Assessment of Knowledge and Adherence of Pediatric Residents to Saudi Initiative Asthma (SINA) Guidelines in Saudi Arabia

Ismail Hassan H Almakrami *, Emad Ali M Alzahrani, Saad Ahmed Alqarni
King Abdul Aziz University

ABSTRACT

Background: Asthma is a chronic disease that infect adults and children**.** It results in chronic symptoms of airflow obstruction**.** Developing and developed countries showed increase in asthma prevalence. The Saudi Initiative for Asthma (SINA) was developed in 2009 with attention to non-asthma specialists.

Aim: To evaluate the knowledge and attitude of pediatric residents to Saudi Initiative Asthma (SINA) guidelines. **Methods:** This study is a cross sectional study included 153 residents from different residency levels. **Results:** The female participants represented 60.1%, while males represented 39.9%. There were 79% had low knowledge and 21 % had high knowledge. The prevalence of attitude represented 57.51%.

Conclusion: Knowledge was low between residents, while attitude was moderate.

Keywords: SINA guidelines, initiative asthma, pediatric residents.

INTRODUCTION

Asthma is one of the most chronic diseases in both adults and children [1]. It causes chronic symptoms of airflow obstruction [2]. Over the last three decades, the prevalence of asthma has been increased in developing and developed countries [1], it was estimated that 8% of the world population are suffering from bronchial asthma [3].

There are several countries that have been reported to have the highest asthma rates including New Zealand, Australia and the United Kingdom, while lowest rates were reported for India and Indonesia [1]. Several studies were established in Saudi Arabia to estimate the prevalence of asthma, one of them [4] showed that prevalence of asthma increased from 8% to 23% in the period from 1986 to 1995. Another Saudi study [5] reported that the asthma prevalence in urban and rural children was 13.9% and 8% respectively.

The prevalence rate of asthma in Saudi Arabia has been reached to 10-24% [6]. The increase in prevalence, mortality and morbidity of asthma may attributed to increased exposure to indoor allergens, urbanization, occupational exposure [7], improper use of medications [8], incompetent medical care and delay in asthma diagnosis [9,10]. Proper diagnosis and management of bronchial asthma patients can save their suffering and medical cost [11].

In order to improve the quality of asthma care, clinical guideline for its diagnosis and management was established. However knowledge and adherence levels to guidelines are low, in a Saudi study [2] by **Al-Kabbaa *et al***. it was found that the level of awareness between the primary care physicians was low (52%) regarding the National Asthma Protocol and 39% only met the standards of the national guidelines in management of asthma. A study by **Abudahish and Bella** [12] showed that the knowledge of primary health care physician in Saudi Arabia, Asser region was poor (37%). In a study by **Mobureek *,et al.*** [13], it was reported that four of Riyadh major hospitals didn't follow the Saudi National Asthma Protocol guidelines.

In 2009, the Saudi Initiative for Asthma (SINA) was developed with special attention to non-asthma specialists including general practice physicians and primary care physicians [14,15]. SINA guidelines were updated in 2016 [16]. As several studies showed low knowledge and adherence to guidelines, so the aim of this study is to assess the knowledge and attitude of pediatric residents to Saudi Initiative Asthma (SINA) guidelines.

SUBJECTS AND METHODS

This study is cross –sectional study on pediatric resident in Saudi Arabia which performed by sending them an electronic questionnaire that assess their knowledge and adherence to SINA guidelines. The data collected from Saudi Thoracic Surgery Society and several hospitals in the period from June 2017 to September 2017. An ethical approval was taken. Data were analyzed by using Statistical Package for Social Studies (SPSS 22; IBM Corp., New York, NY, USA). Categorical variables were expressed as percentages. Chi square test was used for categorical variables. P-value <0.05 was considered statistically significant.

The study was done after approval of ethical board of King Abdulaziz university.

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RESULTS

The present study included 153 participants, 61(39.9%) were males and 92 (60.1%) were females. Most of participants 153 (69.2%) were a pediatric resident and finished Saudi pediatric residency program in the last 2 years, while 68 (30.8%) didn't. The participants were in different levels of residency, level one included 4 (2.6%), level two included 51 (33.3%), level three included 57 (37.3%) and level four included 41 (26.8%). The large majority of participants 141 (92.2%) had public (governmental) practice in the primary training institute, 8 (5.2%) obtained private training and 4 (2.6) obtained both trainings. There were 69 (45.1%) confirmed that they saw asthma patients daily, 62 (40.5%) said weekly, 18 (11.8%) said monthly and 4 (2.6%) saw asthma patients few times. Regarding the last time for reviewing asthma guidelines, 113 (73.9%) they reviewed it since 6 months, 25 (16.3%) reviewed it 6-12 month ago, 9(5.9%) reviewed it 12-24 months ago, 2(1.3%) reviewed it 24-36 months and 4 (2.6%) reviewed it over 36 months ago. Most of the participants 90 (58.8%) read the Saudi initiative asthma guideline (SINA), while 31 (20.3%) heard about it only, 17 (11.1%) didn't know about it at all and 15 (9.8%) attended a workshop. 68 (44.4%) of residents strongly agreed that following asthma guidelines recommendations affect outcome of patients, 51 (33.3%) agreed, 31 (20.3%) gave neutral answer, 2 (1.3%) and 1 (0.7%) disagreed and strongly disagreed respectively. 38 (24.8%) strongly agreed that the language barrier prevents applying asthma guidelines, 17 (11.1%) agreed, 48 (31.4%) gave neutral answer, 31 (20.3%) and 38 (24.8%) disagreed and strongly disagreed respectively. There were 23 (15%) residents strongly agreed that they had enough time during patient visits to apply asthma guidelines, 30 (19.6%) and 57 (37.3%) agreed and gave neutral answer respectively, 30 (19.6%) disagreed and 13 (8.5%) only strongly disagreed. 104 (68%) of the participants knew that SINA guideline is available for free, while 49 (32%) didn't know that. The large majority of residents diagnosed children with asthma based on history (85.6%), 117 (76.5%) based on examination, 61 (39.9%) based on lung function test, while 9 (5.9%) reported that their diagnosis based on pulse oximetry and no one used CT scan for diagnosis. The prevalence of knowledge between participants is shown in figure1, the knowledge of participants was low where 121 had low knowledge while 32 only had high knowledge.

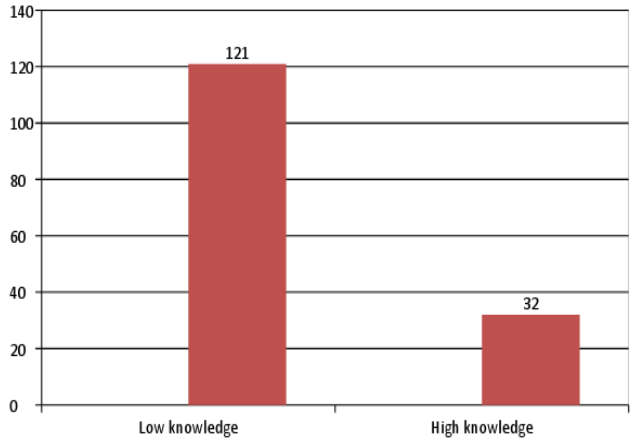

Fig1: Prevalence of knowledge between participants

The correlation between knowledge and characteristics of participants were investigated. Although more females had high knowledge than males, there was no significance difference in knowledge regarding gender (P-value=0.2), also residency level didn't affect the knowledge of participants (P-value=0.3). Regarding the type of practice, residents who received public practice had high knowledge than others (P-value=0.02). The frequency of seeing asthma patients, last time of reviewing of asthma guidelines and knowledge about SINA guideline didn't significantly affect the knowledge of participants. The correlation between knowledge and several variables is shown in table 1.

Table1: Correlation between knowledge and several factors

	Variables	Knowledge N (%)		P-value
		Low 121(79%)	High 32(21%)	
Gender	Male	51 (42.1%)	10 (31.3%)	0.2
	Female	70 (57.9%)	22 (68.8%)	
The level of residency	R1	1 (0.8%)	3 (9.4%)	0.3
	R2	41 (33.9%)	10 (31.3%)	
	R3	46 (38%)	11 (34.4%)	
	R4	33 (27.3%)	8 (25%)	
Type of practice	Public (governmental)	115 (95%)	26 (81.3%)	0.02
	Private	3 (2.5%)	5 (15.6%)	
	Public/Private	3 (2.5%)	1 (3.1%)	
The frequency of seeing asthma patients	Daily	53 (43.8%)	16 (50%)	0.4
	Weekly	53 (43.8%)	9 (28.1%)	
	Monthly	14 (11.6%)	4 (12.5%)	
	Few times	1 (0.8%)	3 (9.4%)	
When was the last time you reviewed asthma guideline	Last6 months	85 (70.2%)	28 (87.5%)	0.08
	6-12 months	23 (19%)	2 (6.3%)	
	12-24months	7 (5.8%)	2 (6.3%)	
	24-36 months	2 (1.7%)	0	
	More than 36 months	4 (3.3%)	0	
Do you know SINA guideline	Not at all	15 (12.4%)	2 (6.3%)	0.5
	I just heard about it	26 (21.5%)	5 (15.6%)	
	I read it	69 (57%)	21 (65.6%)	
	I attended a workshop about it	11 (9.1%)	4 (12.5%)	
Do following Asthma guidelines recommendations affect patient outcomes?	Strongly disagree	1 (0.8%)	0	0.5
	Disagree	2 (1.7%)	0	
	Neutral	24 (19.8%)	7 (21.9%)	
	Agree	42 (34.7%)	9 (28.1%)	
	Strongly Agree	52 (43%)	16 (50%)	
Do you think language barrier prevents applying Asthma guidelines?	Strongly disagree	29 (24%)	9 (28.1%)	0.5
	Disagree	22 (18.2%)	9 (28.1%)	
	Neutral	42 (34.7%)	6 (18.8%)	
	Agree	13 (10.7%)	4 (12.5%)	
	Strongly Agree	15 (12.4%)	4 (12.5%)	
You have enough time during patient visits to apply Asthma guidelines	Strongly disagree	10 (8.3%)	3 (9.4%)	0.8
	Disagree	26 (21.5%)	4 (12.5%)	
	Neutral	41 (33.9%)	16 (50%)	
	Agree	25 (20.7%)	5 (15.6%)	
	Strongly Agree	19 (15.7%)	4 (12.5%)	
Do you know that SINA guideline available for free?	Yes	78 (64.5%)	26 (81.3%)	0.07
	No	43 (35.5%)	6 (18.8%)	

The prevalence of attitude was 57.51%, the gender was the only factor that significantly affected attitude of participants (P-value=0.04), where attitude was more prevalent in female than in males, the correlations between attitude and various factors are shown in table2.

Table1: Correlation between Attitude and several factors

	Variables	Attitude N (%)		P-value
		Absent 65 (42.5%)	Present 88(57.5%)	
Gender	Male	20 (30.8%)	41 (46.6%)	0.04
	Female	45 (69.2%)	47 (53.4%)	
The level of residency	R1	3 (4.6%)	1 (1.1%)	0.1
	R2	25 (38.5%)	26 (29.5%)	
	R3	22 (33.8%)	35 (39.8%)	
	R4	15 (23.1%)	26 (29.5%)	
Type of practice	Public (governmental)	62 (95.4%)	79 (89.8%)	0.6
	Private	2 (3.1%)	6 (6.8%)	
	Public/Private	1 (1.5%)	3 (3.4%)	
The frequency of seeing asthma patients	Daily	24 (36.9%)	45 (51.1%)	0.1
	Weekly	30 (46.2%)	32 (36.4%)	
	Monthly	9(13.8%)	9 (10.2%)	
	Few times	2 (3.1%)	2 (2.3%)	
When was the last time you reviewed asthma guideline	Last6 months	42 (64.6%)	71 (80.7%)	0.1
	6-12 months	12 (18.5%)	13 (14.8%)	
	12-24months	9 (13.8%)	0 (0%)	
	24-36 months	2 (3.1%)	0 (0%)	
	More than 36 months	0 (0%)	4 (4.5%)	
Do you know SINA guideline	Not at all	6 (9.2%)	11(12.5%)	0.1
	I just heard about it	19 (29.2%)	12 (13.6%)	
	I read it	35 (53.8%)	55 (62.5%)	
	I attended a workshop about it	5 (7.7%)	10 (11.4%)	
Do following Asthma guidelines recommendations affect patient outcomes?	Strongly disagree	0 (0%)	1 (1.1%)	0.4
	Disagree	1 (1.5%)	1 (1.1%)	
	Neutral	14 (21.5%)	17 (19.3%)	
	Agree	17 (26.2%)	34 (38.6%)	
	Strongly Agree	33 (50.8%)	35 (39.8%)	
Do you think language barrier prevents applying Asthma guidelines?	Strongly disagree	23 (35.4%)	15 (17%)	0.07
	Disagree	14 (21.5%)	17 (19.3%)	
	Neutral	15 (23.1%)	33 (37.5%)	
	Agree	7 (10.8%)	10 (11.4%)	
	Strongly Agree	6 (9.2%)	13(14.8%)	
You have enough time during patient visits to apply Asthma guidelines	Strongly disagree	5 (7.7%)	8 (9.1%)	0.1
	Disagree	13 (20%)	17(19.3%)	
	Neutral	31 (47.7%)	26 (29.5%)	
	Agree	10 (15.4%)	20(22.7%)	
	Strongly Agree	6 (9.2%)	17 (19.3%)	
Do you know that SINA guideline available for free?	Yes	44 (67.7%)	60 (68.2%)	0.9
	No	21 (32.3%)	28 (31.8%)	

DISCUSSION

Prevalence of asthma in Saudi adults is unknown as stated in 2012 by the Saudi initiative for asthma and the prevalence in Saudi children was found to range from 8 to 25 % [15]. The present study included 153 pediatric residents, the current study was established to evaluate knowledge and attitude of pediatric residents toward the Saudi initiative asthma (SINA) guidelines. SINA guidelines were updated in 2012 with focusing on new evidence such as easy to use charts, a new section is difficult to treat asthma (DTA) and more information about asthma in children [15]. Another SINA guidelines recent update was in 2016 [16]. Most of residents in this study showed low knowledge (79%), while 21% showed high knowledge, however 68 % of participants knew the availability of SINA guidelines for free. A study from Saudi Arabia [17] showed low mean score of knowledge about the National Protocol for Asthma Management between primary health care physicians. **Mobureek *et al***. demonstrated that four major hospitals in Riyadh did not follow the Saudi NAP guidelines [18]. Another study by **Abudahish and Bella** revealed that knowledge of the National Protocol for Asthma Management was very low 37.7% in Asser, KSA [12]. A study by **Nathan *et al.*** [19] showed that there was high awareness of National Asthma Education and Prevention Program (NAEPP) guidelines among physicians between 1998 and 2009. It seems that low knowledge about guidelines is very common between different studies, in our study 73.9% of participants reviewed asthma guidelines 6 months age, and other participants spent longer periods since they reviewed the guidelines, this can explain the low level of knowledge between participants. It is important to investigate the factors that may affect the knowledge level about asthma guidelines. We investigated factors that may affect the knowledge of residents and it was found that the type of practice was the only factor that significantly affected the level of knowledge (P-value=0.02), however no association was found between knowledge and any other studied factor. More participants (81.3%) who got public practice, had higher knowledge than others. This shows the importance of the governmental (Public) training for increasing knowledge of doctors. In the current study, there were 57.5% of residents had attitude toward SINA guidelines. This showed that attitude of participants is better than knowledge. The gender was the only factor that significantly associated with attitude (P-value=0.04), where females showed more attitude (53.4%) toward SINA guidelines than males (46.6%), but there was no other factor affected attitude. To increase knowledge and attitude between residents and doctors, education programs should be established. This study is the first study to evaluate knowledge and attitude of residents toward SINA guidelines in Saudi Arabia, so we couldn't compare our results with previous ones. Also the sample size was rather small, so it is recommended to perform further studies on this subject on a large sample size to find out the factors that influence knowledge and attitude.

CONCLUSION

The knowledge between participants was very low and type of practice was very important factor for increasing knowledge. Attitude of participants was good, however it is important to increase it between residents to get better results.

REFERENCES

1-Al Ghobain MO, Al-Hajjaj MS and Al Moamary MS(2012): Asthma prevalence among 16- to 18-year-old adolescents in Saudi Arabia using the ISAAC questionnaire. BMC Public Health ,12:239.

2-Al-Kabbaa AF, Al-Shamrani KM and Salih MA(2009): DOES THE MANAGEMENT OF BRONCHIAL ASTHMA BY FAMILY PHYSICIANS MEET STANDARDS OF THE NATIONAL PROTOCOL?. Journal of Family & Community Medicine, 9 (3):21-25.

3- Kamal H, Eyubova A, Akhundov S *et al*.(2015): Bronchial Asthma: Clinical Practice Guideline for General Practitioners. American International Health Alliance, Washington,DC.http://www.aiha.com/wp-content/uploads/2015/07/CPGAsthmaEN.pdf

4-Al Frayh AR, Shakoor Z, Gad El Rab M and Hasnain S(2001): Increased prevalence of asthma in Saudi Arabia. Ann Allergy Asthma Immunol.,86:292-296.

5-Hijazi N, Abalkhail B and Seaton A(1998): Asthma and respiratory symptoms in urban and rural Saudi Arabia. Eur Respir J.,12:41-44.

6-Alfrayah A, Hasnain S, Gadelrab M and Alsedaairy S(1998): Prevalence of asthma in three regions of Saudi Arabia. European Respiratory J.,12(29):52.

7-Creticos P, Reed C, Norman P *et al.* (1996): Ragweed immunotherapy in adult asthma. N Eng J Med.,334: 501-6.

8-Tsang K, Lam W *et al.* (1997): Inability of physicians to use metered dose inhalers. Journal of Asthma,34(6): 493-8.

9-Wilson S, Scamagas P, German D *et al.* (1993): Acontrolled trial of two forms of selfmanagement education for adults with asthma. Am J Med.,94:564-74.

10-Gallert A, Gellert S and Illife S(1990): Prevalence and management of asthma in a London

inner city general practice. Br J Gen Practice,40:97-201.

11-Almutawa F, Al-Mutairy G, Al-Arada N and Kamel M(2014): Perception of primary care physicians about guidelines of bronchial asthma . Alexandria Journal of Medicine,50:17–24.

12-Abudahish A and Bella H(2006): Primary care physicians' perceptions and practices on asthma care in Aseer region. Saudi Arabia. Saudi medical journal,27(3):333–7.

13-Mobeireek A, Gee J, Al-Mobeireek K *et al.*(1996): Prescribing for asthma in the outpatient clinics in Riyadh: does it follow the guidelines?. Ann Saudi Med.,16: 497-500.

14-Al-Moamary M, Al-Hajjaj M, Idrees M, Zeitouni M, Alanezi M, Al-Jahdal H *et al.*(1990): The Saudi initiative for asthma. Ann Thorac Med.,4:216-33.

15-Al-Moamary M, Alhaider S, Al-Hajjaj M, Al-Ghobain M, Idrees M, Zeitouni M *et al.*(2012): The Saudi initiative for asthma-2012 update: Guidelines for the diagnosis and management of asthma in adults and children. Ann Thorac Med.,7:175-204.

16-Al-Moamary M, Alhaider S, Idrees M, Al Ghobain M, Zeitouni M, Al-Harbi A *et al.*(2016): The Saudi Initiative for Asthma - 2016 update: Guidelines for the diagnosis and management of asthma in adults and children. Annals of Thoracic Medicine,11(1):3-42.

17-Rovithis E, Lionis C, Schiza S, Bouros D, Karokis A, Vlachonikolis I *et al.*(2001): Assessing the knowledge of bronchial asthma among primary health care physicians in Crete: a preand post-test following an educational course. BMC Med Educ.,1:2–6.

18-Mobeireek A, Gee J, Al-Mobeireek K *et al.*(1996): Prescribing for asthma in the outpatient clinics in Riyadh: does it follow the guidelines? Ann Saudi Med.,16: 497-500.

19-Nathan R, Meltzer E, Blaiss M, Murphy K, Doherty D and Stoloff S(2001): Awareness of and Adherence to National Asthma Education and Prevention Program (NAEPP) Guidelines by Asthma Care Specialists and Primary Care Physicians: Comparison of Results From the 2009 Asthma Insight and Management (AIM) and 1998 Asthma in America (AIA) Surveys. *Chest.*,140(4):240A.