Abusive head trauma (AHT), formerly known as shaken baby syndrome, is a condition with physical, psychosocial, and fiscal implications presenting opportunities for nurses to intervene with prevention strategies. This integrative review of the literature explored the empirical evidence to identify prevention strategies effective in decreasing abusive head trauma. Education, medical, and nursing databases yielded 14 quality research studies providing the basis for the review. Multiple facets of prevention strategies were identified with patterns in the literature of community involvement, early detection and involvement by health professionals, and parental education programming. A five-component model of prevention strategies is proposed to provide nurses with a comprehensive approach to the issue. These components consist of a) completion of personal inventory, b) involvement in multi-modal parental education, c) commitment to a prevention program, d) participation of the family and community, and e) connection to a spiritual element. Through these components, it is hoped there is enhancement of the quality of life for parents and infants, and a discouragement of situations that increase the risk of infant injury.

Bethany Stoll and Judy K. Anderson
Development (Barr, 2012). Current research now suggests that crying is normal, but education of the public is necessary to direct the mind away from the teachings of the past.

Prevention of AHT has been of increased importance in current medical research. Education of parents, caregivers, health care professionals, teachers, and community members may prove to be the most effective method of reducing the incidence of future cases. Health care professionals, especially maternal-child nurses and emergency department personnel, are in critical positions for early recognition and implementation of prevention strategies. Current research has begun to study the effectiveness of various materials in providing caregiver education to prevent AHT. The focus has been to spread the understanding that crying is a natural part of development, not a problem that is resolved through violence. This review of the literature pertains to prevention and education strategies that have been reported during the past five years.

Purpose/Goal Of the Review

The purpose of this literature review was to evaluate past education and/or prevention strategies focused on consumers and health care professionals in reducing the occurrence of AHT in infants younger than two years of age. To evaluate past education or prevention measures, the research question addressed in this literature review is, “What prevention strategies have been effective in decreasing abusive head trauma?”

The goal of this literature review was to determine the effectiveness of past programs in reducing the occurrence of AHT. Gathered information can be used to support the development of a new multi-modal caregiver educational program to reduce the incidence of AHT.

Review of Literature

Search for Evidence

The databases CINAHL, MEDLINE, and Education Research Complete were searched to locate past studies or implementation of education and prevention strategies. The search phrases “abusive head injury,” “prevention,” and “Shaken Baby Syndrome” were used in the search process. Limitations to the search results included only English language articles and publication date within the past five years. The search yielded 52 results. Nine empirical sources were included in this review, with an additional five non-empirical sources summarized. Thirty-seven sources were discarded based on lack of relevance to the purpose of this literature review. The 14 sources that were reviewed were chosen for containing the word(s) “education,” “prevention,” “awareness,” “facts,” “advocacy,” “fight,” “intervention,” “learning,” or “opportunity” in content.

Polit and Beck (2012) provide a hierarchy for interventional literature ranging from expert panels/content authority (Level VII) to systematic review of randomized or non-randomized studies (Level I). Included in this review are Level II sources (n = 4), Level IV sources (n = 1), and Level VI sources (n = 4).

Also present in the literature were non-empirical sources reporting projects or other interventions relevant to the topic. Meskauskas, Beaton, and Meservey (2009) reported on a hospital-based education for parents, developed after training for the nursing staff. Similar to other reports, this program involved multiple educational strategies, including one-on-one instruction, videos, brochures, and parental signature verifying receipt of materials. A printed certificate was also included as a visual reminder of the education received. The literature also contains reports of programs resulting from or as a result of legislative action to require education for health care professions and/or parents of newborns (Altimier, 2008; Gibbs & Nevitt, 2011; Lewin, 2008; Meskauskas et al., 2009). Kentucky is an example of one state mandating continuing education for all nurses and other designated groups interacting with the population most vulnerable to this condition (Kentucky Board of Nursing, 2013). Sims and Hood (2010) reported on a project undertaken by nursing students using simulation to provide education to community personnel working with infants and to high school students.

Challenges in the literature were the use of convenience samples for most of the studies along with the use of self-reported data for outcomes. Many studies used only short-term measurements to support the intervention. Finally, only one study provided insight to the effectiveness of the intervention in decreasing incidence of AHT (Altman et al., 2011). See Table 1 for a summary of the studies.

Findings

The conclusions drawn in the literature reviewed demonstrate three major themes in prevention of AHT (see Figure 1). These three themes include a) entire community involvement in prevention; b) early implementation of previous strategies and early detection; and c) caregiver education strategies that connect caregivers to community resources, teach safe and effective coping skills, and educate about normal childhood development.

Entire community involvement in prevention. Past research indicates that nationwide involvement and education of entire communities is critical in reducing abusive head injuries. Knowledge provided to all individuals of a community may promote earlier detection of at-risk infants, thus increasing early intervention. Hands-on education of community members is an important component of multi-modal prevention strategies. Community-wide efforts advocating for the development of new federal initiatives that increase awareness and knowledge about AHT is another strategy. This may reduce the incidence rate. Federal initiatives that require education of caregivers, teachers, daycare providers, foster families, and individuals working with children may also allow early intervention in suspected cases.

Early implementation of prevention strategies and early detection. Several reviewed articles conclude that health professionals, especially nurses, fill a critical role in reducing the incidence of AHT. Nurses who come into contact with potential at-risk children should be provided sufficient training in early recognition of abuse. Proper education of nursing personnel may allow for more successful recognition of warning signs and increase confidence in reporting suspected cases. With proper education of nurses, the provision of personalized, individual caregiver education (for example, following maternity care) may become an achievable goal. Intervention strategies that emphasize provision of engaging education for both mothers and fathers should be...
### Table 1. Summary of Research

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<th>Citation/Level of Evidence</th>
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| Barr et al. (2009) Level II | **Purpose:** To evaluate the effectiveness of the PURPLE Crying Educational Program in changing maternal knowledge and behaviors related to shaking.  
**Sample:** Convenience; N = 1,279 new mothers.  
**Setting:** Vancouver, British Columbia, Canada. | **Randomized controlled.** The control group received basic injury prevention materials, including 2 brochures and a DVD. The experimental group received the Period of PURPLE Crying material, including an 11-page book and a DVD. Five weeks after giving birth, the mothers were asked to complete a Baby's Day Diary. Three weeks later, independent researchers contacted each mother to complete a questionnaire regarding knowledge about the dangers of shaking an infant and appropriate reactions to calm an upset child. | Mothers who received the PURPLE Crying material scored 5% higher than the control group in measures of knowledge about crying. The same mothers were also more aware of advice about how to avoid acting dangerously and not shaking an infant (13% difference). Mothers who received the PURPLE Crying material were 1.7 times more likely to walk away from inconsolable crying than the control mothers. Effect size for change in knowledge = 0.46. | The PURPLE Crying material, which encourages caregivers to learn safe and healthy methods of reaction to crying infants, appears to be effective in reducing the occurrence of shaken baby syndrome. This suggests that educational materials are beneficial, and a combination of visual-auditory and reading material may be the most effective method of reinforcing healthy behaviors. |
| Bechtel et al. (2011) Level II | **Purpose:** To determine what impact educational interventions have on caregiver beliefs about crying and knowledge of shaken baby syndrome.  
**Sample:** Convenience; N = 222 (n = 110 historical; n = 112 intervention group).  
**Setting:** Connecticut, United States. | **Quasi-experimental post-test.** The intervention group received the “Take 5 Safety Plan for Crying” delivered by resident physicians in either English or Spanish, and a refrigerator magnet with similar points. Following discharge, structured interviews were conducted with the first well-child visit. A historical (control) group was interviewed before the educational intervention. | Following education, the intervention group was much more likely to acknowledge that frustration with a crying infant leads to shaking. Caregivers in the intervention group were much more likely to take a break when frustrated with crying (OR = 3.10; 95% CI [1.62-5.93]) and less likely to continue soothing the infant if frustrated with crying (OR = 0.27; 95% CI [0.10-0.72]). | Educational interventions are critical in the prevention of abusive head trauma. Programs that focus on helping caregivers prevent harmful responses to crying children may reduce the risk of abusing head trauma. |
| Fujiwara et al. (2012) Level II | **Purpose:** To replicate the effectiveness of the PURPLE Crying materials with Japanese mothers.  
**Sample:** Convenience; N = 201 (n = 106 intervention group; n = 96 control group).  
**Setting:** Japan | **Randomized controlled study.** Mailed materials consisting of the PURPLE Crying materials or control materials on infant safety sent 2 weeks after birth. Mothers completed a diary of behaviors at 6 weeks and at 2 months completed a structured telephone survey. | The intervention group scored significantly higher on crying knowledge (p = 0.005). Walking away behavior during unsootheable crying and sharing walk away behaviors with other caregivers also demonstrated to be higher in the intervention group. Effect size of knowledge change = 0.45. | Changes in knowledge and behaviors related to risk of abusive head trauma identified support for the PURPLE Crying materials in potential to reduce incidence of abusive head trauma. |

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Summary of Research

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| Russell, Trudeau, & Britner (2008) Level II | **Purpose:** To compare intervention strategies in raising caregiver and public awareness of practices related to incidence of abusive head trauma.  
**Sample:** Convenience, snowball; N = 264 adults, mean age of 32, both parents and non-parents.  
**Setting:** Connecticut, United States. | Randomized experimental.  
The sample was randomized into 3 case groups: brochure education only, brochure with *Portrait of Promise* education, and brochure with *Shaking, Hitting, or Spanking: What to Do Instead*.  
Respondents were administered the shaken baby syndrome Awareness Assessment prior to education and were assessed throughout the intervention time period at 2, 6, and 12 weeks from enrollment in the study. | Type of intervention was the only variable to have shown a significant pattern of prediction.  
The case group viewing *Shaking, Hitting, or Spanking: What to Do Instead* demonstrated the highest level of positive change in regard to appropriate soothing actions. *Portrait of Promise* demonstrated the next most significant level of change, followed by the educational brochure.  
Time limited the ability of recall for participants in the study. | Audio-visual educational materials that model appropriate emotional responses and healthy strategies to cope with frustration appear to target the primary factors that contribute to abusive head trauma injuries through a medium that is capable of positively influencing caregiver knowledge. |

| Keenan & Leventhal (2010) Level IV | **Purpose:** To evaluate the effectiveness of informational videos with postpartum education in decreasing traumatic brain injuries in infants.  
**Sample:** Purposive/matched; N = 77 mothers and infants under 2 years of age with abusive head injuries.  
**Setting:** Utah, United States. | Case control.  
Case group: Education about prevention of shaken baby syndrome was provided through educational videos  
Alternative exposures: Education about proper use of car seats, education to prevent sudden infant death syndrome, and education to avoid infant scalds by hot water were provided.  
Follow-up interviews with mothers provided information recall assessment/comparison of control and case group. | Educational videos about shaken baby syndrome did not statistically reduce the occurrence of abusive head trauma in infants (OR 0.7; 95% CI [0.5-1.2]).  
The alternative exposure interventions all showed statistically significant reduction in prevention of the discussed conditions. | Educational videos alone do not provide enough intervention to significantly decrease the number of infants experiencing shaken baby syndrome.  
This may suggest the occurrence of shaken baby syndrome is different from other conditions in which lack of knowledge is the cause of injury. |

| Goulet et al. (2009) Level VI | **Purpose:** To evaluate parental and nursing opinions about abusive head trauma educational practices.  
**Sample:** Convenience; n = 263 parents and n = 69 nurses.  
**Setting:** Montreal, Quebec, Canada. | Descriptive.  
Nursing professionals employed at 2 facilities were instructed on procedures for parental education about abusive head trauma. | Ninety-eight percent (98%) of the parents reported that the intervention was relevant and appreciated the information. | Implementation of in-hospital education for parents, especially education that provides information about how to respond appropriately to crying infants and how to cope in such situations, is an important component of the postnatal educational regimen. |

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<td>Goulet et al. (2009) Level VI (continued)</td>
<td>The nurses provided new parents with an information card containing a variety of information regarding crying, anger, and knowledge of shaken baby syndrome. The parents were then asked to form a plan for handling inconsolable crying. The plan was discussed with nursing staff members and signed by the parents. Follow-up telephone questionnaires were administered to parents after 6 weeks to assess the adequacy of the education.</td>
<td>The nurses unanimously responded to the new educational strategy well; 80% of the parents reported having thought about the information cards used in the educational program but did not again look at the copy provided for them, while 98% of the parents thought the action plan was useful, although only 48% remembered any of the steps after 6 to 8 weeks. The signatures were well accepted but showed no convincing relevance.</td>
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| Shanahan, Nocera, Zolotor, Sellers, & Runyan (2011) Level VI | **Purpose:** To describe the abusive head injury prevention education on maternity wards prior to statewide education programs.  
**Sample:** Convenience; \( N = 89 \) hospital maternity wards.  
**Setting:** North Carolina, United States. | Cross-sectional survey. Charge nurses or nurse managers were surveyed over the phone to seek information about present abusive head injury/shaken baby syndrome prevention, education, content, and format. | Sixty-two percent (62%) of the surveyed hospitals reported provision of abusive head injury prevention and/or educational programs. One-on-one bedside education was reported by 49% of the surveyed nurses. Materials provided to new parents in the educational programs included pamphlets (81.8%), books (18.2%), and DVDs (6.1%). Information about the dangers of shaking (81.8%), the normalacy of crying (81.8%), methods of coping (81.8%), the dangers of shaking an infant (75.8%), and physical effects of shaking (72.7%) were reported as components of the educational programs. | Mandatory state educational programs regarding shaken baby syndrome would increase the likelihood that every parent would receive the necessary information to help prevent injury to infants. A multi-modal approach reinforces the message of the education and may serve to protect infants from abusive injury. |

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| Stewart et al. (2011) Level VI | *Purpose:* To evaluate the impact of RN and parental education.  
*Sample:* Convenience; *N* = 10,000 parents.  
*Setting:* London, Ontario, Canada.  
*Level VI* | Quasi-experimental, pre- and post-test/survey.  
Education consisted of a three-pronged approach starting with RN education, followed by RN delivery of education to parents, public health/home visits for initial education or reinforcement, and a media campaign.  
In-house education consisted of *Period of PURPLE Crying* materials.  
*Quasi-experimental.* | Post-training evaluations completed by nurses showed a 47% increase in knowledge  
Ninety-two percent (92%) overall education compliance rate.  
Ninety-two percent (92%) of parents receiving education signed commitment papers following the education  
Ninety-three percent (93%) of parents rated program as useful.  
*The triple-approach to education allowed for extending the education beyond the parents with an intent to create a culture shift regarding the perception of crying.  
The program was rated as useful by all constituents.* |
| Altman et al. (2011) Level VI | *Purpose:* To demonstrate evidence that low-cost prevention programs delivered by maternity nurses can statistically reduce the occurrence of abusive head injury in children younger than 1 year of age.  
*Sample:* Random; *n* = 320 parents (interview); *n* = 16 infants with shaking injury during total period.  
*Setting:* New York State, United States.  
*Level VI* | Quasi-experimental.  
Maternity nurses provided an educational program consisting of a leaflet, an 8-minute video, and signed statement of receiving the information, as well as a commitment statement to be signed by participants.  
Follow-up standardized telephone interviews were conducted as infants reached 6 months of age to measure recall of taught information.  
Comparison of 5-year historical control period to 3-year intervention period.  
*Quasi-experimental.* | Within the first year of instituting the program, 84.5% of parents were exposed to the educational material, 88.1% within the second year, and 87.8% within three years. 97.8% of interviewed caregivers recalled watching the movie, and 55.6% claimed that the information had been helpful in stressful situations. Fewer males were involved and agreed to participate in the education.  
During the years of implementing the educational program, the frequency of abusive head injuries decreased from 2.8 cases per year to 0.7 cases per year, a 75% reduction.  
*Current research suggests that educational programs initiated in the hospital soon after delivery, while caregivers are focused on their new infant and have yet to experience inconsolable crying, are the most effective approach to prevention. Fewer males were compliant in completing the educational materials, suggesting that a priority in future research should include more effective methods of reaching males.  
Cost analysis of education materials ($4.50) compared to lifetime cost of acute/chronic care for injuries supports program.* |

initiated, as familial role changes now place more fathers in the position of primary caregiver.

**Caregiver education strategies that connect caregivers to community resources, teach safe and effective coping skills, and educate about normal childhood development.** Supplying information to increase factual knowledge about AHT is only the first step in decreasing incidence rates. Emotions are often involved in the circumstances surrounding injury to the infant. The educational intervention for caregivers who may cause AHTs, therefore, must be more involved than the sharing of information alone. The importance of caregiver education that teaches coping skills, provides available community resources, and describes the stages of normal childhood development in reducing the risk of AHT is apparent. Current methods of education use single mode strategies. It appears, however, that a multi-modal approach may be most effective in promoting healthy infant-child relationships. The use of parental “commitment signatures” may prove to be a successful tool in encouraging caregiver accountability.

A limitation in this review of literature stems from the choice of restricted search terms. Using a narrow search strategy with only “abusive head trauma” or “shaken baby syndrome” provided the advantage of targeted intervention strategies. However, other sources may place abusive head trauma in a broader concept of child abuse. Including a broader
search strategy for sources where AHT was considered one aspect of child abuse may have revealed additional data.

Discussion

Proposed New Model Of Prevention

Previous models of AHT prevention have not addressed all aspects of life that may contribute to caregiver abuse. Based on the findings of this literature review, the following model of AHT prevention has been developed (see Figure 2). This model seeks to use multiple modes of education that involve the community, maternal/paternal figures, other family figures, members, and/or other primary caregivers. The five components of the prevention strategy focus on continued intervention for those caregivers and infants deemed at risk of experiencing AHT. The personal inventory and multi-modal caregiver education by health professionals should be provided to all caregivers and new parents. The goal of the personal assessment is to determine what factors may influence a caregiver’s coping mechanisms, stress levels, strongest learning strategies, and level of involvement with the infant. By determining factors, such as socioeconomic status, income level, race/ethnicity, marital status, and highest education level, the multi-modal education that follows can be more personalized and directed toward the aspects most important for each individual. The commitment signature of those caregivers who enter the later steps of the program ensure consent, recognition of potential harm, and a true willingness to take the necessary steps in preventing AHT. Involvement of family and community members will help to ensure a support system and resources for caregivers and families to use, which may decrease the occurrence of situations that could endanger an infant. The accountability aspect of becoming involved in the prevention program may be influenced by the use of community counselors, therapists, and other health professionals.

Finally, a spiritual component is added to provide a holistic approach not seen in the current literature to help caregivers realize the importance of forces greater than the individual, including connections with others, personal morality, responsibilities as caregivers, and matters affecting the soul. Through these components, prevention strategies for AHT can truly have an impact on the aspects of life that either promote quality or discourage situations that increase risk of infant injury.

Future Research

Future research in the prevention of AHT should seek to further understand what modes of education are most effective in reducing the occurrence. Many past studies have implemented a single strategy and considered whether any intervention was more beneficial than none. Future research should investigate what sin-
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Goal
To provide an overview of abusive head trauma (previously known as shaken baby syndrome) in infants.

Objectives
1. Define abusive head trauma (AHT).
2. Discuss the model of prevention strategies proposed by this literature review to provide nurses with a comprehensive approach to assessing for and treating AHT.

Statements of Disclosure:
The authors reported no actual or potential conflict of interest in relation to this continuing nursing education activity.
The Pediatric Nursing Editorial Board members reported no actual or potential conflict of interest in relation to this continuing nursing education activity.

This independent study activity is provided by Anthony J. Jannetti, Inc. (AJJ). Anthony J. Jannetti, Inc. is accredited as a provider of continuing nursing education by the American Nurses Credentialing Center’s Commission on Accreditation.

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norities and the dominant races. Further research should seek to understand what classes or racial groups are at highest risk for an AHT, thus determining the greatest need for parental education. In addition, difference in parental response to various educational mediums should be considered in providing educational programs for caregivers of all statuses.

References


Additional Reading