



Evaluation of Awareness of Asthma Disease and Its Management among Primary School Teachers from Hail Province, Kingdom of Saudi Arabia

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ABSTRACT

Background: Asthma is one of the most common chronic respiratory diseases observed in young children. It is approximately estimated that 14% of children all over the world have had asthmatic symptoms, as per the findings of the International Study of Asthma and Allergies in Childhood (ISAAC). The school environment can be considered one of the significant sources of exposure to asthma-triggering allergens. Children in their childhood spend almost one-third of their waking hours in school and is considered a second home for school-going children. **Methodology:** Our present study was a cross-sectional descriptive-analytical study to evaluate the awareness of asthma disease and its management among teachers from primary schools in Hail Province, Kingdom of Saudi Arabia, in the academic year 2022-2023. The study group consisted of 150 schoolteachers who were willing to participate in the study. The study included male and female primary teachers from government and private schools in Hail Province, Saudi Arabia. **Results:** Our present study highlighted that almost 59% of teachers had significant adequate knowledge of asthma disease as they could correctly answer $\geq 75\%$ of

the knowledge questions. The level of asthma disease knowledge in teachers was not significantly associated with years of teaching experience. Many of the teachers were at a high level of awareness related to symptoms of Asthma, triggering and treatment. **Conclusion:** This current study observed that more than 59% of the teachers who voluntarily participated in our study had suboptimal knowledge of asthma disease. There is a need for strategies to improve teachers' understanding of asthma disease. This will be crucial for improved childhood asthma management in school-going children in Hail Province, Saudi Arabia.

Keywords: Asthma, Awareness, Management, Primary School Teacher

Introduction: Asthma is a persistent inflammatory disease of the respiratory tract with aggravating signs and symptoms of difficulty breathing, wheezing, chest tightness and chronic cough. These symptoms are usually on and off, depending on the exposure to the triggering factors (WHO 2017, Memish ZA et al. 2014). According to the Global Burden of Diseases (GBD 2010) report, Asthma is among the highest top 30 burden diseases (GINA.2022) According to WHO, it was estimated that approximately 235 million people worldwide have Asthma.

It is approximately estimated that 14% of children all over the world have had asthmatic symptoms, as per the findings of the International Study of Asthma and Allergies in Childhood (ISAAC) among the population of the Kingdom of Saudi Arabia, Asthma ranks 26th in deaths and 19th in disability-adjusted life years (Moradi-Lakeh M et al. 2015). AlFaryh AR et al. reported an increase in asthma prevalence in children from 8% to 23% over nine years in the Kingdom of Saudi Arabia. The eastern province of the Kingdom of Saudi Arabia had the highest rate of occurrence of symptomatic asthmatic attack, which was estimated at 33.7%, compared to other regions, such as the western region, 14.1% and the central region, 17.7%. (Al Frayh AR et al. 2004)

Chronic asthma disease results in more percentage of school absenteeism than any other childhood disease condition, and this trend has an average of 9.7 absent days per year (Newacheck PW et al.1998, Newacheck PW et al.2016). This brief extended period of absence from school affects a child's academic performance due to learning disruptions (Moonie SA. et al. 2006). Earlier studies reported the correlations between the incidence of asthma attacks and the school environments (Unikel LH et al. 2010, Brittany Esty et al. 2019, Ibraheem RM et al. 2022)

Therefore, school plays a significant role in triggering asthmatic attack and exaggerating their symptoms because school campus has many asthma-triggering allergens such as paper, chalk dust, fumes and dust. In the Kingdom of Saudi Arabia, there are many under-prepared schools; some were housed in old buildings with old air conditioners, doors, furniture and windows, making the class environment shabby and dustier. In most schools with higher admission rates, classrooms are overcrowded with students, and all these factors may exacerbate asthmatic attacks.

Most of the studies from the Kingdom of Saudi Arabia related to Asthma were focused on the prevalence of Asthma, its risk factors and morbidity. Very few studies were conducted on the assessment of awareness of asthma disease among the teacher population. Teachers play a vital role in recognising and managing Asthma in school-going children. Because of this, it is essential to evaluate teachers' knowledge to prevent asthmatic attacks and their complications.

This study aimed to assess the awareness of asthma disease among the teacher. In this study, we evaluated sociodemographics' impact and understanding of asthma disease knowledge and its clinical complication among primary teachers of Hail province of the Kingdom of Saudi Arabia.

Materials And Methods

Study Design: Our present study was a cross-sectional descriptive-analytical study to evaluate the awareness of asthma disease and its management among teachers from primary schools in Hail Province, Kingdom of Saudi Arabia, in the academic year 2022-2023. This cross-sectional study was carried out in the Department of Physiology, Hail University, Kingdom of Saudi Arabia.

Selection of Subjects: The study group consisted of 150 schoolteachers who were willing to participate in the study. The study included male and female primary teachers from government and private schools in Hail Province, Saudi Arabia.

Estimation of Sample Size: The total number of teachers for enrolment was estimated by the formula; $n = N/1+Ne^2$, where n is the desired sample size, N is the size of the study population (169), and e is the precision level of 2.5%. Therefore, $n = 169/1 + (169 \times 0.0252) = 149$.

Data Collection: All primary school teachers of government and private schools will be invited to participate in the study by filling out an anonymous self-administered questionnaire. A self-administered questionnaire was used in the study. The questionnaire was in English and Arabic language.

Three questionnaires were used,

1. Sociodemographic data of the participants.
2. A revised edition of the Newcastle Asthma Knowledge Questionnaire.
3. Confidence of teachers in managing children with Asthma.

Statistical Analysis: The collected raw and Excel sheet data was converted into a computer-based spreadsheet. Statistical Package for Social Sciences (SPSS version 16) was used for statistical analysis. The chi-square test with a 95% confidence level and statistically significant ($P < 0.5$) used statistical correlation.

Results

In this study, all the participants (i.e., 150 teachers) had completed the filling questionnaire about essential information. The majority were female teachers (59.8%) and the age groups 26–30 years were predominant, accounting for 69.4% and 77.6% in the government and private primary school teacher groups, respectively. The overall mean age was 34.62 ± 12.4 years. The most common educational qualification of the primary teachers was a bachelor's degree (40.5%) which diploma holders followed.

Table 1: The demographic and educational qualifications of the teacher participants

Parameter		Government Primary School Teachers (n=75)	Private Primary School Teachers (n=75)
Gender	Male	33 (44%)	32 (42.67%)
	Female	42 (56%)	43 (57.33%)
Age (Years)	21-25	9 (12%)	12 (16%)
	26-30	38 (50.67%)	36 (48%)
	31-35	8 (10.67%)	7 (12%)
	36-40	11 (14.67%)	13 (17.34%)
	41-45	9 (12%)	7 (9.34%)
Region	Hail	41 (56.67%)	43 (57.34%)
	Baqaa	11 (14.67%)	12 (16%)
	Shanan	10 (13.34%)	9 (12%)
	Ghazalah	13 (17.34%)	11 (14.67%)
	Diploma	21 (28%)	24 (32%)

Educational Qualification	Bachelor Degree	43 (57.34%)	38 (50.67%)
	Master Degree	11 (14.67%)	13 (17.34%)
Teaching Experience (Years)	0-5	31 (41.34%)	33 (44%)
	6-10	24 (32%)	21 (28%)
	11-15	12 (16%)	14 (18.67%)
	15-20	8 (10.67%)	7 (12%)

Data presented as n (%).

A significant number of primary school teachers (64%) from the government-run school were willing to remind asthmatic children to take their inhalers (Table 2). A noticeable proportion of the primary school teachers (70.67%) from privately run schools were willing to remind asthmatic children to take their inhalers (Table 2). We also observed that very few teachers from both experimental groups had ever been in contact with an asthmatic patient. Very few governments and privately run primary schools had healthcare personnel attached to the school.

Table 2: Evaluation of Asthma Knowledge Questionnaire (AKQ) to assess teachers' knowledge about Asthma in students

Parameter	Government Primary School Teachers (n=75) Yes = n (%)	Private Primary School Teachers (n=75) Yes = n (%)
Do you think you know enough about Asthma?	34 (45.34%)	28 (37.34%)
Have you ever had any training on Asthma?	10 (13.34%)	8 (10.67%)
Would you allow asthmatic children to keep their drugs in school?	71 (94.67%)	74 (98.67%)
Would you or do you remind an asthmatic child to take their inhaler?	48 (64%)	53 (70.67%)
Would you or do you supervise asthmatic children using the inhaler?	38 (50.67%)	41 (54.67%)
Are you a parent of an asthmatic child?	11 (14.67%)	6 (8%)
Do you have a relative with Asthma?	8 (10.67%)	10 (13.34%)
Do you have Asthma?	2 (2.67%)	1 (1.33%)
Have you ever had a child with Asthma in your class?	23 (30.67%)	19 (25.34%)
Have you witnessed a child having an asthma attack?	8 (10.67%)	12 (16%)
Have you ever contacted a parent of a child with Asthma about the child's symptoms?	9 (12%)	4 (5.34%)
Is there a school nurse permanently or partially attached to your school?	14 (18.67%)	8 (10.67%)
Is there a school doctor permanently or partially attached to your school?	1 (1.33%)	3 (4%)

Data presented as n (%).

Results displayed in Table 3 present the mean rating of confidence rating for each element of the assessment scale, along with the mean total scale score. The sample had a mean total confidence score of 68.7 (SD=14.52, Range 12 to 100). Our internal analysis revealed a high-reliability coefficient for the teacher confidence scale (0.92).

Table 3: Assessment of rating of confidence of teachers in managing or handling the students with Asthma

Parameter	Government Primary School Teachers (n=75) Yes = n (%)	Private Primary School Teachers (n=75) Yes = n (%)
Taking a student on a school camp or excursion	82.07	84.92
Helping a student use their inhaler during an asthma attack	79.25	80.16
Calming a student when they have difficulty breathing	86.21	84.92
Keeping Asthma from getting worse when the student starts to wheeze or cough	81.36	80.07
Handling an asthma attack rather than taking the student to the hospital	60.24	62.83
Giving the appropriate medications to the student during an asthma attack	60.27	61.49
Knowing when the student requires medical assistance	77.42	74.98
Helping a student avoid things they are allergic to	82.39	84.24
Your overall confidence in managing children with Asthma	71.04	69.84

Total Confidence Score: Mean = 68.7 SD = 14.52 Range = 12-100

Results are shown in Table 4 present the knowledge about asthma disease in school-going children among teachers. It was estimated that more than half of participating teachers, i.e., 59% had a high level of asthma awareness, and 41% had low knowledge about Asthma.

Table 4: Assessment of awareness and knowledge of Asthma with the help of an asthma awareness questionnaire

Parameter	Government Primary School Teachers (n=75) Yes = n (%)	Private Primary School Teachers (n=75) Yes = n (%)
Asthma awareness	High ($\geq 75\%$)	42 (57.34%)
	Low ($< 75\%$)	33 (43.67%)
Symptoms of Asthma knowledge	High ($\geq 75\%$)	51 (68%)
	Low ($< 75\%$)	24 (32%)
Treatment of Asthma knowledge	High ($\geq 75\%$)	47 (62.67%)
	Low ($< 75\%$)	28 (37.33%)

Calculations are based on Asthma Knowledge Questionnaire (AKQ). Data presented as n (%). The responses obtained related to asthma knowledge among the primary school teachers, such as the symptoms of severe asthma attacks. These trigger factors exacerbate Asthma and the exercise of an asthmatic student.

Discussion

It is an essential part of a career that primary school teachers must have basic information and symptomatic knowledge of Asthma for the crucial management of the student with Asthma. However, our present study shows that a significant number of primary school teachers in Hail Province, Saudi Arabia, had minimal knowledge about Asthma and its complication among school-going children, similar to the observation of other studies from different countries. Hence, the results of the present study highlight the necessity of additional health education for primary school teachers regarding asthma symptoms in students.

Overall, improving awareness of asthma disease and its complications among primary teachers must reinforce good outcomes and manage asthmatic attacks in students. Our present study highlights that many primary school teachers had suboptimal knowledge of recognising the signs and symptoms of an asthmatic attack in students, similar to a finding of earlier published studies (Al Frayh AR et al.2004, Newacheck PW et al.2016). Teachers should identify the symptoms of an asthmatic attack in students; this skill enables them to take the necessary steps for early clinical intervention.

The present study revealed a better knowledge of Asthma's causes and exacerbation factors among schoolteachers, helping them with early management and clinical interventions for asthma disease in school-going children. Therefore, educating asthmatic students, teachers and parents about when and how such children can use their medication before and during periods of asthmatic attack remains vital in managing disease (Moonie SA et al. 2006, Alkhamis ZN et al. 2019)

The present study observed that primary school teachers with more years of teaching experience had the highest level of knowledge about the management of asthmatic students, which was corroborated in earlier published studies (Blackman JA et al. 2007, Wildhaber J et al. 2012).

Primary school teachers belong to a vital segment in the management and handling of asthmatic students, either in the form of preventive measures or early clinical interventions if they experience asthmatic attacks at school (Cohen R et al 2003, Hauptman M et al 2015). So this study evaluated the knowledge, prevention and management of Asthma in students among primary school teachers in Hail Province, Saudi Arabia.

Conclusion

The primary school teachers from Hail Province, Saudi Arabia, had a suboptimal perception of childhood asthma. However, the slightest knowledge scores were reported for asthma symptomatology and clinical management. The school health program must include strategies to improve teachers' knowledge of asthma and training workshops on steps required for managing and handling acute asthmatic attacks in students.

One of the significant drawbacks of the present study was the failure to collect feedback from the teachers on their willingness to participate in asthma awareness programs that would have proven helpful based on this study's findings.

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