

PARENTAL KNOWLEDGE AND PRACTICE TOWARDS FOREIGN BODY ASPIRATION IN CHILDREN

Lee Siew Pien¹
Nurul Hidayah Zukipli²
Norfadzilah Ahmad¹
Jitlada Piriysart³

¹Kulliyah of Nursing, International Islamic Universiti Malaysia (IIUM), Malaysia,
(E-mail: siewpien@iium.edu.my; fadzilah_hmd@iium.edu.my)

²Subang Jaya Medical Centre, Malaysia,
(Email: nhidayahzulkipli06@gmail.com)

³Faculty of Nursing, Prince of Songkhla University (PSU), Thailand,
(E-mail: jitlada.p@psu.ac.th)

*Correspondence: Email: siewpien@iium.edu.my

Article history

Received date : 24-1-2024
Revised date : 25-1-2024
Accepted date : 8-3-2024
Published date : 15-4-2024

To cite this document:

Lee, S. P., Zukipli, N. H., Ahmad, N., & Piriysart, J. (2024). Parental knowledge and practice towards foreign body aspiration in children. *Journal of Islamic, Social, Economics and Development (JISED)*, 9 (61), 477 – 487.

Abstract: *Foreign body aspiration is a frequently identified leading cause of mortality and respiratory crises in children aged 5 and below. This study aimed to assess parental awareness and behaviour concerning foreign body aspiration in children. Employing a random sampling method, a cross-sectional study was conducted among 160 parents in Pahang, Malaysia. Questionnaires were distributed via various social media platforms, and statistical analyses, including the Chi-square test for frequency comparison was applied. The findings revealed that 50% of participants exhibited proficient knowledge, while approximately 50.6% demonstrated inadequate practices regarding foreign body aspiration in young children. Additionally, a notable correlation was identified between gender and being a first-time parent in relation to knowledge and practices associated with foreign body aspiration in children. This study emphasizes the imperative role of healthcare institutions in organizing targeted educational workshops, specifically tailored for mothers and first-time parents, to elevate awareness and readiness for foreign body aspiration in children, thus effectively mitigating potential risks.*

Keywords: *Foreign body aspiration, knowledge, practice, parents, children*

Introduction

Foreign Body Aspiration (FBA) stands as a prominent concern in paediatric medicine, carrying significant risks of acute and chronic health complications (Lluna et al., 2017). The gravity of this issue is particularly pronounced in children aged 5 years and below, with those under three years facing heightened vulnerability (Almutairi & Alharbi, 2021; Brkic et al., 2018). Alarmingly, FBA has been associated with a 7% mortality rate in children equal to or less than three years of age (Laswad et al., 2023). The exposure of young children to various mortality factors is well-established, with FBA emerging as a prominent contributor to fatalities and respiratory emergencies in this age group (Almutairi & Alharbi, 2021; Brkic et al., 2018; Lluna et al., 2017). Urgent intervention in managing FBA during childhood is imperative, as delayed action may result in severe consequences, including irreversible lung injuries (Almutairi & Alharbi, 2021). In this context, comprehending and addressing the implications of FBA in paediatric care are essential for effective management and prevention of adverse outcomes.

Noteworthy is the shift in young children spending more time at home than in kindergarten or playschool. Inadequate supervision by adults, coupled with children's inclination to explore through oral means, increases the risk of accessing small objects, leading to aspiration (Nasara et al., 2020; Nasir & Subha, 2021). FBA incidents can escalate due to various factors, including parental unawareness of managing such situations in young children and adherence to traditional taboos in injury treatment (Gendeh et al., 2019; Laswad et al., 2023). The lack of awareness regarding signs and symptoms of foreign body aspiration in young children contributes to delayed interventions, potentially resulting in fatal outcomes (Alshehri et al., 2019). Timely reporting and parental awareness of FBA signs and symptoms hold the potential to reduce occurrences and mitigate complications like pneumonia and bronchiectasis associated with delayed diagnoses (Almutairi & Alharbi, 2021; Mahmud, Mohammed & Aluko, 2017).

Existing research strongly advocates for enhancing mothers' knowledge and attitudes toward child safety, significantly contributing to injury prevention (Almutairi & Alharbi, 2021; Brkic et al., 2018; Laswad et al., 2023; Mahmud, Mohammed & Aluko, 2017; Nasir & Subha, 2021). Parents lacking adequate knowledge often take inappropriate actions, exacerbating the situation and causing respiratory distress and death in young children (Brkic et al., 2018; Laswad et al., 2023; Parameswaran & Biswal, 2018). Conversely, well-informed parents equipped with knowledge on foreign body aspiration and its proper management can ensure the safety of their children (Laswad et al., 2023). Hence, timely action has the potential to prevent serious complications and reduce mortality in this vulnerable group.

Emphasizing prevention over treatment is pivotal in averting FBA-related mortality and morbidity (Adjeso et al., 2017; Al-Qudehy et al., 2015; AlShakhs et al., 2018; Montana et al., 2020). Increasing public awareness of the risks associated with FBA in children is crucial, especially considering the scarcity of literature addressing knowledge about FBA in Malaysia. Therefore, this study aims to identify the knowledge and practices of parents regarding FBA, establishing a connection between their socio-demographic data and their knowledge and practices related to FBA. Assessing parents' knowledge and practices will provide valuable insights to formulate effective strategies and plans to address the educational needs of the community concerning foreign body aspiration in young children.

Material and Method

This cross-sectional study delved into the knowledge and practices of parents in Pahang concerning foreign body aspiration in young children. The study utilized a close-ended questionnaire adapted from Almutairi and Alharbi, 2023, encompassing three sections: socio-demographic backgrounds, parental knowledge, and practices related to foreign body aspiration.

Parental knowledge was evaluated through eight questions, each correct answer scoring one (1) and incorrect responses assigned zero (0). The cumulative score determined overall knowledge levels, with scores between 1-4 classified as poor and 5-8 indicative of good knowledge. Meanwhile, parental practices were assessed through eight questions, including four Likert Scale inquiries. Scores were assigned based on response frequency, with higher scores indicating more proactive practices. Reverse coding was applied to four negatively framed questions for unbiased scoring. The translated questionnaire, authorized by the authors, underwent a pilot test with 30 participants, yielding a reliable Cronbach alpha value of 0.89.

This study focused on parents with a child aged 5 years or below within the Pahang population, excluding those with sick or special needs children. Expecting a sample size of 169, we adopted a proactive strategy to accommodate potential non-responses or incomplete questionnaires, resulting in the dissemination of 186 survey forms in public places and online, with participants being briefed about the study's objectives and subsequently providing informed consent. Out of the distributed questionnaires, 160 were completed, resulting in a commendable response rate of 86%. This robust participation underscores the significance and relevance of the study within the targeted population, ensuring a substantial dataset for insightful analysis and conclusions.

Approval was obtained from the Kulliyyah of Nursing Postgraduate Research Committee (KPNGRC) and IIUM Research Committee (IREC)-ID: IREC 2023-KON/NURF. IBM Statistical Package Social Science (SPSS) version 27.0 was employed for data analysis. Descriptive statistics and the Chi-Square test were used to analyse and manage the data, obtaining frequency and percentage data for demographic characteristics. The association between independent and dependent variables was tested using the Chi-square test, with a significance level set at $p < 0.05$. The study aims to provide valuable insights into parental knowledge and practices regarding foreign body aspiration, contributing to the development of effective educational strategies within the community.

Findings

This study comprised 160 parents (Table 1), with a predominant female representation of 68.1%, while 31.9% were male. Participants' ages ranged from 19 to 15 years, with a mean age of 32.47 (± 5.828) years. Educational backgrounds varied, with 13.1% holding SPM, 44.4% having a Diploma/Foundation, 39.4% possessing a Bachelor's Degree, and 3.1% holding a Master's/PhD. The majority belonged to class B40 (B1) (26.3%) and B40 (B2) (48.8%), with others from class M40 (23.8%) and T20 (1.3%). Marital status revealed 97.5% were married, 0.6% were divorced, about 67.5% had one child aged 5 or below, 28.1% had two children, and 4.4% had more than two children, making 41.3% first-time parents. Analysis of the data indicated that 30.6% of parents had experienced their child aspirating a foreign body. Regarding participation in talks/seminars/workshops on foreign body aspiration, 53.8% ($n=86$) attended, while 46.3% ($n=74$) did not partake in any related courses. These demographics provide a comprehensive overview of the study participants, showcasing a diverse sample that enriches the findings on parental experiences and awareness of foreign body aspiration in children.

Table 1: Socio-demographic background of parents (n=160)

Characteristics		Frequency (n)	Percentage (%)
Age	19-34	75	46.9
	35-44	80	50
	45 and above	5	3.1
Mean \pm SD = 32.47 \pm 5.828			
Gender	Male	51	31.9
	Female	109	68.1
Educational level	SPM	21	13.1
	Diploma/Foundation	71	44.4
	Bachelor degree	63	39.4
	Master degree/PhD	5	3.1
Household income	Less than RM2500	42	26.3
	RM2500-RM4849	78	48.8
	RM4850-RM10960	38	23.8
	RM10960 or more	2	1.3
Marital status	Married	156	97.5
	Divorced	1	0.6
	Single	3	1.9
Number of children aged 5 years and below	1 child	108	67.5
	2 children	45	28.1
	3 children	7	4.4
First-time parent	Yes		
	No	66	41.3
		94	58.7
Experience of children aspiring foreign body	Yes	49	30.6
	No	111	69.4
Attended any courses on FBA	Yes	86	53.8
	No	74	46.2

Figure 1 illustrates the extent of parental knowledge and practice regarding foreign body aspiration in young children. The results indicate an even distribution, with 80 participants (50%) possessing good knowledge, while an equal number demonstrated poor knowledge. The overall mean knowledge score stands at 1.50 (\pm 0.502), shedding light on the balanced distribution of proficiency levels among the study participants. On the other hand, there was a slightly higher percentage of participants exhibiting poor practice (50.6%), as opposed to 49.4% demonstrating good practice. The overall mean practice score is recorded at 1.49 (\pm 0.502), underscoring the nuanced distribution of proficiency levels in parental practices within the study.

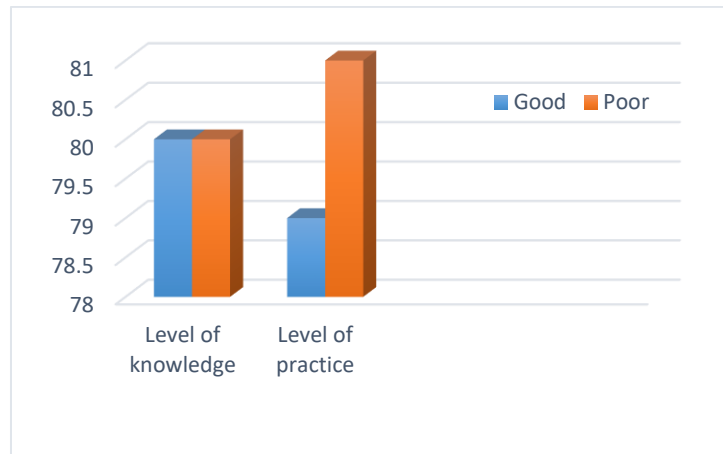


Figure 1: The level of knowledge and practice of parents towards foreign body aspiration in young

As depicted in Table 2, factors such as age, education level, household income, marital status, the number of children aged 5 years and below, experience of children aspiring a foreign body, and attended any courses on FBA exhibit no significant association with the level of knowledge, as evidenced by p-values > 0.05. However, gender and being a first-time parent display a statistically significant association, with p-values < 0.05, specifically at 0.027 and 0.025, respectively. These findings highlight the noteworthy influence of gender and parental experience on the level of knowledge regarding foreign body aspiration among the study participants.

Table 2: The association between the socio-demographic background and the level of knowledge of parents towards foreign body aspiration among young children

Variables	Frequency (n)	Knowledge regarding foreign body aspiration in young children		X ² Statistics (df)	P Values
		Poor n (%)	Good n (%)		
Age					
19-34	75	33 (20.6)	42 (26.3)	29.914 (27)	0.318
35-44	80	46 (28.8)	38 (23.7)		
45 and above	5	1 (0.6%)	0 (0%)		
Gender					
Male	80	32 (40%)	19 (60%)	4.864 (1)	0.027*
Female	80	48 (60%)	61 (40%)		
Education level					
SPM	21	11 (52.4%)	10 (47.6%)	2.935 (3)	0.402
Diploma	71	39 (51.1%)	32 (48.9%)		
Bachelor	63	29 (46%)	34 (54%)		
Master/PhD	5	1 (20%)	4 (80%)		
Household income					
< RM2500	42	22 (52.4%)	20 (47.6%)	0.406 (3)	0.939
RM2500-RM4849	78	37 (47.4%)	41 (52.6%)		
RM4850-RM10959	38	20 (52.6%)	18 (47.4%)		
≥ RM10960	2	1 (50%)	1 (50%)		

Marital status						
Married	156	79 (50.6%)	77 (49.4%)	1.359	0.507	
Divorced	1	0 (0%)	1 (100%)	(2)		
Single	3	1 (33.3%)	2 (66.7%)			
Number of children aged 5 years and below:						
1	108	52 (48.1%)	56 (51.9%)	0.491	0.782	
2	45	24 (53.3%)	21 (46.7%)	(2)		
3	7	4(57.1%)	3 (42.9%)			
First-time parent?						
Yes	66	26 (39.4%)	40 (60.6%)	5.055	0.025*	
No	94	54 (57.4%)	40 (42.6%)	(1)		
Experience of children aspiring foreign body						
Yes	49	20 (40.8%)	29 (59.2%)	2.383	0.123	
No	111	60 (54.1%)	51 (45.9%)	(1)		
Attended any courses on FBA						
Yes	86	47 (54.7%)	39 (45.3%)	1.609	0.205	
No	74	33 (44.6%)	41 (55.4%)	(1)		

*p-value < 0.05

As indicated in Table 3, factors such as age, education level, household income, marital status, the number of children aged 5 years and below, experience of children aspiring a foreign body, and attended any courses on FBA demonstrate no significant association with the level of practice, as reflected by p-values > 0.05. However, gender and being a first-time parent exhibit a statistically significant association, with p-values < 0.05, specifically recorded at 0.048 and 0.007, respectively. These results emphasize the notable impact of gender and parental experience on the level of practice concerning foreign body aspiration among the study participants.

Table 3: The association between the socio-demographic background and the level of practice of parents towards foreign body aspiration among young children

Variables	Frequency (n)	Practice of parents in Kuantan, Pahang regarding foreign body aspiration in young children		X ² Statistics (df)	P Values
		Poor n (%)	Good n (%)		
Age of parents:					
19-34	75	29 (18.1)	36 (22.5)	27.89 (27)	0.417
35-44	80	42 (26.2)	38 (23.8)		
45 and above	5	10 (6.3)	5 (3.1)		
Gender:					
Male	51	20 (39.2%)	31 (60.8%)	3.899 (1)	0.048*
Female	109	61 (56%)	48 (44%)		
Education level:					
SPM	21	11 (52.4%)	10 (47.6%)	3.742 (3)	0.291
Diploma	71	31 (43.7%)	40 (56.3%)		
Bachelor	63	35 (55.6%)	28 (44.4%)		
Master/PhD	5	4 (80%)	1 (20%)		
Household income:					
< RM2500	42	21 (50%)	21 (50%)	2.132 (3)	0.545
RM2500-RM4849	78	38 (48.7%)	40 (51.3%)		
RM4850-RM10959	38	20 (52.6%)	18 (47.4%)		
≥ RM10960	2	2 (100%)	0 (0%)		
Marital status:					
Married	156	78 (50%)	78 (50%)	1.309 (2)	0.520
Divorced	1	1 (100%)	0 (0%)		
Single	3	2 (66.7%)	1 (33.3%)		
Number of children aged 5 years and below:					
1	108	48 (44.4%)	60 (55.6%)	5.208 (2)	0.074
2	45	29 (64.4%)	16 (35.6%)		
3	7	4 (57.1%)	3 (42.9%)		
First-time parent?					
Yes	66	25 (37.9%)	41 (62.1%)	7.302 (1)	0.007*
No	94	56 (59.6%)	38 (40.4%)		
Experience of children aspirating foreign body:					
Yes	49	25 (51%)	24 (49%)	0.004	0.947
No	111	56 (50.5%)	55 (49.5%)		
Attendance to any courses on FBA:					
Yes	86	39 (45.3%)	47 (54.7%)	2.071 (1)	0.150
No	74	42 (56.8%)	32 (43.2%)		

*p-value < 0.05

Table 4 demonstrates no significant association between the level of knowledge and the level of practice with the p-value > 0.05. Notably, 81 out of 160 participants exhibit poor knowledge, with 54.3% of them, totalling 43 participants, also displaying inadequate practice concerning foreign body aspiration in young children. These findings emphasize the importance of addressing and enhancing both knowledge and practices concurrently for effective management of foreign body aspiration risks among the study participants.

Table 4: The association between knowledge and practice of parents towards foreign body aspiration among young children

Variables	Frequency n (%)	Practice		X ² Statistics (df)	P Values
		Poor	Good		
Poor	80 (50%)	43 (53.8)	37 (46.2)	0.625 (1)	0.429
Good	80 (50%)	38 (47.5)	42 (52.5)		

Discussion

The study's findings reveal compelling insights into the demographic composition of the participants, providing a nuanced understanding of the parental landscape. Notably, a substantial proportion, constituting 38.8%, falls within the age range of 26 to 31 years. Gender distribution highlights a predominant female representation, with 68.1% of the participants being female, compared to 31.9% male participants. Upon careful data analysis, it becomes evident that a significant portion of the participants holds diplomas or foundation qualifications and belongs to B40 households with a household income ranging between RM2500-RM4849. The majority of participants are married and have one child aged 5 years or below. Intriguingly, a noteworthy observation is that while most participants are not first-time parents, they lack experience in dealing with a child aspirating a foreign body. Furthermore, it is noteworthy that 53.8% of the participants have actively engaged in activities aimed at enhancing their awareness, as they claim to have attended talks, seminars, or workshops on foreign body aspiration. These findings collectively emphasize the diverse profile of the study participants, painting a comprehensive picture of their backgrounds, experiences, and proactive efforts in seeking information on addressing foreign body aspiration in young children.

An equal distribution is observed among parents, with 50% exhibiting good knowledge and another 50% displaying poor knowledge, totalling 80 participants in each category. This study's outcomes find resonance with prior studies conducted in Saudi Arabia and Nigeria suggesting significantly low awareness levels about foreign body aspiration within these study populations (Almutairi & Alharbi, 2023; Al-Qudehy et al., 2015; Laswad et al., 2023; AlShakhs et al., 2018; Mahmud et al., 2017). Particularly noteworthy is the significant knowledge gap among mothers, as highlighted in previous studies, with a notable deficiency in understanding among mothers with children younger than 12 months and those with only one child (Almutairi & Alharbi, 2023; Laswad et al., 2023). This aligns with our findings, emphasizing the persistent need for targeted educational interventions to bridge the knowledge gap and enhance awareness among parents, especially mothers, regarding the risks associated with foreign body aspiration in young children.

In terms of practice, it is noteworthy that over half of the participants (50.6%) exhibit poor practice concerning foreign body aspiration in young children, while 49.4% demonstrate good practice. These findings align with a previous study indicating that 55.3% of participants

exhibited poor practice in dealing with FBA in young children (Almutairi & Alharbi, 2023; Laswad et al., 2023; Mahmud et al., 2017). This consistent pattern underscores the prevalence of suboptimal practices among parents, potentially leading to inappropriate actions that could exacerbate the situation by causing the aspirated object to lodge deeper into the respiratory system, thereby increasing the risk of respiratory distress or even fatality (AlShakhs et al., 2018). This acceptance, as reported in the study, contributes to poor practices in addressing foreign body aspiration in young children (Al-Qudehy et al., 2015; Laswad et al., 2023). These collective findings emphasize the critical need for targeted interventions and education aimed at improving parental practices, reducing the risk of adverse outcomes associated with foreign body aspiration incidents in young children.

The analysis discloses a compelling link between two specific socio-demographic characteristics of parents and their proficiency in understanding and addressing foreign body aspiration in young children. Notably, gender and being a first-time parent exhibit a statistically significant association, with p -value < 0.05 . These findings highlight the substantial influence of gender and parental experience on participants' knowledge and practices related to foreign body aspiration. In contrast, earlier research, including studies by Almutairi & Alharbi (2023) and Laswad et al. (2023), identified various socio-demographic factors, such as maternal education background, mothers' occupation, number of children, family type, and monthly household income, as impacting foreign body aspiration incidents in young children. While previous studies demonstrated a positive correlation between higher parental education levels and better understanding of home injuries, as well as elevated prevention measure scores with increased education and maternal occupation, our study presents a deviation from these findings. Specifically, our results reveal no significant association between socio-demographic factors (age, education level, household income, marital status, number of children aged 5 years and below, experience of a child aspirating a foreign body, and attendance at related talks) and the level of knowledge and practice in preventing foreign body aspiration incidents. These nuanced insights stress the factors influencing parental knowledge and the importance of tailored interventions and educational programs. Particularly, targeted efforts should be directed towards male parents and those who are not first-time parents, aiming to enhance their practices in preventing and addressing incidents of foreign body aspiration.

The study's findings also suggests that the knowledge possessed by parents does not exert a discernible influence on their practices concerning FBA in young children. Interestingly, it is noteworthy to mention that this finding lacks direct support from existing literature, as there is a dearth of recent studies that have specifically tested the association between knowledge and practice regarding FBA among young children. Previous studies have generally reported poor levels of both knowledge and practice among parents concerning FBA in young children (Alshehri et al., 2018; Mahmud et al., 2017; Laswad et al., 2023). This emphasizes the uniqueness of the present study in explicitly investigating the potential link between parental knowledge and their corresponding practices. Despite the absence of direct precedence, these novel findings emphasize the complexity of factors influencing parental behaviours in the context of FBA, warranting further research to explore the intricate relationship between parental knowledge and the practical implementation of preventive measures.

Conclusion

This study provides valuable insights into the knowledge and practices of parents regarding FBA among young children. The findings emphasize the importance of considering various socio-demographic factors, such as gender and being a first-time parent, in understanding and addressing the challenges associated with FBA. Notably, the study reveals a significant association between certain demographic characteristics and both knowledge and practice levels among parents. While the majority of participants demonstrated suboptimal knowledge and practices, gender and parental experience emerged as significant factors influencing these outcomes. The father and non-first-time parents exhibited lower levels of both knowledge and practice, indicating potential areas for targeted intervention and educational initiatives. The absence of a significant association between parental knowledge and practice, while not aligned with previous studies, emphasizes the need for tailored interventions that go beyond mere knowledge dissemination. Future research should explore the nuanced dynamics influencing parental practices in greater detail. Ultimately, these findings contribute to the growing body of literature on FBA, highlighting the necessity for targeted educational programs and interventions tailored to the unique needs of different demographic groups. Improving parental awareness and practices is crucial for mitigating the risks associated with FBA in young children, ultimately fostering a safer environment for childhood development.

References

- Adjeso, T., Damah, M. C., Murphy, J. P., & Anyomih, T. T. K. (2017). Foreign body aspiration in northern Ghana: a review of pediatric patients. *International Journal of Otolaryngology*, 2017. <https://doi.org/10.1155/2017/1478795>
- Almutairi, A. T., & Alharbi, F. S. (2021). Parental knowledge and practices toward foreign body aspiration in children in the Al Qassim region of Saudi Arabia. *Journal of Family Medicine and Primary Care*, 10(1), 199-204. https://doi.org/10.4103%2Fjfmprc.jfmprc_1500_20
- AlShakhs, F. A., AlYahya, K. A., AlSaeed, A. S., & AlSultan, M. S. (2018). Parental awareness regarding aerodigestive pediatric foreign bodies. Eastern province, Saudi Arabia. *The Egyptian Journal of Hospital Medicine*, 70(9), 1511-1517. <http://doi:10.12816/0044677>
- Alshehri, K. A., Alharbi, A. A., Yaghmoor, B. E., Salman, A. K., Alaydarous, S. A., Abdalwassie, L. K., ... & Marzouki, H. Z. (2019). Awareness of the first aid management of foreign body aspiration among students: A cross-sectional study. *Journal of Education and Health Promotion*, 8, 1-6. https://doi.org/10.4103%2Fjehp.jehp_306_19
- Al-Qudehy, Z., Al-Sheif, H., & Al-Qudaihi, G. (2015). Parental knowledge of foreign body aspiration: A comparative study between Saudis and other nations. *J Otolaryngol ENT Res*, 2(1), 00008. <http://doi.org/10.0.60.46/joentr.2015.02.00008>
- Brkic, F., Umihanic, S., Altumbabic, H., Ramas, A., Salkic, A., Umihanic, S., ... & Zulcic, S. (2018). Death as a consequence of foreign body aspiration in children. *Medical Archives*, 72(3), 220. <https://doi.org/10.5455%2Fmedarh.2018.72.220-223>
- Gendeh, B. S., Gendeh, H. S., Purnima, S., Comoretto, R. I., Gregori, D., & Gulati, A. (2019). Inhaled foreign body impaction: a review of literature in Malaysian children. *The Indian Journal of Pediatrics*, 86(1), 20-24. <https://doi.org/10.1007/s12098-018-2824-8>
- Laswad, B. M. B., Alsulaimani, H. M., Alomairi, M. M., Alsulami, R. R., Alobaidi, S. F., Aljabri, H., ... & Ageel, M. (2023). Parental knowledge and practices related to foreign body aspiration in children in Makkah, Saudi Arabia. *Cureus*, 15(2). <https://doi.org/10.7759/cureus.34816>

- Lluna, J., Olabarri, M., Domènech, A., Rubio, B., Yagüe, F., Benítez, M. T., ... & Mintegi, S. (2017). Recommendations for the prevention of foreign body aspiration. *Anales de Pediatría* (English Edition), 86(1), 50-e1. <https://doi.org/10.1016/j.anpede.2016.04.003>
- Mahmud, A., Mohammed, Y., & Aluko, A. A. A. (2017). Knowledge of foreign-body aspiration in children among caregivers in Kano Nigeria. *African Journal of Trauma*, 6(2), 42. https://doi.org/10.4103/ajt.ajt_11_18
- Montana, A., Salerno, M., Feola, A., Asmundo, A., Di Nunno, N., Casella, F., ... & Di Mizio, G. (2020). Risk management and recommendations for the prevention of fatal foreign body aspiration: Four cases aged 1.5 to 3 years and minireview of the literature. *International journal of environmental research and public health*, 17(13), 4700. <https://www.mdpi.com/1660-4601/17/13/4700#>
- Na'ara, S., Vainer, I., Amit, M., & Gordin, A. (2020). Foreign body aspiration in infants and older children: a comparative study. *Ear, Nose & Throat Journal*, 99(1), 47-51.
- Nasir, Z. M., & Subha, S. T. (2021). A five-year review on pediatric foreign body aspiration. *International archives of otorhinolaryngology*, 25, 193-199. <https://doi.org/10.1177/0145561319839900>
- Parameswaran, N., Das, S., & Biswal, N. (2018). Respiratory morbidity following foreign body aspiration among South Indian children: A descriptive study. *Cureus*, 10(11). <https://doi.org/10.7759/cureus.3629>
- Wu, X., Wu, L., Chen, Z., & Zhou, Y. (2018). Fatal choking in infants and children treated in a pediatric intensive care unit: A 7-year experience. *International journal of pediatric otorhinolaryngology*, 110, 67-69. <https://doi.org/10.1016/j.ijporl.2018.04.026>