

Parental knowledge and practices toward foreign body aspiration in children in the Al Qassim region of Saudi Arabia

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Abstract

Background: Foreign body aspiration (FBA) is a perilous condition with a high mortality rate, especially in children less than three years of age. **Aim:** This study aimed to assess parental knowledge and practices toward FBA in children in the Al Qassim region of Saudi Arabia. **Materials and Methods:** This is a descriptive cross-sectional study conducted among Saudi parents at AlQassim region, Saudi Arabia during the period between February 2020 and June 2020. A validated self-administered questionnaire containing 16 questions of knowledge and practices toward FBA was distributed online via various Social Media platforms. Correct answers were coded and scored. Participant responses were grouped based on their score level of knowledge and practices. **Results:** We recruited 385 parents with a mean age of 35.4 (range: 19–59) years, and 59.2% were female and 40.8% were male. The mean ± SD knowledge score was 4.97 (1.42)/8 points and the practice score was 12.4 (2.13)/20 points. Parents with poor and good knowledge were 61.3% and 36.9% and those with poor and good practices were 55.3% and 44.7%, respectively. Female professionals with less children who were more aware of FBA significantly influenced knowledge, while having no incidence of FBA among children and having heard of FBA significantly influenced knowledge, while having no incidence of FBA were insufficient. Educated females with less children that heard about FBA influenced parental knowledge. Also, having no incidence of FBA among children and being aware about FBA led to a better impact in parental practices.

Keywords: Children, foreign body aspiration, knowledge, parents, practices

Introduction

Foreign body aspiration (FBA) is a perilous condition with a high mortality rate, particularly if intervention is delayed. Kids who are less than three years of age are at a higher danger of FBA.^[1] Delayed diagnosis is often due to the non-specific presentation of symptoms and the absence of a witness to the aspiration event.^[2] Witnessing of aspiration events, mostly by parents or caregivers, and subsequent

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reporting to the treating physician are helpful for early detection and intervention.^[3]

Besides their important role of reporting FBA early, parental awareness regarding signs and symptoms of aspiration is critical in the initiation of treatment. It has been found to reduce the incidence of FBA and minimize the risk of complications related to delayed diagnosis such as pneumonia and bronchiectasis.^[4,5]

Forestalling this kind of injury is substantially more powerful than trying to fix it.^[6] Raising public awareness is one of the most effective ways to prevent FBA.^[7] To achieve this goal, it is important to assess what parents think and how they will react to it. There are published studies that discussed parents' awareness

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toward foreign body aspiration among Saudis and worldwide.^[8-10] However, there are no studies addressing parental beliefs and practices toward FBA specifically in the Al Qassim region, which has a population around 1.4 million. For this reason, we are conducting this study to assess the beliefs and practices of parents in this region to hopefully raise awareness.

Materials and Methods

This is a descriptive cross-sectional study conducted among Saudi parents from different region's of Al Qassim, Saudi Arabia over the period of four months from February 2020 to June 2020. Parents were selected based on their residence and nationality, selecting only Saudi parents living in the Al Qassim region.

The sample size was calculated using the proportion formula: $n = z^2p (1-p) d^2$ with 95% confidence level and 5% margin of error. Where n = sample size, z = 1.96, P = 0.5, and d = 0.05. To guarantee accuracy, the sample size was raised to 400 to prevent loss of data or for the non-reply rate. The final number of recruited parents was 385 after exclusion of incomplete questionnaires.

The questionnaire was translated to Arabic by a native Arabic health professional familiar with the terminology of the area and then translated back to English by an independent translator who has no knowledge of the questionnaire content. It was designed by reviewing questionnaires of similar studies,^[9-12] revised by experts with a research background, and tested on 15 participants.

The questionnaire contained three sections: personal profile, the parental beliefs towards FBA, and their practices toward FBA. After the validation, the questionnaire was sent to the participants through various Social Media platforms (WhatsApp, Twitter, etc.). This study was approved from the Subcommittee of Health Research Ethics, Deanship of Scientific Research, Qassim University. An online consent form written in Arabic was included in the questionnaire that was advised to be completed first.

Evaluation of a parental knowledge toward FBA was determined by eight questions. A correct answer for each question was coded as 1, while incorrect answers were coded with 0. The total knowledge score was calculated by adding the scores for all eight questions. The higher the score, the higher a parental knowledge of FBA. Using the mean score as a cutoff point to determine the knowledge level, parents were classified as having poor (score of 1–5) or good (score of 6–8) knowledge.

Assessment of parental practice toward FBA was also determined by eight questions. The first four questions were Likert Scale types of questions with "always" coded as 1, "often" coded as 2, "sometimes" coded as 3, "rarely" coded as 4, and "never" coded as 5. Negative questions were coded reversely to avoid a bias in the score. The remaining four questions were coded as 1 for a correct answer and a 0 for an incorrect answer. By adding all eight questions, a score ranging from 7–20 was generated, with a higher score suggesting a higher practice toward FBA. We used the mean score as a cutoff point to determine the level of practice. We then classified scores ranging from 7–12 points as poor practice and 13–20 points as good practice toward FBA.

Statistical analysis

Descriptive statistics were presented as counts, proportion (%), and mean and standard deviation whenever applicable. The statistical association between knowledge and practices among the socio-demographic characteristics of parents was conducted using the Mann-Whitney U test, (skewed data). A *P* value of < 0.05 was considered statistically significant. Statistical collinearity was also conducted using the Shapiro Wilk test. All data analyses were analyzed using the Statistical Package for Social Sciences, version 21 (SPSS, Armonk, NY: IBM Corp, USA).

Results

We recruited 385 parents and measured their knowledge and practices toward FBA among children. Their mean age was 35.4 years (range: 19–59 years) with more than half (52.7%) \leq 35 years. There were slightly more women (59.2%) than men (40.8%). Approximately 60% of parents had a college degree or higher and the majority had 1–3 children. Further demographic characteristics are illustrated in [Table 1].

Figure 1 shows the source of information about FBA. The most commonly source of FBA information was obtained from the internet (49.7%), followed by both campaign and doctors (each 17%), while the least information was obtained from television (16.4%).

[Table 2] describes the assessment of knowledge toward FBA. The majority of parents (60.8%) correctly identified that children aged 1–5 years were at the highest risk of FBA. Most (82.1%) agreed that children should not be given peanuts until they reached 4 years old. However, the majority (82.1%) disagreed with the statement that "only items with a smooth surface could be aspirated". On the other hand, a little below a half of them (43.9%) opposed that the absence of choking is an assuring sign that the item is gone and a considerable proportion (74.8%) even more disagreed with the statement "If the foreign body causes no symptoms it is okay to delay removal". Furthermore, 80.3% of parents agreed that talking while chewing may lead to aspiration, while only 18.7% disagreed that x-rays can



Figure 1: Source of information about foreign body aspiration

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Table 1: Socio-demographic characteristics of parents (n=385)			
Study Variables	n (%)		
Age group			
\leq 35 years	203 (52.7%)		
>35 years	182 (47.3%)		
Gender			
Male	157 (40.8%)		
Female	228 (59.2%)		
Educational level			
Secondary or below	104 (27.0%)		
College degree or higher	281 (59.2%)		
Number of children			
1-3	246 (63.9%)		
>3	139 (36.1%)		
Age of the youngest child			
<1 year	129 (33.5%)		
1-5 years	173 (44.9%)		
6-10 years	69 (17.9%)		
>10 years	14 (03.6%)		
Have any of your children aspirated a foreign body?			
No	222 (57.7%)		
Once	82 (21.3%)		
Twice	51 (13.2%)		
More than twice	30 (07.8%)		
Have you heard about foreign body aspiration?			
Yes	159 (41.3%)		
No	226 (58.7%)		

detect all foreign bodies. Additionally, a great proportion of parents (80.8%) believed that both non-organic and organic items could cause aspiration in children. Based on the above questions, the overall mean knowledge score was 4.97 (SD 1.42).

Figure 2 shows the parental rating for the signs and symptoms of FBA as they were asked to scale given symptoms from 1 to 6. Based on the results, parents considered "unable to talk/change in voice" as the top symptoms of FBA (44.7%), followed by vomiting (29.4%), and choking (19.5%). On the other hand, parents considered "increased saliva" as the lowest sign of FBA (40.5%), followed by "difficulty in breathing/noisy breathing" (42.3%) and coughing (10.4%).

[Table 3] describes the assessment of parental practices toward FBA. The proportion of parents that sometimes "buy toys with a small part that could be aspirated", "let their child play without supervision", "keep small items out of children reach", and "letting their child to eat without supervision" were 33.2%, 20.8%, 32.7%, and 29.1%, respectively. Interestingly, the majority of parents (77.1%) would attempt to remove the foreign body inside the child's mouth with their fingers, while nearly all (90.6%) might attempt to slap the child's back or abdominal thrusts if their child was choking and able to talk. However, the proportion of parents who would attempt to do back slaps or abdominal thrusts if their child was choking and not able to talk was 63.6%. Finally, the proportion of parents who would go to the hospital

Table 2: Assessment of parental knowledge toward foreign body aspiration (<i>n</i> =385)			
Statement	n (%)		
At what age children are at the highest risk to			
aspirate foreign bodies?			
<1 year	94 (24.4%)		
1-5 years*	234 (60.8%)		
6-10 years	51 (13.2%)		
>10 years	06 (01.6%)		
Children shouldn't be offered peanuts until they			
are 4 years old			
Disagree	69 (17.9%)		
Agree*	316 (82.1%)		
Only items with a smooth surface can be aspirated			
Disagree *	216 (82.1%)		
Agree	169 (43.9%)		
Absence of choking is an assuring sign that the			
item has gone away			
Disagree*	169 (43.9%)		
Agree	216 (56.1%)		
If the foreign body causes no symptoms it is okay			
to delay removal			
Disagree*	288 (74.8%)		
Agree	97 (25.2%)		
Talking while chewing may lead to aspiration			
Disagree	76 (19.7%)		
Agree *	309 (80.3%)		
X-rays can detect all foreign bodies			
Disagree*	72 (18.7%)		
Agree	313 (81.3%)		
Which of the following items are children at risk			
to aspirate?			
Organic like nuts	23 (06.0%)		
Non-organic like small plastic toys	46 (11.9%)		
Both*	311 (80.8%)		
None	05 (01.3%)		
Total knowledge score (mean±SD)	4.97±1.42		
*Signifies correct answer			

even though the child had no symptoms or if the symptoms subsided shortly after was 52.2%. Based on the above statements, the total mean practice score was 12.4 (SD 2.13).

Figure 3 depicts parental knowledge and practice levels toward FBA. A poor rating for knowledge was found in 63.1% of parents and 36.9% of parents had a good rating. The proportion of parents with poor and good practices was 55.3% and 44.7%, respectively.

When comparing knowledge and practice levels to the socio-demographic characteristics of parents, it was found that being a female (T = -2.950; P = 0.004), a professional (T = -3.900; P < 0.001), having 1–3 children (T = 1.755; P = 0.044), and having heard about FBA (T = 4.736; P < 0.001) resulted in a significantly better knowledge score compared to its counterparts. Also, having no prior incidence of FBA among their children (T = -5.239; P < 0.001) and having heard about FBA (T = 2.788; P = 0.012) resulted in significantly better practice scores compared to the opposite groups [Table 4].

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Figure 2: Parental ratings for signs and symptoms of foreign body aspiration (Scale 1-6)



Figure 3: Level of knowledge and practices toward foreign body aspiration

Discussion

This study aimed to determine the knowledge and practices of parents toward FBA among children. This study is important because FBA is considered the leading cause of morbidity and mortality among young children.[13,14] Hence, assessing and increasing the awareness of parents regarding the subject plays an important role in decreasing the rate of mortality. In this study, we measured the knowledge of parents and our results were consistent with the findings of Abu-Hasheesh and El Bahnasawy.^[15] They found that 59% of mothers had poor knowledge, 28% were average, and only 13% had good knowledge regarding FBA. On the other hand, AlShakhs et al., [16] reported conflicting findings. Their reports indicated that the awareness toward aerodigestive pediatric foreign bodies was high (60.3%) however, only 36.2% reported to have awareness regarding its management which was not consistent with our reports. However, their study aimed to assess the awareness of parents regarding aero digestive pediatric foreign bodies. In our assessment of specific knowledge, the majority of parents (82.1%) agreed that peanuts should not be given to children under 4 years old and many of them concurred that organic (i.e. nuts) and non-organic (i.e. small plastic toys) items might cause aspiration among young children. These assessments have been validated by several studies.^[1,2,9,11] Although, previous reports considered nuts and plastic toys as aspirated foreign bodies, Alqudehy and Al-Qudaihi documented that one third of parents did not perceive a peanut or a small toy as a risk of FBA, which is contrary to our report.^[10] On the other hand,

Abu-Hasheesh and El Bahnasawy noted that batteries are the most dangerous item a child can swallow requiring immediate medical care.^[15]

The quality of knowledge in this study can be related to some basic characteristics of the parents. For example, we observed that being a female, a professional, having less children, and having heard about FBA were significantly associated with having a good level of knowledge. These findings seem to contradict Higuchi *et al.* which reported that being a mother with a first child and being a mother with a child younger than a year were independent risk factors for lack of knowledge about FBA^[9].

In regard to the assessment of parental practice toward FBA, the overall practice mean score was 12.4 (SD 2.13) with poor and good practices found among 55.3% and 44.7% of parents, respectively. Poor practices with regards to the management of FBA had also been indicated by Abu-Hasheesh and El Bahnasawy.^[15] Based on their accounts, 65% of mothers were reported to have poor practices, while 23% and 17% had average or good practices, respectively, toward the management of FBA. Factors that had direct influences on the practices of parents in this study included: having heard about FBA and having no incidence of FBA among children. To the best of our knowledge, this is the first study in Saudi Arabia that measured the impact of a parent's basic characteristics in relation to their practices toward FBA.

Parent awareness to signs and symptoms of FBA is important in the management of this injury. Interestingly, in this study, parents rated "unable to talk or change in voice" as the number one symptoms of FBA, followed by vomiting and choking. Various papers have reported a cough as the most common symptom of FBA.^[1,11,15] However, there are also reports that some mothers did not know that sudden choking and coughing were symptoms of FBA, which is not consistent with other previous reports.^[9,10]

The sources relaying information about FBA also plays a significant role in parental awareness. There are inconsistencies in reports with regards to sources of information among the

Table 3: Assessment of parental practices toward foreign body aspiration (n=385)				
Statement	n (%)			
Do you buy toys with small parts that can be aspirated?				
Always	29 (07.5%)			
Often	77 (20.0%)			
Sometimes	128 (33.2%)			
Rarely	100 (26.0%)			
Never	51 (13.2%)			
Do let your child play without supervision?				
Always	183 (47.5%)			
Often	98 (25.5%)			
Sometimes	80 (20.8%)			
Rarely	18 (04.7%)			
Never	06 (01.6%)			
Do you keep small items out of the reach of children? [†]				
Always	12 (03.1%)			
Often	54 (14.0%)			
Sometimes	126 (32.7%)			
Rarely	108 (28.1%)			
Never	85 (22.1%)			
Do let your child eat without supervision?				
Always	47 (12.2%)			
Often	112 (29.1%)			
Sometimes	112 (29.1%)			
Rarely	80 (20.8%)			
Never	34 (08.8%)			
Would you attempt to remove the foreign body inside the child's mouth with your fingers?				
Yes	297 (77.1%)			
No*	88 (22.9%)			
Would you attempt do back slaps or abdominal thrusts if the child is choking and able to talk?				
Yes*	349 (90.6%)			
No	36 (09.4%)			
Would you attempt to do back slaps or abdominal thrust if the child is choking and not able to talk?				
Yes	245 (63.6%)			
No*	140 (36.4%)			
Would you go to hospital if there are no symptoms or				
if the symptoms subsided shortly after?				
Yes	201 (52.2%)			
No*	184 (47.8%)			
Total practice score (mean±SD)	12.4±2.13			

[†]Indicates reverse answer, *Signifies correct answer

subjects. For instance, in a paper by Singh *et al.*,^[11] the most common sources of FBA information were relatives, friends, and visual media. Whereas Alshehri *et al.*,^[17] stated the doctor was the best source of FBA information reported by high school students. In our paper, the most commonly cited sources of FBA information were the internet, followed by doctors and awareness campaigns, which did not coincide with previous reports. Finally, because education assumes a critical function in harm avoidance, counseling on healthy practices ought to be remembered for all visits to pediatricians to make parents aware of the dangers associated with consuming a few nutrients and allow them to choose a secure environment for their kids. Sensitizing the

community toward the require for awareness about FBA through instructive campaigns including stricter mass media measures can radically decrease the mortality associated with FBA. Family and clinic pediatricians and primary care physicians must too be committed during consultancy activities to raising families' awareness about the risk of foreign body aspiration and to guide them in making the most appropriate actions and practices to safe their children's health.^[18]

This study has limitations that might restrict generalization of the results. The sample was collected from a single region in Saudi Arabia, a fact that my limit generalization of the results within the country or the Gulf region. Furthermore the sample may not have represent the whole population and hence sampling bias was a possibility as can be seen that females responded more than males. Though mothers usually take care of children in our setting, a balanced sample or a randomized sample may yield better results and hence correct decisions on clinical practice.

Conclusion

Parental knowledge and practices toward FBA are insufficient. Being a female, more educated, having less children, and having heard about FBA directly influence parental knowledge, whereas having no incidence of FBA among their children and being aware about FBA had a better impact on parental practices. The need to increase awareness among parents with regard to FBA was clear in this study. As the role of preventive medicine is getting more and more important around the world nowadays and as family physicians and primary care givers are playing a central role in education and raising awareness about different potentially preventable health issues they must educate parents and notify them about the risk of FBA in children, especially those under 5 years of age. Parents should also be discouraged on giving their infants organic and non-organic items, such as nuts and small plastic toys as the treatment of infants is more difficult than older children because of their small airways.^[19] Also, further guidance for those kids under 5 years of age is needed among parents.

Key points

Children's prevention of FBA must include public education regarding signs, symptoms and management of aero digestive pediatric foreign bodies. Caregivers must be confident with the best ways of supervising children in a safe environment.

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Key messages

This study is important because FBA is considered the leading cause of morbidity and mortality among young children. Hence, assessing and increasing the awareness of parents regarding the subject plays an important role in decreasing the rate of mortality.

Table 4: Statistical association between knowledge and practices and socio-demographic characteristics of parents $(n=385)$						
Factor	Knowledge Score (8) Mean±SD	t Test; P [§]	Practices Score (20) Mean±SD	t Test; P§		
Age group						
\leq 35 years	5.06±1.43	1.245;	12.4±2.08	0.877;		
>35 years	4.88±1.39	0.136	12.3±2.18	0.331		
Gender						
Male	4.72±1.4 0	-2.950;	12.3±1.94	-0.120;		
Female	5.15±1.40	0.004 **	12.4±2.26	0.700		
Educational level						
Secondary or below	4.52±1.39	-3.900;	12.3±2.05	-0.417;		
College degree or higher	5.14±1.39	< 0.001 **	12.4±2.16	0.688		
Number of children						
1-3	5.07±1.48	1.755;	12.4±2.05	1.052;		
>3	4.81±1.29	0.044 **	12.2±2.25	0.236		
Had children who aspirated a foreign body						
Yes	5.05 ± 1.36	0.890;	11.7±2.01	-5.239;		
No	4.92±1.46	0.476	12.8±2.09	<0.001 **		
Have heard about foreign body aspiration						
Yes	5.37±1.37	4.736;	12.7±2.14	2.788;		
No	4.69±1.39	< 0.001 **	12.1±2.09	0.012 **		

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[§]P has been calculated using Mann-Whitney U test. **Significant at P<0.05

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Conflicts of interest

There are no conflicts of interest.

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