Medical Science

pISSN 2321–7359; eISSN 2321–7367

Awareness of parents about shaken baby syndrome in Makkah, Saudi Arabia

Talah Atif Felemban[1], **Husain Abdullah Al Shareef**[1], **Nouf Eed Almajnooni**[1], **Jana Saleh Alhadramy**[1], **Zahra Alabbad**[1], **Rayed Ahmad Alhuda**[1*], **Mokhtar Shatla**[2]

To Cite:
Felemban TA, Al-Shareef HA, Almajnooni NE, Alhadramy JS, Alabbad Z, Alhuda RA, Shatla M. Awareness of parents about shaken baby syndrome in Makkah, Saudi Arabia. *Medical Science* 2023; 27: e28ms2728. doi: https://doi.org/10.54905/disssi/v27i131/e28ms2728

Authors' Affiliation:
[1]Department of Medicine and Surgery, College of Medicine, Umm Al-Qura University, Makkah, Saudi Arabia
[2]Department of Community Medicine and Pilgrims Health Care, College of Medicine, Umm Al-Qura University, Makkah, Saudi Arabia

[*]**Corresponding author**
Department of Medicine and Surgery, College of Medicine, Umm Al-Qura University, Makkah,
Saudi Arabia
Email: r.n.alhuda@gmail.com

Peer-Review History
Received: 23 December 2022
Reviewed & Revised: 25/December/2022 to 05/January/2023
Accepted: 06 January 2023
Published: 09 January 2023

Peer-review Method
External peer-review was done through double-blind method.

URL: https://www.discoveryjournals.org/medicalscience

ABSTRACT

Background and aim: Shaken baby syndrome (SBS) also known as (abusive head trauma) is a common disease that occurs in infants which may causes serious complications and high risk of infant mortality rates, especially if not discovered and treated appropriately. Parents' education should not be overlooked, as parental awareness about how to detect and prevent SBS is an important factor to reduce the burden of this condition. This study aims to assess parental awareness about SBS symptoms, complications and prevention methods in Makkah, Saudi Arabia. *Methods:* A cross-sectional study was conducted using an online self-administered questionnaire to collect data about SBS from parents in Makkah city, Saudi Arabia. Parents in Makkah city with internet accessibility were the target population. Data collection was done through data collectors who distributed the questionnaire on social media platforms. *Results:* Out of 385 respondents to our questionnaire, 27% of them were between 40 to 49 years old. The majority of the study participants are females (62.9%). 249 (64.7%) participants did not hear or read about SBS before. Participants´ sources of information were primarily from social media platforms (20.8%), followed by friends and relatives (8.3%). Approximately 28.3% of participants believed that domestic violence was a risk factor for SBS. Meanwhile 70.6% of them did not know the causes of SBS. *Conclusion:* The majority of the participants demonstrated a lack of information regarding SBS risk factors, complications and prevention methods. Thus, it is essential to reinforce their knowledge to help reduce the incidence and burden of this condition.

Keywords: Shaken baby syndrome, Saudi Arabia, Awareness

1. INTRODUCTION

Shaken baby syndrome (SBS) also known as (abusive head trauma) is a common and devastating disease in infants. It is defined as "a devastating form of inflicted traumatic brain injury that occurs when a young child is violently shaken and subjected to rapid acceleration, deceleration and rotational forces, with or without impact" (Stewart et al., 2011). Significant symptoms are vomiting, irritability, breathing problems, lethargy, seizures

and coma. Commonly mentioned risk factors for SBS are parents not expecting babies, single caregivers, parental depression, substance abuse, Low education and economic status (Alanazi et al., 2021; Mian et al., 2015). SBS carries a significant risk of serious complications most commonly, partial or total blindness, developmental delays, severe brain injuries and eventually death (Mian et al., 2015). Retinal hemorrhages, although not pathogenic, are more common in SBS and fractures of the posterior ribs. Children less than one-year-old tend to show up later and are more likely to suffer from sub-dural bleeding (Mann et al., 2015). SBS carries a high risk of infant mortality rates if not discovered and treated correctly (Blumenthal, 2002).

In one epidemiological study conducted in The United States, the rate of confirmed and possible diagnosis code SBS cases was 5.4 ± 0.3 in 100,000 between 1998 and 2014 in children three years old and younger (Conrad et al., 2021). In another study conducted in Scotland, SBS cases were 33.8/100,000 in children aged below one year (Minns et al., 2008). Furthermore, two studies were conducted in Britain and Estonia, with SBS incidence rates of 14.2 and 40.0 per 100,000 children less than one year, respectively (Mann et al., 2015). After this observation and considering the risks of SBS, parents' education should not be over looked. Since education and economic status are risk factors for SBS, increasing parents' awareness could reduce SBS incidence and complications (Alanazi et al., 2021).

Furthermore, a pilot awareness program conducted in Saudi Arabia revealed that 77% of the participating parents had little to no knowledge of SBS risk factors, mechanisms and complications. However, six months later, most participants could recall the program's content. Furthermore, none of the infants whose parents were educated had abusive head trauma (Frasier et al., 2014).

A study conducted in Tabuk city, Saudi Arabia, expected that urbanized provinces such as Riyadh, Jeddah and Dammam would be more familiar with SBS than rural regions. They reported that most of the parents had poor knowledge regarding SBS. Only 32% of the participants understood the relationship between shaking infants and causing this condition. The results of this study reflect the need for parents' education (Alshahrani et al., 2018). Other studies in our region have yet to study the importance of parental knowledge regarding SBS. This study aims to determine the level of awareness about shaken baby syndrome (SBS) among parents in Makkah, Saudi Arabia.

2. METHODS

A cross-sectional study was conducted from 15 January 2022 till November 2022 using an online self-administered questionnaire to collect data about SBS from parents in Makkah city, Saudi Arabia. Parents in Makkah city with internet accessibility were the target population. Married couples without children were also included and single participants were excluded. Data collectors distributed the questionnaire through social media applications. The sample size was calculated using an online calculator.

This questionnaire was designed after reviewing the literature and it was reviewed by an expert researcher consultant. The first section collected participants' demographic data: age, gender, income and education. Other sections in the questionnaire included questions about whether they had previously heard about SBS and the participants' knowledge about SBS causes, risk factors, complications and prevention methods.

Ethical approval was obtained from the Medical Ethics Committee in the Faculty of Medicine at Umm Al-Qura University. Approval No: (HAPO-02-K-012-2022-02-985). The collected data were tabulated and statistically analyzed using the SPSS program (Statistical Package for Social Sciences) software version 26.0, Microsoft Excel 2016 and Med Calc program software version 19.1. In addition, descriptive statistics were performed for categorical data as frequencies and percentages. Descriptive statistics were also expressed as pie charts or bar charts whenever applicable.

3. RESULTS

Socio-demographic characteristics

This cross-sectional study was conducted on 385 parents in Makkah city with internet accessibility. Out of 385 respondents, 27% of them were between 40 to 49 years old, 26% were between 30 to 39 years old, 24.2% were between 50 to 59 years old, 17.9% of them between 20 to 29 years old and 4.9% were 60 years old or older. The majority of our participants are females (62.9%). Regarding marital status, most participants (91.2%) were married. Concerning education, 290 (75.3%) participants had a Bachelor´s degree. 7.8% of participants were working in the medical field. More than half (59%) of parents had three or more children (Table 1).

Knowledge about shaken baby syndrome

In this study, we found that 69 (17.9%) of participants had read or heard about SBS, while 249 (64.7%) did not. Participants´ sources of information about shaken baby syndrome were primarily from social media platforms (20.8%), followed by friends and relatives (8.3%) and TV (4.9%). Only 9.5% of participants had relatives or acquaintances who suffered from SBS (Table 2).

Table 1 Distribution of socio-demographic characteristics

		Studied respondents (N= 385)	
		N	%
Age (years)	20-29 years	69	17.9%
	30-39 years	100	26.0%
	40-49 years	104	27.0%
	50-59 years	93	24.2%
	60 and older	19	4.9%
Gender	Male	143	37.1%
	Female	242	62.9%
Marital status	Married	351	91.2%
	Divorced	22	5.7%
	Widowed	12	3.1%
Education	Elementary school	2	0.5%
	Intermediate school	16	4.2%
	High school	52	13.5%
	Diploma	6	1.6%
	Bachelor's degree	290	75.3%
	Higher education (PHD, etc.)	19	4.9%
Working in medical field *	Yes	30	7.8%
	No	355	92.2%
Income	Less than 5000	75	19.5%
	5000-10000	136	35.3%
	More than 10000	174	45.2%
Number of Children	No children	41	10.6%
	One child	52	13.5%
	Two children	65	16.9%
	Three or more children	227	59.0%

Table 2 Distribution of participants' knowledge about shaken baby syndrome

Items	Studied respondents (N= 385)	
	N	%
Have you ever read or heard of shaken baby syndrome		
Yes	69	17.9%
No	249	64.7%
May be	67	17.4%
Source of information		
Physician	14	3.6%
TV	19	4.9%
Magazines	8	2.1%
Radio	2	0.5%
Friends and relatives	32	8.3%
Social media platforms	80	20.8%
Did any of your relatives or		

Items	Studied respondents (N= 385)	
	N	%
acquaintance suffer from Shaken baby syndrome (SBS history)		
Yes	38	9.5%
No	238	59.5%

Forty-five (11.7%) participants reported that SBS usually occurs in older than one year and 13.5% of respondents reported that SBS usually occurs at the age of one year or younger (Figure 1). Only 20.8% of participants recognized that shaking a baby forcefully back and forth was the cause of SBS, 6.8% of them thought that falling from height was the cause of SBS, while 1.8% thought that the cause was treating the child harshly (Figure 2).

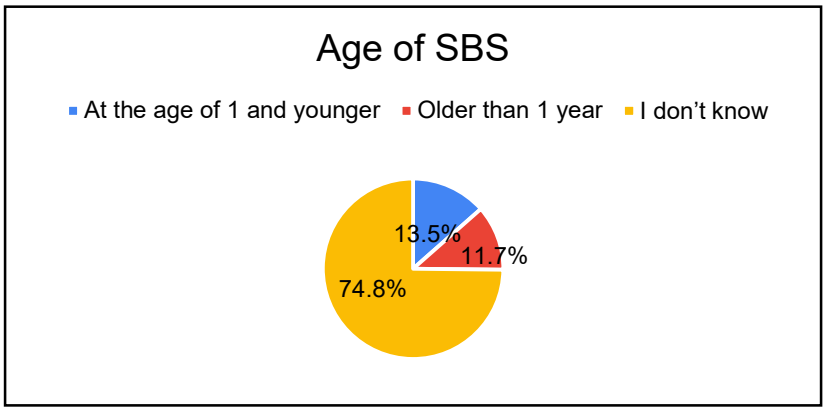

Figure 1 Distribution of studied respondents regarding SBS age

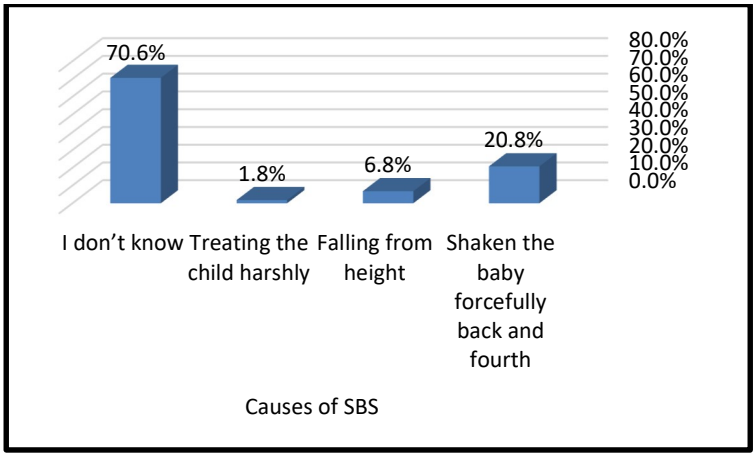

Figure 2 Distribution of studied respondents regarding SBS causes

Knowledge about risk factors of shaken baby syndrome

One hundred and nine respondents (28.3%) reported that domestic violence was a risk factor for SBS, 17.4% reported unstable family situations, 15.3% reported low parents' education level, 12.7% reported young or single parenthood, 10.6% reported one or both of parents having a mental illness especially postpartum depression. In contrast, 7.8% reported alcohol or substance abuse (Figure 3).

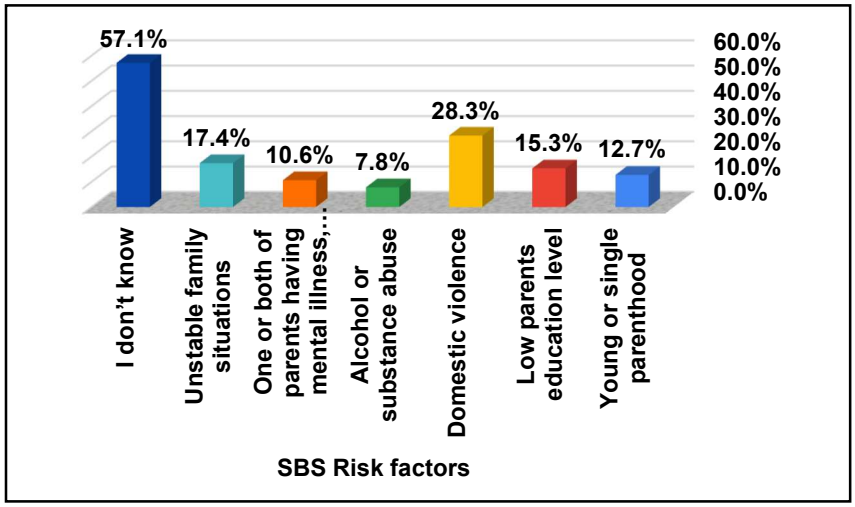

Figure 3 Distribution of participants' knowledge regarding SBS risk factors

Knowledge about symptoms and complications of shaken baby syndrome

Regarding symptoms of SBS, 16.4% and 11.4% recognized the inability to focus and fatigue, respectively. On the other hand, the least symptom reported was paralysis. As regards complications, 17.1% of participants reported that mental retardation was one of the SBS complications, 12.2% reported seizures attack, 10.1% reported recurrent brain bleeding and 8.6% reported breathing difficulties (Table 3).

Table 3 Distribution of respondents as regard causes and complications of SBS

Items	Studied respondents (N= 385)	
	N	%
SBS symptoms		
Fatigue	44	11.4%
Poor eating/loss of appetite	42	10.9%
Inability to focus	63	16.4%
Vomiting	31	8.1%
Breathing problems	28	7.3%
Pale or bluish skin	32	8.3%
Seizures attacks	41	10.6%
Paralysis	19	4.9%
Loss of consciousness	24	6.2%
Baby posture: Head fully extended backwards with bowing of the back	24	6.2%
I don't know	278	72.2%
SBS complications		
Partial or total blindness	31	8.1%
Seizures attacks	47	12.2%
Recurrent brain bleeding	39	10.1%
Breathing difficulties	33	8.6%
Mental retardation	66	17.1%
Paralysis	29	7.5%
Death	32	8.3%
I don't know	282	73.2%

Attitudes toward shaken baby syndrome occurrence and prevention

In general, 114 respondents (29.6%) think booking a doctor's appointment was the best option if they feel a baby has SBS and 26.5% of them think that going to the emergency room was the best. Additionally, 41.9% of participants stated that going to a pediatrician if there may be a medical reason why the baby is crying was a preventive measure. In addition, 26% of them reported not leaving a baby with a caregiver, friend or family member in whom there is not complete trust and 11,9% stated taking a deep breath and counting to 10 or calling someone for emotional support (Table 4).

Table 4 Attitudes towards SBS occurrence and prevention

Items	Studied respondents (N= 385)	
	N	%
In your opinions, what should you do if you feel a baby is having shaken baby syndrome (Dealing with SBS)		
Going to the emergency room	102	26.5%
Booking a doctor's appointment	114	29.6%
Going to the pharmacy	4	1.0%
Going to traditional healer	1	0.3%
Go for Ruqyah	3	0.8%
I don't know	161	41.8%
SBS Prevention		
Take a deep breath and count to 10	46	11.9%
Take time out and let the baby cry alone	12	3.1%
Call someone for emotional support	46	11.9%
Go to a pediatrician – there may be a medical reason why the baby is crying	160	41.6%
Never leave a baby with a caregiver, friend or family member in whom there is not complete trust	100	26%

4. DISCUSSION

The main objective of the current study was to assess parents' awareness of SBS in Makkah, Saudi Arabia. It was noticed that most participants had never heard or read about SBS and those who were aware their sources were not reliable or trusted sources in particular. Therefore, only a minority had sufficient information on the condition and how to recognize it. This is consistent with a study conducted in Tabuk, Saudi Arabia, that most parents had poor knowledge regarding SBS (Alshahrani et al., 2018). Another study done in Riyadh, Saudi Arabia also reported low levels of knowledge of SBS. Mothers, widowed and students had significantly good knowledge compared to fathers, married and employees, respectively (Alomran et al., 2022).

Shaken baby syndrome (SBS) has been recorded in large numbers in Saudi Arabia. There were 36 deadly incidents out of 248 verified child abuse cases. The children ranged from 4 days to 2 years old (Nabi, 2016). Furthermore, only 20.8% knew the sole cause of SBS, resulting in their ignorance of how to prevent it, concluding that most participants did not know how to act appropriately, allowing severe complications to develop. Since the complications of SBS are severe and devastating, we need to emphasize the prevention of such conditions.

A pilot awareness program done in Saudi Arabia reported that 77% of their participants had little to no knowledge of SBS risk factors, mechanisms and complications. However, after six months, the participants could recall at least 50% of the program (Frasier et al., 2014). This indicated that it is possible to prevent SBS in the following ways by teaching parents how to care for newborns and by providing information through maternity nurses and educational videos. Given that SBS is a preventable condition, we recommend highlighting the importance of this topic and initiating social awareness campaigns. Since social media is a source of information for many participants in our study, spreading awareness posters and videos about SBS by health authorities on social media may help raise the population's awareness regarding SBS symptoms, complications and prevention.

This study has some limitations. First, the questionnaire used for the data collection was an online self-administered questionnaire, which may affect the reliability of participants' answers. However, this method of data collection reaches a large number of variable populations.

Moreover, even though the sample size was calculated according to the population size, a larger sample size might be more representative of the population's awareness of SBS. Therefore, future studies on a broader population across the kingdom of Saudi Arabia assessing the knowledge about SBS and the effectiveness of awareness programs are recommended.

5. CONCLUSION

This study assessed parents' awareness about shaken baby syndrome (SBS) in Makkah, Saudi Arabia. The majority of the study participants lack information about SBS risk factors, complications and prevention methods. Awareness campaigns and posters are recommended to improve the public knowledge about SBS.

Acknowledgment

The authors would like to extend their appreciation to Research Code Team (RCT) (Twitter: @Rcodeteam1), for their valuable contribution and efforts in supervising each step of this research project.

Authors Contribution

Talah Felemban: Proposal planning, writing and review, manuscript writing review, data management.
Husain Alshareef: Proposal planning, writing and review, manuscript writing review.
Nouf Almajnooni: Proposal planning, writing and review, manuscript writing review.
Jana Alhadramy: Proposal planning, writing and review, manuscript writing review.
Zahra Alabbad: Proposal planning, writing and review, manuscript writing review.
Rayed Alhuda: Proposal planning, writing and review, manuscript writing review, data management and statistical analysis
Mokhtar Shatla: Proposal review, statistical analysis review, manuscript writing and review, supervision through the complete project.

Ethical Approval

This study was approved by The Medical Ethical Committee of Umm Al-Qura University, Makkah, Saudi Arabia with Approval No (HAPO-02-K-012-2022-02-985). Written informed consent was obtained from all individual participants included in the study.

Funding

This study has not received any external funding.

Conflict of interest

The authors declare that there is no conflict of interests.

Data and materials availability

All data sets collected during this study are available upon reasonable request from the corresponding author.

REFERENCES AND NOTES

1. Alanazi FS, Saleheen H, Al-eissa M, Alshamrani AA, Alhuwaymani AA, Jarwan WK, Hamaid MS. Epidemiology of abusive head trauma among children in Saudi Arabia. Cureus 2021; 13(10). doi: 10.7759/CUREUS.19014
2. Alomran HI, Alkharaan ZI, Aldawsari KM, Aldakkan OZ, Alatif HM, Mohamed MZE. Parental awareness, knowledge and attitude about shaken baby syndrome in Riyadh, Saudi Arabia: A cross-sectional study. Pan Afr Med J 2022; 41. doi: 10.11604/PAMJ.2022.41.327.33708
3. Alshahrani AN, Alshahrani MN, Ahmed AB. Evaluation of knowledge regarding shaken baby syndrome among parents in Tabuk City. Egypt J Hosp Med 2018; 72:11.
4. Blumenthal I. Shaken baby syndrome. Postgrad Med J 2002; 78(926):732–735. doi: 10.1136/PMJ.78.926.732
5. Conrad A, Butcher B, Oral R, Ronnenberg M, Peek-Asa C. Trends in shaken baby syndrome diagnosis codes among young children hospitalized for abuse. Inj Epidemiol 2021; 8(1). doi: 10.1186/S40621-021-00334-W

6. Frasier LD, Kelly P, Al-Eissa M, Otterman GJ. International issues in abusive head trauma. Pediatr Radiol 2014; 44(4):647–653. doi: 10.1007/s00247-014-3075-0
7. Mann AK, Rai B, Sharif F, Vavasseur C. Assessment of parental awareness of the shaken baby syndrome in Ireland. Europ J Pediatr 2015; 174(10):1339–1345. doi: 10.1007/s00431-015-2528-2
8. Mian M, Shah J, Dalpiaz A, Schwamb R, Miao Y, Warren K, Khan S. Shaken Baby Syndrome: A review. Fetal Pediatr Pathol 2015; 34(3):169–175. doi: 10.3109/15513815.2014.999394
9. Minns RA, Jones PA, Mok JYQ. Incidence and demography of non-accidental head injury in Southeast Scotland from a national database. Am J Prev Med 2008; 34(4). doi: 10.1016/j.amepre.2008.01.016
10. Nabi G. Family profile of victims of child abuse and neglect in the Kingdom of Saudi Arabia. Saudi Med J 2016; 37(12):1418. doi: 10.15537/SMJ.2016.12.17162
11. Stewart TC, Polgar D, Gilliland J, Tanner DA, Girotti MJ, Parry N, Fraser DD. Shaken baby syndrome and a triple-dose strategy for its prevention. J Trauma 2011; 71(6):1801–1807. doi: 10.1097/TA.0B013E31823C484A