



Long-term outcomes of the shaken baby syndrome prevention program: Turkey's experience

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Abstract

Aim: Shaken baby syndrome (SBS) is a condition which may cause to serious health problems in the baby. SBS may be prevented by increasing awareness with giving education to parents especially in the early postnatal period. In shaken baby prevention programs, education is recommended to be given before the 2-4th month during which the frequency of crying is increased. It is important that education given in the early period is permanent until the period during which the frequency of crying is increased. The aim of this study was to evaluate the persistency of the benefit of the SBS prevention program until the 2-4th month during which crying is intensified.

Material and Methods: This study is an interventional study. When the babies became 2-4 months old, a questionnaire which questioned the usefulness of education and the experiences with babies was applied to a group selected randomly among the mothers who received SBS prevention education during pregnancy or in the first 7 postnatal days (group A). The same questionnaire was applied to 143 mothers whose babies completed their first 2 months, who presented to the hospital for vaccination and who did not receive education about SBS as the control group (group B). The data were evaluated using the Statistical Program for Social Sciences (SPSS) 15.0 statistical analysis package program. Ethical approval was obtained from the local ethics committee (30.12.2009, 2785).

Results: The rate of the mothers who stated "yes" to the sentence "babies occasionally cry" which was one of the main messages of the education was statistically significantly higher in group A compared to group B ($p=0.001$). The rate of the mothers who stated "I agree" to the sentence "battering is harmful for babies" was statistically significantly higher in group A compared to group B ($p=0.001$).

Conclusions: Conclusively, it was found that SBS prevention program education was permanent until the 2-4th month.

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Key words: Education program, protection program, shaken baby syndrome, Turkey

Introduction

Shaken baby syndrome (SBS) which may lead to serious brain injury is a condition which occurs especially in children below the age of one year, which develops with recurrent acceleration and deceleration mechanism, which may lead to serious health problems in the baby and which may even result in mortality (1, 2).

In a few epidemiological studies, the prevalence of SBS has been reported to be 14-33.8/100 000 in children aged below one year. It is thought that these figures are lower than the actual ones because of problems in reporting (3-6).

Approximately 25% of the subjects are lost in a few days after injury. A great portion of the survivors continue their lives with functional disorders including learning difficulty, behavior problems, advanced cognitive and developmental retardation, stroke and blindness. No dysfunction is found in only less than 35% of all cases (1, 2, 7, 8).

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Shaking frequently occurs as a result of getting angry of a caregiver of a baby who cries in an unpacifiable way. Therefore, caregivers of babies should be aware of their level of stress and learn how to cope with stress (9, 10).

Shaken baby syndrome is a preventable problem. Prevention has become important, because it is late when the child is shaken and abused (11-14).

Education is given to prevent this syndrome in the world especially in developed countries (15-17). During this education, it is important to explain to everybody who takes care of babies that crying is a normal part of the baby's development, to teach coping with a crying baby and pacifying methods and to give information about the harms of shaking (13, 14, 16, 18, 19).

In Shaken Baby Syndrome prevention programs (SBSPP), education is recommended to be given before 2-4 months which is the period when the frequency of crying of babies is increased. It is important that the education given in the early period is permanent until the time when the frequency of crying is increased (12, 13, 18).

One of the programs used in the world is "Shaken Baby Prevention Project in Western Sydney" which was prepared by Westmead Children's Hospital in Australia (20). The aim of this training program was to develop parents' methods of coping with stress, educate them about the harms of shaking using a friendly language and to give information.

In Turkey, no sufficient information about child abuse and especially SBS has been achieved yet. While information about prevention of child abuse is briefly mentioned in general family education programs, there is no education directed to prevent SBS as far as we know.

The aim of this study was to determine the efficiency and utility of SBSPP applied to mothers with different sociocultural levels on the knowledge, ability and attitudes of families until the period when the frequency of crying of babies was increased.

Material and Methods

The study was conducted between March 2010 and June 2010 in two hospitals who gave service to different sociocultural groups in Ankara (The Ministry of Health Ankara Education and Research Hospital-Gazi University Medical Faculty Hospital).

Mothers who had healthy babies, who delivered at term (≥ 37 weeks) and who had no depression after delivery were included in the study.

The study is an intervention study. Verbal informed consent was obtained from the mothers. In the first stage, a question-

naire form was applied to the mothers who presented to the Pregnancy Outpatient Clinic or Healthy Children Follow-up Outpatient Clinic in the first seven days after delivery before the SBS prevention program. This questionnaire form included questions which interrogated personal data, the reasons of the baby's crying (19 questions) and the level of knowledge about shaking (9 questions). Open-end questions were asked to obtain information about the methods used by the mother to pacify her baby. The mothers were asked to answer the statements of "a normal and healthy baby can cry for 2-3 hours a day", "it may be annoying or challenging to take care of a baby", "shaking is harmful for babies" as "I definitely agree", "I agree", "I am not sure", "I do not agree" and "I definitely do not agree" on a Likert type scale.

After the pre-test was completed, the animation film produced in Australia in the scope of "Shaken Baby Prevention Project in Western Sydney" was used as the training video (20). The film was dubbed in Turkish. The following messages were present in the film which lasted approximately for 3 minutes: "Each baby can cry for 2-3 hours a day, this is normal"; "if you can not handle with crying of your baby, leave him/her in a peaceful room safely and call a relative or physician for help"; "you should not shake your baby, because shaking may harm babies' brains and may lead to death".

32.7% (n=178) of the mothers who received education who were identified by randomized sampling were reached by the investigator by phone when their babies were 2-4 months old (group A). The phone call lasted approximately for 10 minutes. During this time, the mothers were made to fill in the questionnaire form which was applied at the first meeting. In addition, it was interrogated if the baby had unstoppable crying, if the mother thought of shaking the baby and if she thought of the film she had watched. The question of "what did you do when your baby had unstoppable crying?" was asked as an open-end question.

One hundred forty-three age-matched mothers whose babies completed 2 months, who presented to the hospital for vaccination, who did not receive education about SBS and whose verbal consents were obtained were included in the control group; the same questionnaire form was applied in the control group (group B). Ethics approval was given by the Ministry of Health Ankara Education and Research Hospital Ethics Committee (30.12.2009, 2785).

Statistical analysis

The data were evaluated using Statistical Program for Social Sciences (SPSS Inc. Chicago, IL, USA) 15.0 statistical analysis package program. Chi-square test was used for qualitative variables in statistical comparisons. Normal distribution of quantitative variables (parity of the mother, number of children, number of individuals in the house) was evaluated using Kolmogorov-Smirnov Z (K-S) test. Mann-Whitney U test

was used in comparison of two independent groups, because the distributions were not compatible with the normal distribution. Kruskal-Wallis variance analysis method was used in comparison of more than two groups. Post-hoc Bonferroni correction (Mann-Whitney U) was used to determine the groups for which a difference was found in the Kruskal-Wallis variance analysis test. A p value of <0.05 was considered statistically significant.

Results

One hundred seventy-eight mothers identified with randomized sampling (group A) among the mothers who received SBS prevention education were included in the study group and 143 mothers (group B) were included in the control group.

When the sociodemographic properties of the groups were evaluated, it was found that there was no statistically significant difference in terms of maternal education levels ($p=0.059$) (Table 1).

In group A, 46.1% of the subjects ($n=82$) answered "yes" and 53.9% of the subjects ($n=96$) answered "no" to the question "Did you receive education before/after delivery?". When the mothers who stated that they did not receive education were asked the question "have you watched a film related with care and/or shaking of a baby?", 16.9% of the mothers ($n=30$) could not remember.

In group A, the rate of the answer "yes" to the question "Have you received education before/after delivery?" was found to be higher in the mothers who had received high school education compared to the mothers who had received elementary school education (6-8th grades) and university/post graduate education ($p=0.023$; 0.042, respectively).

The question "When a baby cries, why do you think he/she cries for?" was answered most commonly as "the baby is hungry" (99.4%, $n=177$) in group A and as "the baby has soiled his/her diaper" in group B (86.7%, $n=124$) (Table 2).

The question "What would you do if your baby continues to cry?" was answered most commonly as "I would rock" in group A (40.4%, $n=72$) and as "I would nurse" in group B (22.4%, $n=32$) (Table 3).

The rate of the mothers who answered the statement "a normal healthy baby can cry for 2-3 hours a day" as "I am not sure" was 5.6% in group A and 16.8% in group B, while the rate of the mothers who answered as "I do not agree" was 41.6% in group A and 30.1% in group B ($p=0.003$). The rate of the mothers who answered the statement "Shaking is harmful for babies" as "I agree" was statistically significantly higher in group A compared to group B ($p=0.001$) (Table 4).

45.5% of the mothers in group A ($n=81$) and 30.1% of the mothers in group B ($n=43$) reported that their babies had unstopable crying episodes; there was a statistically significant difference between the two groups ($p=0.006$).

No significant relation was found between the status of unstopable crying and birth orders, maternal education level, familiar income and number of persons in the house ($p>0.05$).

The question "Have you thought of shaking?" was answered as "yes" by 9% of the mothers in group A ($n=16$) and by 3.5% of the mothers in group B ($n=5$) ($p=0.068$).

When the mothers in group A were asked "Have you thought of the film you have watched?", 65.7% ($n=117$) reported that they did. This question was answered as "yes" by 72.8% ($n=59$) of the mothers who stated that their babies had unstopable

Table 1. Evaluation of the differences between the sociodemographic properties of Group A and B

	Group A (n=178)	Group B (n=143)	p
Maternal education level (n, %*)			
≤Elementary school 5 th grade	49 (27.4)	47 (32.9)	0.059
Elementary school 6-8 th grade	32 (18.0)	38 (26.6)	
High school	58 (32.6)	39 (27.3)	
University and post graduate	39 (21.9)	19 (13.3)	
Working mother (n, %*)	32 (18.0)	28 (19.6)	0.714
Gravidity			
Median (range)	2 (1-7)	2 (1-5)	0.291
Mean±SD	2.1±1.7	1.99±1.0	
Number of children			
Median (range)	2 (1-5)	2 (1-4)	0.161
Mean±SD	1.8±0.8	1.7±0.8	
Number of mothers with stillbirth			
Number of stillbirths	9 (5.1)	11 (7.7)	0.332
Median (range)	2 (1-2)	2 (1-2)	
Number of mothers with abortus			
Number of abortus	37 (20.8)	26 (18.2)	0.560
Median (Range)	2 (1-2)	2 (1-2)	
Number of persons living in house			
Median (range)	4 (2-12)	4 (3-10)	0.275
Mean±SD	4.2±1.3	4.5±1.5	
Monthly income (TL) (n, %*)			
< 500	20 (11.2)	14 (9.8)	0.020
500-1000	74 (41.6)	64 (44.8)	
1001-2000	57 (32.0)	58 (40.6)	
>2000	27 (15.2)	11 (4.9)	

*: percentage of the column

*: percentage of the column

Table 2. Evaluation of the responses given to the question “what would you think a baby cries for, when he/she cries?” by the mothers in Group A and B

	Group A (n=178) (%)*			Group B (n=143) (%)*			p
	Yes	No	I don't know	Yes	No	I don't know	
Baby is ill	149 (83.7)	21 (11.8)	8 (4.5)	60 (42.0)	57 (39.9)	26 (18.2)	0.001
Baby is tired	134 (75.3)	35 (19.7)	9 (5.1)	47 (32.9)	52 (36.4)	44 (30.8)	0.001
Baby is hungry	177 (99.4)	1 (0.6)	-	119 (83.2)	23 (16.1)	1 (0.7)	0.001
Baby has been spoiled	54 (30.3)	100 (56.2)	24 (13.5)	41 (28.7)	76 (53.1)	26 (18.2)	0.514
Baby has soiled his/her diaper	175 (98.3)	3 (1.7)	-	124 (86.7)	17 (11.9)	2 (1.4)	0.001
Baby has pain	174 (97.8)	3 (1.7)	1 (0.6)	104 (72.7)	20 (14.0)	19 (13.3)	0.001
Baby has given wrong formula	85 (47.8)	65 (36.5)	28 (15.7)	29 (20.3)	80 (55.9)	34 (23.8)	0.001
Baby is naughty	76 (42.7)	84 (47.2)	18 (10.1)	45 (31.5)	76 (53.1)	22 (15.4)	0.083
Baby is ill-natured	55 (30.9)	101 (56.7)	22 (12.4)	35 (24.5)	84 (58.7)	24 (16.8)	0.316
Baby is demanding	70 (39.3)	81 (45.5)	27 (15.2)	35 (24.5)	85 (59.4)	23 (16.1)	0.015
Baby is bored	149 (83.7)	23 (12.9)	6 (3.4)	85 (59.4)	43 (30.1)	15 (10.5)	0.001
Baby is unhappy	114 (64.0)	47 (26.4)	17 (9.6)	45 (31.5)	74 (51.7)	24 (16.8)	0.001
Baby is complaining	133 (74.7)	34 (19.1)	11 (6.2)	76 (53.1)	50 (35.0)	17 (11.9)	0.001
Baby is stubborn	90 (50.6)	68 (38.2)	20 (11.2)	60 (42.0)	63 (44.1)	20 (14.0)	0.301
Babies occasionally cry	143 (80.3)	29 (16.3)	6 (3.4)	90 (62.9)	38 (26.6)	15 (10.5)	0.001
Baby is impatient	128 (71.9)	39 (21.9)	11 (6.2)	97 (67.8)	35 (24.5)	11 (17.7)	0.712
Babies cry without a cause	108 (60.7)	49 (27.5)	21 (11.8)	75 (52.4)	54 (37.8)	14 (9.8)	0.148
The caregive of baby is troublesome	115 (64.6)	45 (25.3)	18 (10.1)	55 (38.5)	68 (47.6)	20 (14.0)	0.001
The environment is noisy	133 (74.7)	37 (20.8)	8 (4.5)	71 (49.7)	58 (40.6)	14 (9.8)	0.001

*: percentage of the column

crying and by 59.8% (n=58) of the mothers who stated that their babies did not have unstoppable crying; there was no statistically significant difference between the two groups (p=0.082). There was a significant relation between the answer given to the question “Have you thought of the film you have watched?” and the education levels of the mothers (p=0.134; 0.521).

When the question “Is this film useful?” was asked to the mothers in group A, 77% of the mothers (n=137) reported that they found it useful, 6.2% (n=11) reported that they found it useless and 16.9% (n=30) reported that they were not sure. No statistical relation was found between reporting that the film was useful and the education levels of the mothers (p=0.620).

Discussion

Shaken baby syndrome is an important health problem, because approximately ¼ of the subjects die and a great portion of the survivors have mild or severe disability. Since it is late after children are shaken and abused, the importance of prevention of SBS which is a preventable problem was emphasized by Caffey in 1972 for the first time (21).

In shaken baby prevention programs, education is recommended to be given before 2-4 months when the frequen-

Table 3. Evaluation of the responses given to the question “what would you do if your baby continues crying?” by the mothers in Group A and B

	Group A (n=178) (%)*	Group B (n=143) (%)*	P ¹
I would rock him/her	72 (40.4)	20 (14.0)	0.001
I would nurse/feed him/her	55 (30.9)	32 (22.4)	0.101
I would massage/bath him/her	41 (23.0)	9 (6.3)	0.008
I would show him/her around	30 (16.7)	7 (4.9)	0.001
I would take him/her to a physician	15 (8.4)	8 (5.6)	0.388
I would turn on the hairdryer	7 (3.9)	1 (0.7)	0.080
I would leave him/her on bed	5 (2.8)	-	
I would call for help	3 (1.7)	1 (0.7)	0.632
I would take him/her on my lap	-	-	
I would measure his/her temperature	-	-	
I would talk and sing	-	-	
I would change his/her diaper	-	-	
I would burp him/her	-	-	
I would take him/her to open air	-	-	

*: percentage of the column; ¹Fisher's Exact test

Table 4. Distribution of the answers given to the main messages given during the education by Group A and B

	Group A (n=178) (%) [*]			Group B (n=143) (%) [*]			p
	I agree	I am uncertain	I don't agree	I agree	I am uncertain	I don't agree	
A normal healthy infant may cry for 2-3 hours a day	95 (53.4)	10 (5.6)	73 (41.0)	76 (53.1)	24 (16.8)	43 (30.1)	0.003
Caring for a baby may be frustrating and worrisome	55 (30.9)	3 (1.7)	120 (67.4)	35 (24.5)	9 (6.3)	99 (69.2)	0.058
Shaking is harmful for babies	171 (96.1)	2 (1.1)	5 (2.8)	104 (72.7)	18 (12.6)	21 (14.7)	0.001

*: percentage of the column

cy of crying of babies is increased (12, 13, 18, 22, 23). It is important that the education given in the early period to be permanent until the period when the frequency of crying is increased. To explore the status of recall of this education given, a group of mothers who were selected by randomized sampling among the mothers who received SBS prevention education and whose babies were 2-4 months old was compared with mothers who did not receive education about SBS, whose babies completed 2 months of age and who presented to the hospital for vaccination.

When the mothers were reached by phone in the 2-4th months after delivery, the rate of agreement with the statement “babies occasionally cry” was markedly lower in the mothers who did not receive education compared to the mothers who received education.

2.8% of the mothers who received education reported that they used the method of “leaving on the bed” which was recommended as one of the methods of pacifying babies, whereas none of the mothers who did not receive education reported usage of this method. We think that the reason for this is the fact that this method is not generally accepted in our community.

There was no difference between the frequencies of the mothers who used “calling for help” methods and having received education. When the mother were reached three months after education in the study in which the same education method was used in Australia, 78% reported that they used this method (20); 35% of the mothers reported that they called their friends/relatives, 31% reported that they called healthcare institutions, 12% reported that they used both methods. In our study, 1.7% of the mothers reported that they called their relatives and 8.4% reported that they brought their babies to a physician. It was thought that the reason of this result was the fact that it is found normal by the community that mothers are supported by their close relatives especially in the first three months after delivery, thus mothers have not reported and were not asked the question “Would you call for help?”.

The rates of agreement with the statement “shaking is harmful for mothers” were found to be markedly higher in the mothers

who received education compared to the mothers who did not receive education. In the third month follow-up of the study conducted in Australia, the rate of agreement with the statement “shaking is harmful for mothers” was found to be high similar to our study (20). This shows that the education given is also efficient in the 2-4th month after delivery.

In one study, it was reported that 98% of the mothers remembered the information given about SBS 3-4 months after the video education called “Love Me...Never Shake Me”, 94% knew what to do when they experienced stress and problems related with their babies, 79% used the pacifying methods they learned and 92% gave better care to their babies with these methods (18).

In a study conducted in Canada, 80% of the mothers who were given an education card reported what they thought about this card when they returned home (22). In addition, the parents asked for more information about the crying periods of babies and SBS. In this study, it was shown that information given in the second month after the first briefing and at the vaccination visits acted as a strengthening factor.

In the study conducted in Australia, the rate of recall of the education video was 100%, while it was reported that 34% of the mothers answered as “yes” to the question “Have you thought of the film you watched?” (20). In our study, the rate of recall of the education film was found to be 46%. When the mothers were asked the question “Have you received education about the harms of shaking?”, this rate increased to 87%. This rate was considerably higher, though it was lower compared to the study conducted in Australia and the rate of the mothers of thinking of the film was higher compared to the study conducted in Australia (66%).

In a study conducted with 1 826 mothers who had babies aged three months in Holland, 10% of the mothers reported that they used the methods of shaking or battering to silence their babies. It has been reported that this risk was 2-3 fold higher in babies who cry extremely and in Turkish people (24). In another study conducted with 3 259 mothers who had babies aged below 6 months in Holland, it was reported that 5.6% of the mothers battered or shaken their babies at least for one time while their babies cried (25). In

a study conducted with 3345 babies by the same investigators in the same country, it was reported that the parents who came from undeveloped countries, who were unemployed or had part-time employment and the parents who thought that their babies cried too much had a higher risk in terms of battering and shaking their babies (10). In USA, the rate of the families who use physical violence as a discipline method has been reported to be 4.3% and the rate of parents (especially mothers) who use shaking as a discipline method in children aged below two years has been reported to be 2.6% (26). In a study conducted in the United Arab Emirates, no parent who reported that they battered or shook their babies was found (27). In our study, the question "Have you shaken/battered your baby" was not asked.

When the mothers were asked the question "Have you thought of shaking your baby?", 9% of the mother who received SBS prevention education and 3.5% of the mothers who did not receive SBS prevention education answered as "yes"; it was observed that the frequency of shaking did not change with SBS prevention program. The reason that the rate of this answer was lower than expected may be the fact that the mothers might have not confessed and might have hidden this emotion with the awareness that harming their baby is an unacceptable behavior.

In various studies, it has been reported that mothers who report that they "batter or shake" their babies usually have a low education and a low income level (9, 24). In a study conducted in USA, no relation was found between the income levels of families and the frequency of shaking in contrast to what is expected (26). In our study, no relation was found between the income level of the family and the education level of the mother and the frequency of thinking of shaking. Although shaking is used as a discipline method with a higher rate in families with low income levels, the reason that there was no relation between the income level of the parents and the frequency of thinking of shaking in this study similar to the study conducted in USA may be explained with the possibility that these families might have hidden the facts because of fear.

The most common exploiters in shaken baby syndrome are men (16, 17, 28). In different education methods, educating men is also recommended (16). In the study of Deyo et al. (18), it was found that 87% of the mothers transferred the education given in the hospital to the men with whom they lived together. In a study conducted in Australia, 47% of the mothers reported that they shared the education they received with other people who lived in the house (20). In our study, the mothers were not asked if they shared this education with other people. The fathers were usually not present while the mothers were given education because of hospital conditions and thus were not included in the education program. However, fathers do not care for babies especially during infancy

in our country and only mothers take care of babies during this period. Although the fact that fathers were not included in this study was a limitation of the study, it may not be very important for SBSPPs in our country. Therefore, further studies are needed.

The actual aim of SBS prevention programs is to decrease the frequency of SBS. In the program planned by the 'Shaken Baby Syndrome National Center', it was reported that non-accidental head traumas decreased by 47% in a three-year period in New York with giving information about SBS in the hospital to all parents who had newborn babies (13, 29). In Turkey, the prevalence of SBS is not known. The fact that the effects of SBSPP on the frequency of SBS were not evaluated with long-term follow-up in this study was a limitation of the study. In our country, further studies are needed in this area.

Conclusively, it was found that knowledge as a result of education in SBSEP is permanent until the 2-4 months when babies cry with the highest rate. As the education levels of the mothers increase, the rates of utility of education increase. Healthcare workers in our country should primarily be educated about SBS and make a diagnosis of SBS, reliable prevalence data should be obtained and the decreased frequency after education should be demonstrated to measure the actual efficiency.

Ethics Committee Approval: Ethics committee approval was received for this study from the ethics committee of Ministry of Health Ankara Education and Research Hospital.

Informed Consent: Verbal informed consent was obtained from the parents of the patients who participated in this study.

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References

1. Chiesa A, Duhaime AC. Abusive head trauma. *Pediatr Clin North Am* 2009; 56: 317-31. [\[CrossRef\]](#)
2. American Academy of Pediatrics: Committee on Child Abuse and Neglect. Shaken baby syndrome: rotational cranial injuries-technical report. *Pediatrics* 2001; 108: 206-10. [\[CrossRef\]](#)
3. Barlow KM, Minns RA. Annual incidence of shaken impact syndrome in young children. *Lancet* 2000; 356: 1571-2. [\[CrossRef\]](#)

4. Minns RA, Jones PA, Mok JY. Incidence and demography of non-accidental head injury in southeast Scotland from a national database. *Am J Prev Med* 2008; 34: S126-33. [\[CrossRef\]](#)
5. Fanconi M, Lips U. Shaken baby syndrome in Switzerland: results of a prospective follow-up study, 2002-2007. *Eur J Pediatr* 2010; 169: 1023-8. [\[CrossRef\]](#)
6. Kelly P, Farrant B. Shaken baby syndrome in New Zealand, 2000-2002. *J Paediatr Child Health* 2008; 44: 99-107. [\[CrossRef\]](#)
7. Jacobi G, Dettmeyer R, Banaschak S, Brosig B, Herrmann B. Child Abuse and Neglect: Diagnosis and Management. *Dtsch Arztebl Int* 2010; 107: 231-40.
8. King WJ, MacKay M, Sirnick A. Canadian Shaken Baby Study Group. Shaken baby syndrome in Canada: clinical characteristics and outcomes of hospital cases. *CMAJ* 2003; 168: 155-9.
9. Barr RG, Trent RB, Cross J. Age-related incidence curve of hospitalized Shaken Baby Syndrome cases: convergent evidence for crying as a trigger to shaking. *Child Abuse Negl* 2006; 30: 7-16. [\[CrossRef\]](#)
10. Reijneveld SA, van der Wal MF, Brugman E, Hira Sing RA, Verloove-Vanhorick SP. Prevalence of parental behaviour to diminish the crying of infants that may lead to abuse. *Ned Tijdschr Geneesk* 2004; 148: 2227-30. [\[CrossRef\]](#)
11. "Preventing Shaken Baby Syndrome: A Guide for Health Departments and Community-Based Organizations" is a publication of the Centers for Disease Control and Prevention, National Center for Injury Prevention and Control [internet]. Erişim Tarihi: Mayıs 2013. Erişim: www.cdc.gov/injury. [\[CrossRef\]](#)
12. Barr RG, Barr M, Fujiwara T, Conway J, Catherine N, Brant R. Do educational materials change knowledge and behaviour about crying and shaken baby syndrome? A randomized controlled trial. *CMAJ* 2009; 180: 727-33. [\[CrossRef\]](#)
13. Dias MS, Smith K, DeGuehery K, Mazur P, Li V, Shaffer ML. Preventing abusive head trauma among infants and young children: a hospital-based, parent education program. *Pediatrics* 2005; 115: e470-7. [\[CrossRef\]](#)
14. Showers J. "Don't shake the baby": the effectiveness of a prevention program. *Child Abuse Negl* 1992; 16: 11-8. [\[CrossRef\]](#)
15. Starling SP, Patel S, Burke BL, Sirotiak AP, Stronks S, Rosquist P. Analysis of perpetrator admissions to inflicted traumatic brain injury in children. *Arch Pediatr Adolesc Med* 2004; 158: 454-8. [\[CrossRef\]](#)
16. Carbaugh SF. Understanding shaken baby syndrome. *Adv Neonatal Care* 2004; 4: 105-14. [\[CrossRef\]](#)
17. Overpeck MD, Brenner RA, Trumble AC, Trifiletti LB, Berendes HW. Risk factors for infant homicide in the United States. *N Engl J Med* 1998; 339: 1211-6. [\[CrossRef\]](#)
18. Deyo G, Skybo T, Carroll A. Secondary analysis of the "Love Me...Never Shake Me" SBS education program. *Child Abuse Negl* 2008; 32: 1017-25. [\[CrossRef\]](#)
19. Bailey M, Gress T, Bolden D, Pfitzer L. Testing educational strategies for Shaken Baby Syndrome. *W V Med J* 2008; 104: 22-3.
20. ARCHI - Shaking Your Baby is Just Not the Deal [internet]. Erişim tarihi: Ocak 2013. Erişim: <http://www.archi.net.au/resources/workforce/nursing/shaking-baby>.
21. Blumenthal I. Shaken baby syndrome. *Postgrad Med J* 2002; 78: 732-5. [\[CrossRef\]](#)
22. Goulet C, Frappier JY, Fortin S, Déziel L, Lampron A, Boulanger M. Development and evaluation of a shaken baby syndrome prevention program. *J Obstet Gynecol Neonatal Nurs* 2009; 38: 7-21. [\[CrossRef\]](#)
23. Barr RG, Rivara FP, Barr M, et al. Effectiveness of educational materials designed to change knowledge and behaviors regarding crying and shaken-baby syndrome in mothers of newborns: a randomized, controlled trial. *Pediatrics* 2009; 123: 972-80. [\[CrossRef\]](#)
24. Van der Wal MF, van den Boom DC, Pauw-Plomp H, de Jonge GA. Mothers' reports of infant crying and soothing in a multicultural population. *Arch Dis Child* 1998; 79: 312-7. [\[CrossRef\]](#)
25. Reijneveld SA, van der Wal MF, Brugman E, Sing RA, Verloove-Vanhorick SP. Infant crying and abuse. *Pediatrics* 2004; 364: 1340-2.
26. Theodore AD, Chang JJ, Runyan DK, Hunter WM, Bangdiwala SI, Agans R. Epidemiologic features of the physical and sexual maltreatment of children in the Carolinas. *Pediatrics* 2005; 115: e331-7. [\[CrossRef\]](#)
27. Abdulrazzaq YM, Al Kendi A, Nagelkerke N. Soothing method-used to calm a baby in an Arab country. *Acta Paediatr* 2009; 98: 392-6. [\[CrossRef\]](#)
28. Holden JR, Jenny C. Abusive head trauma: the relationship of perpetrators to their victims. *Pediatrics* 1995; 95: 259-62.
29. National Center on Shaken Baby Syndrome [internet]. Erişim tarihi: Haziran 2013. Erişim: <http://www.dontshake.org/sbs>.