

Knowledge about childhood bronchial asthma among primary health care personnel in eastern Saudi Arabia

Abstract

Background: Bronchial asthma (BA) is a chronic non-communicable disease affecting children and adults. Despite the availability of written guidelines for diagnosis and management, yet still knowledge and application were inadequate. The aim of this study was to assess asthma knowledge of primary health care centers (PHCCs) personnel in Dammam city, eastern Saudi Arabia. **Materials and Methods:** This was a cross-sectional study conducted in 22 PHCCs. The sample consisted of 194 personnel (50 physicians and 144 nurses). Data was collected through a self-administered questionnaire which contained 58 questions. Knowledge score about asthma was coded as good and poor. Descriptive statistics, paired t-test and logistic regression were used for statistical analysis. **Results:** The majority of PHCCs personnel (96.9%) had no postgraduate studies and 78.4% of them didn't receive any training about BA. More than half (55.2%) of the PHCCs personnel showed good total knowledge score about BA. Also, 81.8% of the physicians and 52.7% of the nurses had good total knowledge level regarding the total aspects of BA in children. Physicians had statistically higher mean knowledge score than nurses regarding all components and total knowledge scores. Knowledge about role of exercise and prognosis was inadequate. Being a physician, female, younger, less years of work in PHCCs were statistically significant and associated with good knowledge level. **Conclusions:** There are still some deficiencies in knowledge about different aspects related to bronchial asthma. It is recommended that both physicians and nurses receive training about national asthma guidelines through continuing medical education.

Key words: Bronchial asthma, childhood, knowledge, primary health care personnel, Saudi Arabia

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Access this article online

Website: www.ijmedph.org

DOI: 10.4103/2230-8598.137705

Quick response code:



INTRODUCTION

Bronchial asthma is a chronic non-communicable disease affecting both children and adults worldwide.^[1-3] Various studies in Kingdom of Saudi Arabia (KSA) showed an increasing prevalence in both urban and rural areas.^[4-7] The majority of asthma patients in KSA are managed by primary health care (PHC) physicians at primary health care centers (PHCCs). Knowledge of physicians about diagnosis and management of bronchial asthma is essential for better patient care. Several studies have assessed the knowledge of bronchial asthma among physicians and health care providers.^[8-12] Despite the availability of written protocols for diagnosis and management of bronchial asthma, yet still there is inadequate knowledge and application of these guidelines.^[13-15]

The aim of this study was to assess the knowledge of PHCCs personnel (physicians and nurses) in Dammam city, eastern Saudi Arabia, and to determine factors affecting their knowledge.

MATERIALS AND METHODS

Study design and sample size

This was a cross-sectional study conducted in all the 22 PHCCs of the Dammam city, Eastern Province, Saudi Arabia, in the year 2010 during a two-months period. The study sample consisted of 194 PHC personnel (50 physicians and 144 nurses) working in the centers and agreed to share in the study. A

pilot study was conducted to test the validity and the logistics of administering the questionnaire in one of the PHCCs. Personnel in the pilot study were excluded.

Data collection

Data collection was accomplished through a self-administered questionnaire constructed by the investigators. All the questions were close-ended and the questionnaire consisted of two main parts:

1. Personnel's socio-demographic characteristics: Occupation, nationality, gender, marital status, years of experience since graduation, duration of work in PHC, and training about bronchial asthma.
2. Fifty eight (58) questions to assess the knowledge about bronchial asthma in children divided into seven components namely; magnitude, definition and causes, risk factors, associated diseases, role of exercise, clinical picture, management, and prognosis.

A scoring system was used, giving a score of one to each correct answer and a score of zero to the wrong answers or do not know. The knowledge score was calculated by summation of the right answers, scores. The maximum total knowledge score was 58. The knowledge score of the components as well as the total knowledge score were divided into two groups namely, good and poor knowledge according to the cut-off points which were determined according to the mean of the distribution. Personnel who scored less than the cut-off point were considered as poor and those above the cut-off point were considered as good.

Necessary permissions to conduct the study were obtained from concerned authorities and confidentiality of the information was strictly adhered to by assuring the participants that no details about their status will be released and data will be only used for research purpose.

Statistical analysis

The collected data were reviewed, coded, verified and statistically analyzed using the Statistical Package for Social Sciences (SPSS) software version 16. Descriptive statistics for all studied variables and paired t-test were used. Logistic regression analysis was used to find the association between the characteristics of the PHCCs personnel (Independent variables) and the knowledge level about bronchial asthma (Dependant variable). A P-value level of < 0.05 was considered significant throughout the study.

RESULTS

[Table 1] shows the socio-demographic characteristics of the PHC personnel. It was found that 77.4% of the personnel were nurses, females (83%), Saudis (90.2%), and 47.9% were in the age group 30-40 years. The majority of PHC personnel (96.9%) had not undergone any postgraduate studies and 78.4% of them did not receive any training about bronchial asthma in children. More than half (55.2%) of the PHC personnel showed good total knowledge score about

Table 1: Socio-demographic characteristics of the PHC personnel

Socio-demographic characteristics	Total (n = 194)	
	No.	%
Occupation		
Physicians	44	22.6
Nurses	150	77.4
Gender		
Male	33	17.0
Female	161	83.0
Nationality		
Saudi	175	90.2
Non-Saudi	19	9.8
Age in years		
20-30	57	29.4
30-40	93	47.9
40-50	37	19.1
≥ 50	7	3.6
Mean Age in years ± SD = 33.89 ± 7.45		
Marital status		
Single	44	22.7
Married	140	72.7
Divorced	7	3.6
Widowed	3	1.5
Years of Experience since graduation		
<5 years	53	27.3
5-10	38	19.6
≥ 10	103	53.1
Duration of work in PHC		
<5 years	70	36.1
5-10	41	21.1
≥ 10	83	42.8
Postgraduate studies		
None	188	96.9
Diploma	4	2.1
Fellowship	2	1.0
Training about Bronchial asthma in children		
<1 week duration	40	20.6
>1 week duration	2	1.0
No training	152	78.4

bronchial asthma in children. Moreover, 71.6% of PHC personnel had good knowledge regarding magnitude, definition and causes, risk factors (64.4%), associated diseases (57.2%), clinical picture (61.3%), management (59.8%), and prognosis (76.8%). On the other hand, 57.7% of the PHC personnel had poor knowledge level about the role of exercise in bronchial asthma [Table 2].

[Figure 1] shows that 81.8% of the physicians and 52.7% of the nurses had good total knowledge level regarding the total aspects of bronchial asthma in children.

According to [Table 3], it was evident that physicians had higher mean knowledge score regarding all the components and the total knowledge scores of bronchial asthma in children and the differences were found to be statistically significant except for the knowledge about prognosis. The results of the logistic regression analysis

of significant factors predicting knowledge level about bronchial asthma in children showed that the following factors were found to be independently and significantly associated with good knowledge level: Physicians (OR = 0.407, 95% CI = 0.242-0.684), females (OR = 4.247, 95% CI = 1.197-15.071), younger age (OR = 1.144, 95%

Table 2: Distribution of total and different components of Bronchial asthma knowledge among PHC personnel

Knowledge components	Knowledge level					
	Good		Poor		Total	
	No.	%	No.	%	No.	%
Total Knowledge score	107	55.2	87	44.8	194	100.0
Magnitude, definition & causes	139	71.6	55	28.4	194	100.0
Risk Factors	125	64.4	69	35.6	194	100.0
Associated diseases	111	57.2	83	42.8	194	100.0
Role of Exercise	82	42.3	112	57.7	194	100.0
Clinical picture	119	61.3	75	38.7	194	100.0
Management	116	59.8	78	40.2	194	100.0
Prognosis	149	76.8	45	23.2	194	100.0

Table 3: Mean scores for different components of PHC personnel's knowledge about bronchial asthma according to their occupation

Knowledge Components		Physicians (n = 44)	Nurses (n = 150)	t-test	P-value
Total Knowledge score	\bar{x}^*	1.81	1.47	4.8	0.00
	SD**	0.39	0.50		
Magnitude, Definition & Causes	\bar{x}	1.86	1.67	2.93	0.004
	SD	0.34	0.47		
Risk Factors	\bar{x}	1.77	1.606	2.20	0.031
	SD	0.42	0.49		
Associated Diseases	\bar{x}	1.75	1.52	2.96	0.004
	SD	0.43	0.50		
Role of Exercise	\bar{x}	1.61	1.36	2.96	0.003
	SD	0.49	0.48		
Clinical picture	\bar{x}	1.75	1.57	2.28	0.025
	SD	0.43	0.49		
Management	\bar{x}	1.72	1.56	2.11	0.038
	SD	0.45	0.49		
Prognosis	\bar{x}	1.84	1.74	1.42	0.158
	SD	0.36	0.43		

* Mean, ** Standard deviation

Table 4: Logistic regression analysis of significant factors predicting knowledge level about bronchial asthma in children among PHC personnel

Variables	B coefficient	S. E. of B	P-value	O. R.	95% Confidence interval of O. R.	
					Lower	Upper
Occupation	-0.899	0.265	0.001	0.407	0.242	0.684
Gender	1.446	0.646	0.025	4.247	1.197	15.071
Age	0.134	0.065	0.038	1.144	1.007	1.299
Duration of work in PHC	0.746	0.366	0.041	2.109	1.030	4.321
Constant	-0.336	2.316	-	-	-	-

Model $\chi^2_{(4)} = 38.251, P < 0.001,$

CI = 1.007-1.299), and those with less than 5 years duration of work in PHC (OR = 2.109, 95% CI = 1.030-4.321), ($P < 0.001$) [Table 4].

DISCUSSION

The majority of PHCCs personnel were young females. This is mainly due to the predominance of nurses who were mainly females, reflecting the usual pattern in KSA. Physicians in the sample were mainly general practitioners who had no post-graduate qualifications and no training in bronchial asthma. The total knowledge score of PHCCs personnel and the knowledge about causes and management of bronchial asthma were generally good. The results were in agreement with other studies among PHC physicians and nurses.^[10,11,13,15-17] A study of the level of knowledge about childhood asthma showed that general practitioners scored well in most questions but had some deficiencies particularly in distinguishing preventive therapy from symptom-relieving medication.^[10] Pediatric nurses in the previous study had poor knowledge of exercise-induced asthma, which is similar to the result of the present study. Al-Kabba *et al.*, in their study of primary care physicians knowledge about bronchial asthma using a true or false self-administered questionnaire, reported that only 39% of the of the 44 physicians passed the test as a whole, with 66% passed in general knowledge, 70% in diagnosis, 48% in classification of severity, and 59% in the management of asthma.^[13] A study of the prevalence of asthma in Yanbu industrial city and two non-industrial villages in KSA reported

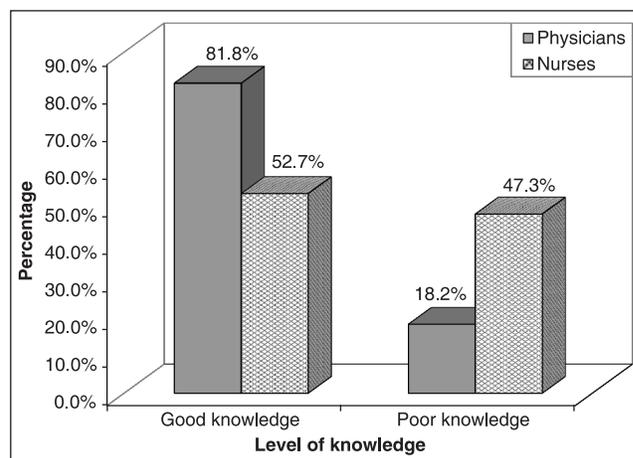


Figure 1: Distribution of PHC personnel according to their level of total knowledge score about bronchial asthma

a prevalence of physician-diagnosed asthma in the three areas of 13.9%, 2.2% and 13.7% respectively.^[7]

Similar results were shown by Lageriov *et al.*, study among 698 general practitioners in five European countries assessing their knowledge, attitudes, and prescribing behavior. It showed that most doctors were in agreement with guideline recommendations.^[9] In practice, however, the proportion of asthma patients receiving inhaled steroids varied almost two-fold, ranging 31% in Germany to 58% in the Netherlands.^[9]

Our study was also in agreement with Coates *et al.*, study among 127 South Australian general practitioners concerning knowledge and reported asthma management,^[14] which revealed deficiencies in their knowledge and management practices of asthma and suggest that ideal asthma management was not being attained.

In this study physicians had better total knowledge compared to nurses. This result was similar to Lemay *et al.*, study who reported that 32% of pediatric residents, 12% of family medicine residents and 72% of pediatric nurses failed to identify all three main symptoms of asthma (wheezing, cough, dyspnea).^[16] In Lemay *et al.*, study, 25% of pediatric residents, 52% of family medicine residents and 81% of pediatric nurses were unable to name at least two preventive asthma medications.^[16] However, another study in Aseer Region, Saudi Arabia, showed poor knowledge of PHC physicians on asthma care, where they got 37.7% of the total scoring of case scenarios on asthma care.^[16]

In this study there were deficiencies in knowledge mainly concerning the role of exercise and management of asthma. Continuing medical education should focus on these areas especially for nurses who had unsatisfactory knowledge as shown by the significantly lower mean knowledge compared to physicians. Tomson *et al.*, study reported that there were changes in knowledge, attitudes and actual practice of Swedish primary care physicians after intervention messages concerning management of bronchial asthma.^[11] A similar study by Rovithis *et al.*, demonstrated an improvement in knowledge of PHC physicians serving a rural population on the island of Crete after a one-day educational course on bronchial asthma clinical guidelines.^[8] These results stress the need for interventions in the form of frequent courses and continuing education to improve knowledge and practice of health care personnel about asthma and disease management.

In the present study, physicians had good knowledge in all aspects of bronchial asthma as shown by the logistic regression analysis. Female health care personnel were 4.2 times more likely to have good knowledge about bronchial asthma compared to males. This result was similar to Soyer *et al.*, study in Turkey.^[18] They reported that even though self-perceived overall asthma knowledge did not differ between genders ($P = 0.098$), female physicians recorded more frequent use of inhaled steroids for chronic asthma (3.72 ± 0.08 vs. 3.43 ± 0.07 , respectively, $P = 0.006$) while male physicians scored higher than females for inhaled steroids for acute asthma (2.8 ± 0.12 vs. 2.17 ± 0.2 , respectively, $P = 0.007$). Female physicians' scoring

for 'symptom control' as the main aim of asthma management was higher than that of their male counterparts (3.88 ± 0.04 vs. 3.65 ± 0.06 , respectively, $P = 0.002$).

In their study of clinicians adherence to asthma guidelines, Salama *et al.*, showed that agreement with asthma guidelines was present in 76.2% of the studied physicians and there was positive significant correlation between qualification and knowledge, ($P < 0.01$), positive significant correlation between qualification and practice, ($P < 0.01$), and positive significant correlation between qualification and attitude, ($P < 0.01$).^[19] In the current study, the fact that younger health care personnel and those with less than 5-years experience of work in PHCCs had significantly good knowledge which may possibly be due to their being newly graduated physicians with recent knowledge from their medical school studies. Nurses were still having some deficiencies in knowledge of bronchial asthma compared to physicians.

CONCLUSIONS

This study showed that the majority of health care personnel had good knowledge about bronchial asthma. However, there are still some deficiencies about management and the role of exercise in asthma. Being a physician, a female, of young age, and with less years of work in PHCCs were significantly associated with good knowledge of bronchial asthma. It is recommended that both physicians and nurses should be informed and continuously reminded of the diagnosis and management of bronchial asthma according to the National Guidelines. This can be done through continuing medical education in the form of seminars, workshops and clinical teaching using patients with asthma. In addition, assessment of actual practice of physicians and nurses is greatly needed so that knowledge can be reflected on better patient care.

Limitations of the study

This study depends on self-reporting which might have resulted in over- or under-reporting of some aspects of asthma knowledge. This was a cross-sectional study done at a point in time. Therefore, cause and effect cannot be definitely assumed regarding factors predicting knowledge of asthma. Further studies on the effects of health care personnel practice in improving care of patients with asthma are needed.

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How to cite this article: Taha AZ, Sabra AA, Al Hamed JH. Knowledge about childhood bronchial asthma among primary health care personnel in eastern Saudi Arabia. *Int J Med Public Health* 2014;4:222-6.

Source of Support: Nil, **Conflict of Interest:** None declared.