

Original Research Article

Pre-schoolers bronchial asthma in the primary health care centres: physicians' knowledge and practice in Jazan region Saudi Arabia

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ABSTRACT

Background: The aim of this study was to assess the knowledge and practice of primary health care (PHC) physicians in the diagnosis and management of preschoolers' bronchial asthma in Jazan region in Saudi Arabia.

Methods: A survey of 106 primary care physicians practicing in Jazan region was conducted. Domains that assessed include asthma causes, diagnosis, management, and prognosis. Item formats included self-reports through online version questionnaire during the period December 2018 to February 2019.

Results: Among 72% of participants were general practitioners, with about 60% were mid-level experience (1-10 years), overall PHC physician level of knowledge and practice was moderate level, and the knowledge was significantly affected by grade of specialty, years of experience, and the number of bronchial asthma patients seen in the last three months in the center. This study showed mis concepts and mal practices of PHC physicians as 57% of them considered prescribing antibiotics during asthma attacks, while 72% agreed that anti-cough therapy is helpful in asthma like symptoms.

Conclusions: This study proves that PHC physician in Jazan region are moderately aware of preschoolers' bronchial asthma if compared to studies done in other regions of Saudi Arabia. There are certain practices and concepts regarding preschooler's asthma that need to be revised. Raising the awareness regarding adherence to guidelines of pediatrics bronchial asthma mandates more attention and advocacy.

Keywords: Bronchial asthma, Knowledge, Physician, Practice, Pre-schoolers, Primary health care.

INTRODUCTION

Bronchial asthma is a chronic reversible airway obstruction that present with recurrent wheezing, coughing, chest tightness, and shortness of breath, with symptoms prevalently occur at early morning and at night.¹ Asthma attacks is triggered by allergies, colds and exercise, and managed by avoiding triggers and using medications as prophylaxis and during acute attacks.² Childhood asthma is one of the most common chronic childhood diseases in Saudi Arabia that causing poor

quality of life, frequent emergency department visits, hospitalization, and school absence to affected children.³ In Saudi Arabia bronchial Asthma showed regional diversity with high prevalence in Jazan region as one study reported that the higher prevalence of bronchial asthma is in the south west sea level region area compared to high altitude areas in the same region.^{4,5} Pre-schoolers' (3-5 years old) are Phenotype-defining element of childhood bronchial asthma according to the age group. Viruses are the commonest incriminated trigger at this age, and as result viral-induced asthma is

the most appropriate diagnosis followed by exercise induced asthma.⁶ Pre-schoolers' are noticed to have an elevated rate of hospital admissions and emergency department visits due to asthma symptoms when compared to other age groups.⁷ Early diagnosis of asthma in this age group is important to avoid treatment delay, reduce morbidity and, potentially, maximize lung growth and function. In spite of clinical picture that is consistent with bronchial asthma, the definitive diagnosis of asthma in young children is challenging that is due to similarity of presentation with many other diseases. Furthermore, there are no definite diagnostic tests for asthma, and this is attributed to difficulty of performing the forced expiratory test required for spirometry which is mandatory to confirm the diagnosis of bronchial asthma.^{8,9} Despite the development of national and international guidelines for diagnosis and management of child hood asthma, there is under-treatment practice of bronchial asthma persists as many studies reported.^{10,11} The concern is that some management prescriptions would not follow either national or international guideline, in addition the level of awareness of the national Asthma Protocol among the primary health care physicians was low as one study in Saudi Arabia revealed, and this showed decreased general knowledge about the child hood asthma, methods of diagnosis, and the classification of asthma severity and state the management protocols among PHC physician.¹² The physicians' adherence barrier to the management protocols are either misapplied strategy to use the protocol or perhaps related to the physician's attitude and beliefs.¹³ The aim of this study was to assess the knowledge and practice of primary care physicians in the diagnosis and management of preschoolers' bronchial asthma in Jazan region in Saudi Arabia.

METHODS

A cross-sectional study was conducted in 13 PHC centers of Jazan region distributed to include Island zone (Farsan), mountain zone (Alardah, Huroob, Aledabi, Aldaer, Fifa), Rural (Village), Urban (City of Jazan, Abu Arish, Beash, samtah, Alhurath, Darb). All physicians available during the study period in the selected PHC centers were included. Hundred and six PHC physicians participated in this study with their different grades of specialty (Family medicine doctor, General practitioner, and Pediatrics physician) during the period December 2018 to February 2019. An online version questionnaire was developed by the researchers and validated to assess the knowledge and practice of physicians about preschoolers' bronchial asthma. It included socio-demographic data, work experience, questions to assess causes, diagnosis, management, and side effects of medications. The grade of knowledge was assessed by using 5-points Likert scale in 21 questions while practice was assessed by 6 questions. The participants responded to each item on a Likert-type scale of 5 points with answers ranging from "strongly disagree" to "strongly agree." Responses to each item were thus graded from 5

to 1. Administrative approval was obtained from Jazan health directorate. Physicians' oral agreement was obtained to participate in the study after explanation of the study aims. They were reassured of the data confidentiality. Using Statistical Package for Social Science (SPSS) Version 20 the collected data was analyzed. A descriptive statistic was used to characterize the response rate in demographic questions. An exploratory factor analysis was used to establish evidence for the stability and validity of the questionnaire. Cronbach's alpha was calculated to assess stability and scores greater than 0.70 were considered to have good scale reliability. Appropriate chi-square was used, with $p < 0.05$ considered significant. The level of knowledge and practice was considered high if the score was above the mean and low if the score was less than that. Scores in between were considered medium. The relationship between knowledge, practice, and demographic variables was calculated to assess the influence of the later variables in the level of knowledge and practice.

RESULTS

During the study period 106 PHC physicians in Jazan region were interviewed and enrolled in the study. Participant characteristics are shown in (Table 1).

Table 1: Distribution of primary health care physicians according to their general characteristics.

Variables	Items	Frequency	Percent%
Health center is situated in	Island zone (Farsan)	5	4.7
	Mountain zone (Alardah, Huroob, Aledabi, Aldaer, Fifa)	33	31.1
	Rural (Village)	12	11.3
	Urban (City of Jazan, Abu Arish, Beash, samtah, Alhurath, Darb)	56	52.8
Gender	Female	24	22.6
	Male	82	77.4
Years of experience (years)	<10	66	62.3
	10-20	31	29.2
	21-30	6	5.7
	>30	3	2.8
Grade of specialty	Family doctor	21	19.8
	Family medicine	1	0.9
	General practitioner	77	72.6
	Pediatrics	7	6.6
Total		106	100

General practitioner constitutes 72% compared to 20% family physicians, approximately 60% were mid-level experience that ranged between 1-10 years. Physician were more likely to be male (77.4%), and to practice in Urban PHC centers. About 68% of the participants see usually less than 10 patients per day of children with symptoms and signs of asthma.

Bronchial asthma knowledge and practice among PHC physician

The knowledge of physicians regarding preschoolers' bronchial asthma was ranging between high and medium degree of approval as it is noted in (Table 2). This is shown by the mean arithmetic values which falls within the medium term, and standard deviation is close to the correct one, and The some value of (chi square) test is not statistically significant with a probability value Larger the

statistical significance level (0.05), Which means that there are no differences between this average and the average scale (3), That is, this variable a medium degree. On the other hand, two items of knowledge questions showed low grade of approval degree and this were in the use of anti-cough therapy and the recurrent use of inhaled bronchodilator (puffer).

Correlations between knowledge, practice, and demographic variables

There is statistically significant difference in knowledge scores of primary health care physician affected by grade of specialty ($p=0.05$), years of experience ($p=0.05$), and the number of bronchial asthma patients seen in the last 3 months by the physician ($p=0.006$). On the other hands practice of the physician in the sample was not affected by any variables as shown in (Table 4).

Table 2: Chi square test demonstrating the response of PHC physician to the Knowledge questions.

Items knowledge	Mean	Std. Deviation	Chi-square	Sig	Degree of approval
It is difficult to diagnose asthma in under 5 years	3.30	1.367	7.679	0.104	Medium
Asthma is an inflammatory condition?	3.97	1.457	99.377	0.000	High
Asthma is an allergic disease	4.38	1.117	154.189	0.000	High
Exposure to environmental changes (dust, cold, smoke and) can trigger the attacks?	4.77	0.772	236.113	0.000	High
Bacterial infections are commonly associated with asthma attacks	2.97	1.383	2.113	0.715	Medium
Pattern of asthma symptoms varies with time	4.23	1.045	94.755	0.000	High
Child asthma symptoms are often worse over night	4.45	0.957	157.302	0.000	High
Asthma can lead to death in young child	3.63	1.304	21.830	0.000	High
Asthma is a curable disease young child	3.07	1.409	3.434	0.488	Medium
Primary health care providers can handle child with asthma	4.18	0.993	79.472	0.000	High
Child with asthma should be followed by asthma specialists	3.46	1.346	17.585	0.001	Medium
Asthma burden can be measured by number of doctor visits	3.79	1.161	36.075	0.000	High
Asthma is over-diagnosed by physicians	3.26	1.260	8.906	0.064	Medium
In acute respiratory distress the response to bronchodilators in young child should not support diagnosis of asthma	2.75	1.401	4.094	0.393	Medium
Anti-cough therapy is helpful in asthma like symptoms in young child	2.11	1.214	47.019	0.000	Lows
Recurrent use of Inhaled bronchodilator (puffer) could cause chronic relapsing asthma like attacks in young child	2.19	1.180	35.415	0.000	Lows
The hearts rate increase (tachycardia) and tremor with bronchodilator should restrict its use	3.03	1.489	5.226	0.265	Medium
The side effects of long-term inhaled steroids outweigh its therapeutic effect in young child	3.08	1.442	1.075	0.898	Medium
I consider prescribing antibiotics during acute respiratory attacks.	2.54	1.507	20.226	0.000	Medium
Inhaled steroid is not an essential part of asthma management in young child	2.56	1.346	11.642	0.020	Medium
Use of spacer with face mask is not mandatory for (puffer) use	2.66	1.323	7.774	0.100	Medium
total	3.3518	0.47721	-	-	Medium

Table 3: Frequencies of physician responses according to bronchial asthma characteristics.

Item	Question	Agree	%	Not agree	%	Neutral	%
Diagnosis	Do you consider frequent wheeze in a child under 5 years is a sign of asthma?	17	16	62	58.5	27	25.5
	It is difficult to diagnose asthma in under 5 years	34	32	55	51.88	17	16.2
	Asthma is over-diagnosed by physicians	30	28.3	48	45.3	28	26.41
	In acute respiratory distress the response to bronchodilators in young child should not support diagnosis of asthma	49	46.2	35	33	22	20.75
Causes	Asthma is an allergic disease	8	7.54	90	84.9	8	7.54
	Asthma is an inflammatory condition	22	20.8	76	71.7	8	7.54
	Exposure to environmental changes (dust, cold, smoke) can trigger the attacks	3	2.8	99	93.4	4	3.8
	Bacterial infections are commonly associated with asthma attacks	43	40.6	38	35.8	25	23.7
symptoms	Pattern of asthma symptoms varies with time	8	7.6	89	84	9	8.5
	Child asthma symptoms are often worse over night	9	8.5	95	89.6	2	1.9
	Asthma can lead to death in young child	22	20.8	64	60.4	20	18.9
management	Primary health care providers can handle child with asthma	6	5.7	83	78.3	17	16
	Child with asthma should be followed by asthma specialists	29	27.4	25	23.6	52	49
	Asthma burden can be measured by number of doctor visits	15	14.2	64	60.4	27	25.5
	Asthma is a curable disease young child	44	41.5	45	42.5	17	16
	In acute respiratory distress the response to bronchodilators in young child should not support diagnosis of asthma	49	46.2	35	33	22	20.8
	Anti- cough therapy is helpful in asthma like symptoms in young child	76	71.7	18	17	12	11.3
	Oral bronchodilators have the same therapeutic effects as inhaled (puffer) in under 5 year	55	51.9	29	27.4	22	20.8
	Recurrent use of Inhaled bronchodilator (puffer) could cause chronic relapsing asthma like attacks in young child	67	63.2	17	16	22	20.8
	I consider prescribing antibiotics during acute respiratory attacks	60	56.6	33	31.1	13	12.3
	Inhaled steroid is not an essential part of asthma management in young child	55	51.9	30	28.3	21	19.8
	MDI (metered dose inhaler/ puffer) has the same efficacy as Nebulizer	41	38.7	38	35.8	27	25.5
	Use of spacer with face mask is not mandatory for use	54	50.9	31	29.2	21	19.8
Medications Side effects	The hearts rate increase (tachycardia) and tremor with bronchodilator should restrict its use	43	40.6	49	46.2	14	13.2
	The side effects of long-term inhaled steroids outweigh its therapeutic effect in young child	40	37.7	44	41.5	22	20.8
	Infant growth will be affected by long term inhaled corticosteroid	30	28.3	65	61.3	11	10.4
Guidelines Adherence	During acute attack of suspected asthma, I use my clinical judgment to evaluate the severity of attack	16	15.1	73	68.9	17	16
	I am aware about an established guideline of preschool asthma management	12	11.3	79	74.5	15	14.2
Total		106	100	106	100	106	100

Table 4: Correlations between knowledge, practice, and demographic variables.

Item	Demographics variables	p value*	Result
Knowledge	health center is situated in	0.389	No significance
	Number of children (under 6 years) seen in the practice per day	0.938	No significance
	Approximate number of known asthmas seen last 3 months	0.006	significance
	Gender of physician	0.816	No significance
	Years of experience	0.05	significance
	Grade of specialty	0.05	significance
Practice	health center is situated in	0.295	No significance
	Number of children (under 6 year) seen in the practice per day	0.426	No significance
	Approximate number of known asthmas seen last 3 months?	0.169	No significance
	Gender of physician	0.171	No significance
	Years of experience	0.822	No significance
	Grade of specialty	0.614	No significance

*correlation is significant in p value 0.05 or less

DISCUSSION

In this study we have sought to explore the PHC physician knowledge and practice about preschoolers' bronchial asthma, owing to the fact that this specific age group did not well explored in the preceding studies. Pre-schoolers' bronchial asthma is a challenging for most of the health care physician in form of diagnosis and management. PHC physicians are thus expected to achieve a major role in the diagnosis, prevention, and referral of the affected children to the special clinics. This study proves that PHC physician awareness of preschoolers' bronchial asthma in Jazan region are suboptimal, to our best knowledge there are only two studies assessed the knowledge of PHC physicians on asthma care in Saudi Arabia both reports lower level of knowledge and not focused on preschooler's age group.^{13,14}

It is well documented in this study that most of PHC physician have good knowledge regarding bronchial asthma causes and precipitants, although there was considerable number of physician (32%) reported that diagnose of bronchial asthma under 5 years is difficult task (Table 2) and this is agree with Canadian thoracic society which realized the difficulty of diagnosis the preschooler's bronchial asthma and tried to find suitable way to diagnose it in the absence of lung function tests in this age group, and considered diagnosis with frequent (≥ 8 days/month) asthma-like symptoms or recurrent (≥ 2) exacerbations (episodes with asthma-like signs), but these still dependent on parental reports.¹⁵

Authors findings show a high rate of misconceptions regarding management of preschooler's bronchial asthma as 78% of participants disagree that primary health care provider's ability to handle child with asthma. Furthermore 71% of them think anti-cough therapy is helpful in asthma like symptoms, and about 57% of participants prescribed antibiotics during asthma attacks, and this is agree one study done in Egypt found that 13.4% of the studied physicians still believe that long courses of antibiotics can prevent asthma.¹⁶ Moreover considerable number of physician in this study (63%) thought that recurrent use of Inhaled bronchodilator (puffer) could cause chronic relapsing asthma like attacks in young children, and half of them believed that oral bronchodilators have the same therapeutic effects as inhaled (puffer) in under 5 year, although oral bronchodilators was discouraged by many protocols in all age groups due to a slower onset of action and the higher incidence of side effects.¹⁷⁻²⁰

Whilst most of the physicians in this study (61%) disagreed that infant's growth will be affected by long term inhaled corticosteroids, still 52% of them believe that this therapy is not an essential part of asthma management of young children. Consequently, this lack of knowledge will directly affect practice of the physician in prescribing inhaled corticosteroids as a controller in preschooler's asthma, and will create a barrier in adherence to guidelines as one study showed.²¹ Authors finding in this study interestingly conflict other study findings which found high rate of physician agreed on use inhaled corticosteroids as controller therapy, in spite of high response rate to child's growth concern as result of this therapy.¹⁶

Awareness about established guideline of preschoolers asthma management was relatively poor in the studied physicians (11%), and this inconsistency of interest with guidelines for asthmatic children is clear as it appeared in the low percentage of physician (6%) who agree that the primary health care providers can handle child with asthma, as well about half of physician were not sure if an asthmatic child should be followed by asthma specialists or not (Table 3). These results are consistent with previous studies that have shown contradiction of care with guidelines for asthmatic children and utility of

specialists in the delivery of asthma care, especially if asthmatic child previously encounters with specialists.^{16,22}

Some methodological limitations should be declared to improve further similar studies. The number of involved physicians in this study was small, however it could be considered as representative of PHC physician serving in Jazan region. Social desirability bias should be encountered in such types of studies where participants sometimes answered what they supposed would be the right answer rather than what they actually practice.

Assessing the PHC physician knowledge and practices regarding the guidelines for diagnosis and management of preschoolers' bronchial asthma could improve the medical care services administered to this age group by filling the gaps and rectification of the miss concepts. The findings from this study have extended our knowledge of the PHC physician weakness area relating to the diagnosis and the management of bronchial asthma. We found that the overall knowledge of PHC physician about preschoolers' bronchial asthma is of moderate degree, although there is a still misuse practice of prescribing anti-cough and antibiotics during asthma attacks. These findings provide an important basis for the planning of future extended studies to advocate the adherence to guidelines and to ameliorate the PHC physician practices and concepts

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