infant on the left side position, didn't let the infant breastfeed or bottle feed or giving a pacifier & didn't check the infant diaper respectively. While post application of the health education program most of them (96%,

94%, 92%, 98% & 90 %) respectively done those items. It is highly satisfactory on their practice after one month of health Education which P value (<.001) .**Table (7):** A comparison of total reported practice preprogram and one month post health education, it demonstrated that there was a highly statistical significant improvement in the level of reported practice scores among the studied mothers, whereas only 34.0% of the studied mothers had a satisfactory level of reported practice pre-program, and this level increased to nearly the majority (84.0%) of them had a satisfactory level of reported practice post-program implementation. **Table (8)** showed that mothers response to general crying pre health education 40%,58%,42%, 58% &28% respectively never done picked up infant when being fussed or cried, put infant down in a safe place and walked away when he or she fussed or cried to the point that frustrated, told other people who take care of infant about the characteristics of infant crying, walk around with infant when he or she fussed or cried and told other people who take care of infant what to do if they became frustrated with infant's crying respectively while post one month of health education significant improvement of mother crying response in which P value<..001. With regard to inconsolable crying, it was a significant improvement from 60%, 40%, 58% & 46% respectively, never done pre health education to 52%, 62%, 46% & 62% always done in pass the baby to someone else for a while, put the baby down in a safe place for a while, took a break from the sound of crying and took the baby for a walk or drive respectively. Also, this table illustrated that self-talk response, the mother's response improvement post health education than pre health education. **Table (9)** ;It is evident from table (9) that there was a highly statistical significant positive correlation between level of education with total knowledge and total reported practice post one month of program implementation with total (p <0.001) respectively while there was no correlation between age with knowledge and behaviors .**Figure (1):** Displays that more than half (56.0%) of mothers had good level scores of crying behaviors response post one month post-program implementation compared to 16.0% pre-program.

4.Discussion

Shaken baby syndrome is an abusive head injury that's preventable and it is a type of physical infant misuse. It is due to force shaking an infant by shoulders, arms, or legs. The American academy of Pediatrics and the Centers for Disease Control and Prevention report that maltreatment causes a high rate of injury and death among infants and mental abnormalities or developmental delays [(12)]**.** The result of this study revealed that, mothers do not have enough knowledge, practice and behaviors towards shaken baby syndrome and crying in pre education intervention. Before infant are birth, some hospitals are actualizing training techniques to assist mothers reduce is incidence. Researchers need to test that mothers that have purple education program about infant crying have the knowledge and practice about crying and prevent infant shaking. [(13)]**.** Interestingly, the present finding revealed that after the application of educational program a significant improvement in knowledge, practice and behavior of mothers. The present finding parallels with [(14)] who reported that mothers' awareness of the dangers of shaking after program was high in both groups. [(15)] stated that the gain in knowledge-sharing practices about the normal character of crying, leaving whenever disappointed and the danger of shaking is significant in light of the fact that, after the biological caregivers are the most widely recognized culprits of shaking. Researchers reported from their point of view that when mothers are education on a specific point or issue they can take a positive choice when the issue or problems arise with it. The significance of SIS is the morbidity and mortality is needed to found different

education for mothers to prevent SIS. Healthcare experts in pediatric settings are promoters and voices for these newborn children. New avoidance training programs for SIS should be pointed toward mothers before discharge from hospital and postnatal area .Healthcare experts watching hazard factors are another approach to mediate to postpone the occurrence of abusive head injury [16]. [17] Stated that, less risk hazards include a low socioeconomic status, young mothers, single caregiver, males, and having a child less than 2 years old will decrease the chance of SIS, through an early prevention of people with high risk factors. The neurological Pediatrician can prevented the incidences of SIS [18], This in accordance with [19] who revealed that more mothers or caregivers are taking care of infant unconsciously shake the child without knowing their dangers. They might be over a crying infant by Running Head: Education program to prevent harsh head injury incorporate assets that mothers and caregivers can use to release stress without hurting themselves or even the infant. Mothers and caregivers may not be educated on how much shaking a child can affect the infant's heath [20]. In this study in pre education more than half of mothers disagree about that infants cry more often in the late afternoon and evening, sometimes a crying infant may be result from a pain. Otherwise, sometimes healthy infants can cry for 5 or more hours a day and it is normal to walk away from a crying infant when crying becomes very frustrating but [11] found that the peak pattern of crying increases during the 2 month and less after. Crying does not hurt infants but getting frustrated with crying can lead one to shake the baby. The mothers was reminded not to shake an infant under any circumstance and to help different other caregivers of an infant not to shake [19]. [21] Found that in his study about Parent education regarding prevention of SIS, reduce the incidence of SIS. Another study in 2009 by [11], found that mothers were more have information and aware of their practice and stressors that lead to SIS when they received material about infant crying less stressors of mothers and caregivers. Also, [22] found that the intervention before discharge decreases the incidence of SIS.

5.CONCLUSION

Based on the results of the present study, it can be concluded that, the purple educational program was a more effective improvement of mother's knowledge, reported practice and behaviors to decrease infant shaking syndrome. Hence, these results support the proposed hypotheses.

6.Recommendations

The findings of the present study recommend that

6.1-Applying Shaken infant Syndrome educational Prevention Programs in hospitals should start early after birth immediately and should be reinforced with infant follow-up to improve information and interpret normal infant behaviors that can assist in abuse by caregivers.

6.2- Encouraging the nurses to participate in training courses and update their knowledge and practice to provide instruction to parents and care giver about the prevention of Shaken Infants Syndrome.

6.3- A simplified illustrated Arabic booklet about shaking infant syndrome to increase mother's awareness for a healthy life.

6.4-Recommending replication of the current study on a larger sample in different settings to achieve a more utilization of the program

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8.Conflict of interest

No conflict of interest has been declared by the authors.

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Table (1): Percentage Distribution of Infants regarding to their Characteristics

Items	n=(50) No	%
Infant age/month		
< 3 months	25	50.0
3 -< 6 months	15	30.0
6 -< 9 months	7	14.0
9 - ≥ 12 months	3	6.0
Mean ±SD	3.400 ± 2.47	
Sex:		
Male	18	36.0
Female	32	64.0
Birth Weight:		
3 < 9 km	39	78.0
9- ≥ 12km	11	22.0
Type of delivery		
Normal	9	18.0
Cesarean	41	82.0
Type of feeding:		
Breast feeding	36	72.0
Artificial feeding	7	14.0
Complementary feeding	7	14.0

Table (2): Percentage Distribution of Mothers regarding to their Characteristics

Mothers characteristic	n= (50) No	%
Mother's age/year		
20 -< 30	36	72.0
30 -< 4028	13	26.0
40 - ≥ 50	1	2.0
Mean +SD	24.88± 5.88	
Educational Level:		
Illiterate	4	8.0
Primary	22	44.0
Secondary Education	5	10.0
University	19	38.0
Occupation:		
Working	39	78.0
House wife	11	22.0
Number of children:		
1	25	50.0
2	11	22.0
3	12	24.0
5 and more	2	4.0

Table (3): Mother's knowledge regarding shaking infants' syndrome before and after implementation of educational program

Items	Pre Program Education (50)						After one month of Program Education (50)						X^2	P
	Disagree		Uncertain		Agree		Disagree		Uncertain		Agree			
	No	%	No	%	No	%	No	%	No	%	No	%		
Ensuring individuals who deal with their infant aware about the risks of shaking an infant.	21	42.0	29	58.0	0	0.0	6	12.0	11	22.0	33	66.0	56.97	<..001
Shaking an infant can cause genuine medical issues or even death	30	60.0	13	26.0	7	14.0	11	22.0	13	26.0	26	52.0	59.0	<..001
Shaking an infant is a decent method to enable an infant to quit crying	5	10.0	24	48.0	21	42.0	32	64.0	13	26.0	5	10.0	65.22	<..001
Infant crying can be perceive how somebody may shake or hurt a baby	7	14.0	11	22.0	32	64.0	30	60.0	10	20.0	30	60.0	70.19	<..001
Shaking a baby can be very dangerous and can cause serious injuries	30	60.0	10	20.0	10	20.0	10	20.0	8	8.0	32	64.0	60.84	<..001

***Statistical significant difference (p<0.05)**

****A highly statistical significant difference (*P* ≤0 .001)**

Table (4): Mother's Knowledge regarding Crying before and after Implementation of Educational Program

Mothers knowledge about crying	Pre Program Education (50)						After one month of Program Education (50)						X^2	P
	Disagree		Uncertain		Agree		Disagree		Uncertain		Agree			
	N	%	N	%	N	%	N	%	N	%	N	%		
Infants cry all the more regularly in the late evening and night	30	60.0	13	26.0	7	14.0	8	16.0	9	18.0	33	66.0	71.07	<..001
Baby crying increase in the initial of life and arrives at a top in the initial 2 or 3 months before getting less	20	40.0	22	44.0	8	16	7	14.0	11	22.0	32	64.0	59.31	<..001
If an infant is healthy, it should not cry without a reason	6	12.0	14	28.0	30	60.0	29	58.0	15	30.0	6	12.0	69.26	<..001
When a newborn child cries it is constantly a sign that something isn't right	6	12.0	4	8.0	40	80.0	30	60.0	11	22.0	9	18.0	76.46	<..001
Some of the time a crying infant can resemble' being in pain	32	64.0	14	28.0	4	8.0	5	10.0	13	26.0	32	64.0	53.26	<..001
Sometimes newborn can cry for at least 5 hours per day	30	60.0	10	20.0	10	20.0	6	12.0	15	30.0	29	58.0	55.64	<..001
Great parent ought to have the option to relieve their crying newborn children	29	58.0	10	20.0	11	22.0	5	10.0	16	32.0	29	58.0	72.35	<..001
The parent should leave a crying infant when their crying becomes very frustrating	32	64.0	10	20.0	8	16	9	18.0	14	28.0	27	54.0	78.16	<..001

Table (5): Distribution of the studied Mothers according to their total Knowledge level thorough program phases (n=50).

Total Knowledge	Pre Program Education (50)		After one month of Program Education (50)		X2	P- value
	No	%	No	%		
Good	5	10.0	33	66.0	199	<0.000*
Average	21	42.0	14	28.0		
Poor	24	48.0	3	6.0		

Table (6): Mother's Practice regarding Crying and Shaking before and after Program Implementation

Mothers practice	Pre Program Education (50)				After one month of Program Education (50)				X^2	P
	Done		Not done		Done		Not done			
	No	%	No	%	No	%	No	%		
- Pick up the infant when fused or crying.	14	28.0	36	72.0	48	96.0	2	4.0	52.9	<..001
Give the infant a warm bath.	13	26.0	37	74.0	47	94.0	3	6.0	54.8	<..001
-Massage the infant gently on the back, arms, and legs.	21	42.0	29	58.0	48	96.0	2	4.0	54.9	<..001
- Use a white noise or rhythmic sounds.	20	40.0	30	60.0	48	96.0	2	4.0	53.4	<..001
- Place the infant on the left side position.	17	34.0	33	66.0	46	92.0	4	8.0	52.5	<..001
-Wrap the infant in a blanket.	14	28.0	36	72.0	48	96.0	2	4.0	52.8	<..001
-look at the infant and smile.	12	24.0	38	76.0	49	98.0	1	2.0	52.3	<..001
-Let the infant breastfeed or bottle feed or giving the infant a pacifier.	17	34.0	33	66.0	48	96.0	2	4.0	53.1	<..001
-Check the infant diaper	22	44.0	28	56.0	45	90.0	5	10.0	52.6	<..001

Table (7): Distribution of mothers regarding Total Reported Practice level of Crying before and after Program Implementation

Total knowledge level	Pre Program Education (50)		After one month of Program Education (50)		X2	P- value
	No	%	No	%		
Satisfactory	17	34.0	42	84.0	232	0.000*<
Unsatisfactory	33	66.0	8	16.0		

Table (8): Mother's behavior response about crying before health education implementation and after one month of health education implementation

Items	Pre Program Education (50)						After one month of Program Education (50)						X^2	P
	Never		Sometimes		Always		Never		Sometimes		Always			
	No	%	No	%	No	%	No	%	No	%	No	%		
Responses to General Crying														
Picking up infant when she or he fussed or cried	20	40.0	19	38.0	11	22.0	12	24.0	8	16.0	30	60.0	56.93	<..001
Putting the infant down in a safe place and walked away when he or she fussed or cried to the point that she frustrated	29	58.0	13	26.0	8	16.0	5	10.0	20	40.0	25	50.0	37.86	<..001
Telling other people who take care of your infant about the characteristics of infant crying	21	42.0	21	42.0	8	16.0	5	10.0	13	26.0	32	64.0	34.81	<..001
Walking around with infant when he or she fussed or cried	29	58.0	17	34.0	4	8.0	7	14.0	7	14.0	36	72.0	10.03	<..005
Telling other people who take care of your infant what to do if they became frustrated with the infant's crying.	14	28.0	21	42.0	15	30.0	11	22.0	13	26.0	26	52.0	52.18	<..001
Response to Inconsolable Crying Scale														
Passing the infant to someone else for a while	30	60.0	14	28.0	6	12.0	8	16.0	16	32.0	26	52.0	8.85	<..005
Putting the infant down in a safe place for a while	20	40.0	21	42.0	9	18.0	3	6.0	16	32.0	31	62.0	27.41	<..001
Taking a break from the sound of crying	29	58.0	13	26.0	8	16.0	8	16.0	19	38.0	23	46.0	26.88	<..001
Taking the infant for a walk or drive	23	46.0	16	32.0	11	22.0	6	12.0	13	26.0	31	62.0	42.01	<..001
Self-talk Responses to Inconsolable Crying														
Telling the crying would end	31	62.0	13	26.0	6	12.0	7	14.0	17	34.0	26	52.0	3.96	<..005
Telling the infant is ok	25	50.0	15	30.0	10	20.0	4	8.0	19	38.0	27	54.0	21.71	<..001
Telling there is nothing can do	29	58.0	12	24.0	9	18.0	10	20.0	22	44.0	18	36.0	9.68	<..005

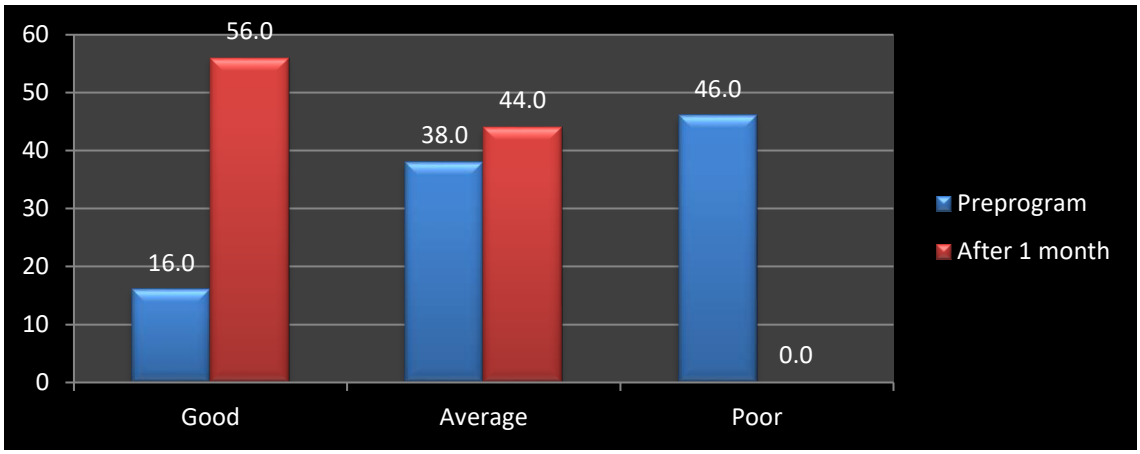

Figure (1): Total behavior response among mothers thorough program phases (n=50).

Table (9): Correlation between age, level of education with total knowledge, total reported practice and total behavior throughout program phases

Variable	age		Level of education	
	R	p-value	R	p-value
Total knowledge pre	.147	>0.005	.342	<0.001**
Total knowledge post	.197	>0.005	.355	<0.001**
Total Reported practice pre	.195	>0.005	.110	>0.005
Total Reported practice pre	.289	<0.001**	.323	<0.001**
Total Behavior pre	.027	>0.005	.056	>0.005
Total Behavior post	.0287	>0.005	.004	>0.005