Assessment of Risk Factors of Asthma in Health Institutions in Maysan Governorate, Iraq

Ali Abdulwahed Abdul Jabbar[1], Buthaina Ateyah Rashid[2]

[1]M.Sc. Student, [2]Assist Prof., Middle Technical University College of Health & Medical Technology, Baghdad, Iraq

Introduction

Background: Asthma is a common chronic lung disease in which the airways (bronchi) become inflamed and are abnormally sensitive to certain triggers. Asthma can affect people of all races and ages and although there is no known cure, there are many ways to control it. The symptoms of asthma include coughing, shortness of breath, wheezing and chest tightness.

Materials and Method: This is A case-control study conducted in Consultation Center for Chest and Respiratory Diseases at Al-Sadr Teaching Hospital in Maysan Governorate Data was collected over a period of five months between the 1st of November 2019 to the 1st of April 2020.

Results: The commonest risk factors that had been found causes asthma in cases was family history of asthma with OR=5.127, CI=(2.77-9.49), upper respiratory tract infection with OR=5.059, CI=(2.29-8.76), active smoker with OR=2.145, CI=(1.18-3.91)Occupational exposure to dust with OR = 4.660, CI= (2.68-8.10), skin allergy with OR =2.77, CI=(1.28-6.03).

Conclusion: Significant association was found between **(**Family history of asthma, upper respiratory tract infection, active smoking,occupational exposure to dust, chemical, fumes and gases, allergies and the used of NSAIDs before the onset of asthma) and asthma in adults in maysan governorate.

Keywords: *Risk Factors; Asthma; chronic lung disease; Maysan.*

Introduction

Asthma is a common chronic respiratory disease and is a major public health problem worldwide and affects people of all races and genders. Reports indicate that the number of asthma sufferers worldwide may exceed 334 million, according to a report published by the World Asthma Network in 2014**(1)**. Many studies have shown that the prevalence of asthma varies between countries and within countries and is directly proportional to different allergies, where different lifestyles are adopted and societies become civilized and this trend is expected to continue during the next two decades**(2)**. For people who suffer from asthma, it can cause them a major disability and affect the quality of life significantly**(1)(2)**. The significant increase in the prevalence of asthma and other allergies (for example, eczema) cannot be explained over the past several decades by relying on genetic factors alone and this leads to an increased focus on other risk factors such as environmental exposure, for example and it is expected that cases will rise Asthma to over 400 million cases globally in 2025**(3)**. due to climate change, increased exposure to air pollution, urbanization, changing the immune response and changing lifestyle**(3)(4)**. in the UK receiving approximately 4.3 million adults treating from asthma**(5)**.

Aim of Study: To assess the major risk factors of asthma in adult in health institutions in maysan governorate.

Patients and method

A case-control study was conducted in Consultation Center for Chest and Respiratory Diseases at Al-Sadr Teaching Hospital in Maysan Governorate(one of the 18 Iraqi governorate located in south of Iraq the number of persons 1 million and characteristics with Marshes and oil) It is a center for the diagnosis and treatment of

respiratory diseases and is located in the center of the city of Amara and provides care and treatment to respiratory patients from all its districts and aspects of Maysan Governorate. The center provide services to average 50 patients daily with respiratory diseases of them about 2-3 patients with asthma daily for 5days in a week. The daily center activities include history taking, clinical examination, laboratory investigations, management, the follow-up to asthma patients, health education, also different respiratory cases for management and follow up. Data was collected over a period of five months between the 1st of November 2019 to the 1st of April 2020.

Statistical Analysis: Analysis of data was carried out using the available statistical package of SPSS-25 (Statistical Packages for Social Sciences- version 25).

Finding: The results in table 1 showed the distribution of age and gender among cases and controls and there was no statistically significant difference between the two groups (p >0.05) the higher percentage of cases was in age groups (40-49) years (27.5%). the higher percentage of controls was in the age group (30-39) years (30.8%). Predominantly males (36.7%) and females (63.3%) in both cases and controls.

Table (1): Distribution of cases and controls according to age and gender.

		Asthmatic patients		Controls		P value
		No	%	No	%	
Gender	Male	44	36.7	44	36.7	
	Female	76	63.3	76	63.3	
Age (Years)	<20 Years	7	5.8	4	3.3	0.356
	20---29	12	10.0	21	17.5	
	30---39	30	25.0	37	30.8	
	40---49	33	27.5	27	22.5	
	50---59	20	16.7	18	15.0	
	=>60 Years	18	15.0	13	10.8	

The results in (table 2) shows persons that used electrical heating system protected from asthma with low significant association OR=0.553, CI=(0.32-0.95). Persons that use oil heating system at risk (5 times) to have asthma with highly statistical significant OR =4.846, CI=(2.40-9.80). Regarding dampness on the wall, the percentage of the cases was 73.3% and controls were 65.0%, with no statistical differences between the two groups (p-value= 0.162).). Regarding household pets, the percentage of cases was 19.2% and controls were 15.0% with no statistical significant P-Value =0.162. persons that allow pets in bed at risk 5 times to have asthma with significant association OR=5.46, CI=(1.24-24.09).

Table (2): Distribution of cases and controls according to heating system inside the house, dampness on the wall and household pets.

Type of heating system inside the house		Asthmatic patients		Controls		P value	OR (95% CI)
		No	%	No	%		
Electrical	Yes	34	28.3	50	41.7	0.030*	0.553 (0.32-0.95)
	No	86	71.7	70	58.3		
Oil	Yes	108	90.0	78	65.0	0.0001*	4.846 (2.40-9.80)
	No	12	10.0	42	35.0		

Type of heating system inside the house		Asthmatic patients		Controls		P value	OR (95% CI)
		No	%	No	%		
Is there dampness on the wall	Yes	88	73.3	78	65.0	0.162	1.481 (0.85-2.57)
	No	32	26.7	42	35.0		
You have household pets	Yes	23	19.2	18	15.0	0.391	1.344 (0.68-2.64)
	No	97	80.8	102	85.0		
Allow pets be in bed	Yes	12	52.2	3	16.7	0.019*	5.46 (1.24-24.09)
	No	11	47.8	15	83.3		

This table shows the persons that have a family history of asthma at risk 5 times to have asthma compared with none with highly significant association OR=5.127, CI=(2.77-9.49). the high percentage of family history in cases was 18.3% in mother and in controls was 7.5% in sister.

These results shows persons that have upper respiratory tract infection at risk five times to have asthma with highly significant association OR=5.059, CI=(2.29-8.76). this table shows persons that have an infection from 6-11 months at risk 8 times to have asthma with highly significant association OR=8.25, CI=(1.80-37.91), persons that have infections =>12 months at risk 4 times to have asthma with highly significant association OR=4.29, CI=(1.48-12.41).

Table (3): Distribution of cases and controls according to family history and upper respiratory tract infection.

		Asthmatic patients		Controls		P value	OR (95% CI)
		No	%	No	%		
Family history of asthma	Yes	57	47.5	18	15.0	0.0001*	5.127 (2.77-9.49)
	No	63	52.5	102	85.0		
The relationship with the person in the family has asthma	Brother	3	2.5	3	2.5		
	Father	17	14.2	2	1.7		
	Grandfather	4	3.3	-	-		
	Mother	23	18.3	3	2.5		
	Sister	3	2.5	9	7.5		
	Sons	-	-	1	0.8		
	Uncle	7	5.8	1	0.8		
Have URT infection before asthma onset	Yes	86	71.7	40	33.3	0.0001*	5.059 (2.29-8.76)
	No	34	28.3	80	66.7		
Duration of infection	<6 months	40	46.5	33	82.5	0.001*	-
	6---11	20	23.3	2	5.0		8.25 (1.80-37.91)
	=>12 months	26	30.2	5	12.5		4.29 (1.48-12.41)

The results in table 4 show persons that are an active smoker before the onset of asthma at risk 2 times to have asthma from non-smoker with significant association OR=2.145, CI=(1.18-3.91) the high percentage of cigarettes packet/day was 56.4% of cases and 72.7%of controls were in 1 packet/day, With statistically no significant (p-value = 0.433). the high percentage of the duration of smoking of cases was 43.6% in duration

(=>15 years), for controls were 40.9% in duration (10---14 years). Regarding second-hand smoke, the percentage of cases was 50.8% and controls were 49.2% with statistically no significant (p-value = 0.796).

Table (4): Distribution of cases and controls according to smoker and second hand smoke.

		Asthmatic patients		Controls		P value	OR (95% CI)
		No	%	No	%		
Smoker before onset asthma	Yes	39	32.5	22	18.3	0.012*	2.145 (1.18-3.91)
	No	81	67.5	98	81.7		
Cigarettes packet/day	1	22	56.4	16	72.7	0.433	
	2	15	38.5	5	22.8		
	3	2	5.1	1	4.5		
Duration of smoking	<5 years	5	12.8	1	4.5	0.530	
	5---9	7	17.9	4	18.2		
	10---14	10	25.6	9	40.9		
	=>15 years	17	43.6	8	36.4		
Second hand smoke	Yes	61	50.8	59	49.2	0.796	1.069 (0.64-1.77)
	No	59	49.2	61	50.8		

The results in (table 5) show persons that are overweight that have BMI(25-29.9) at risk 1 time to have asthma but with no significant association OR=1.42, CI=(0.78-2.58). Persons that are Obese I that have BMI (30-34.9) at risk 3 times to have asthma with significant association OR=2.54, CI=(1.15-5.63). persons that are Obese II that have BMI (=>35) at risk 5 times to have asthma with significant association OR=4.89, CI=(1.77-13.53).

Table (5): Distribution of cases and controls according to BMI.

		Asthmatic patients		Controls		P value	OR (95% CI)
		No	%	No	%		
BMI (Kg/m^2)	Normal (18.5-24.9)	33	27.5	51	42.5	0.005*	-
	Overweight (25-29.9)	45	37.5	49	40.8		1.42 (0.78-2.58)
	Obese I (30-34.9)	23	19.2	14	11.7		2.54 (1.15-5.63)
	Obese II (=>35) Total	19120	15.8100	6120	5.0100		4.89 (1.77-13.53)

Discussion

Regarding the age, the results in this study demonstrated that the higher percentage was in the age group between (40-49) years with no significant association (p-value =0.356). it disagrees with the study that reported by Abdulhussian, 2015 in Basrah that found most of the study samples were among age group (30-44) years with no significant association (p-value =0.730)[6]. In the current study, this results demonstrated that the higher percentage of gender in females 63.3% in compared with males 36.7%.which is in agreement with the result that done by Abdulhussian, 2015 in Basrah that found most of the study samples were among females 62.5% in compared with males 37.5%[6].

Regarding the type of heating system inside the house the results of current study shows that the higher percentage was 90.0% in cases and 65.0% in controls were oil, which it disagrees with the result of study done by Esmaeil Idani,2019 in Iran which found that the higher percentage of cases was 98.3% and controls were 98.4% were Gas[7] . This disagreement may be due to the type of fuel available in Iraq compared to other countries, Also, it may be due to economic and environmental matters.

In this study regarding dampness on the wall, this result demonstrate that the percentage of the cases was 73.3% and controls were 65.0%, with no statistical differences between the two groups (p-value= 0.162). which is in agreement with the result of study done by Esmaeil Idani,2019 in Iran that found that the percentage of cases was 51.1% and controls were 49.2% with no statistical differences between the two groups (p-value= 0.433)[7].

regarding household pets, the current study demonstrate that the percentage of cases have household pets was 19.2% and controls were 15.0% and this results shows the percentage of allowing pets in bed was 52.2% in cases and 16.7% in controls with statistical significance (p-value = 0.019).which is in agreement with the results of study done by Esmaeil Idani,2019 in Iran that found the percentage of cases have household pets was 8.5% and controls were 7.9% and the percentage of allowing pets in bed was 2.8% in cases and 0.9% in controls with statistical significance (p-value <0.001)[7].

The present study demonstrate that the percentage of cases have family history of asthma was 47.5% and for controls 15.0%,which is in agreement with results of study that done by Elfaki NK, 2017 in Saudi Arabia. That found that the percentage of cases have family history of asthma was 66.8%. and for controls 40.2%[8].

The current study demonstrate that the percentage of cases have upper respiratory tract infection was 71.7% and for controls were 32.5% with highly statistically significant (OR= 5.253, CI=3.03-9.11) . which is in agreement with the results of study that reported by Al-Mazam, A., 2001 in Saudi Arabia that found that the percentage of cases have upper respiratory tract infection was 61.8% and for controls were 13.6% that found to be an independent risk factor for bronchial asthma (OR=10.5, CI=5.11-21.89)[9].

Regarding active smoker this study shows that the percentage of the active smoker was 32.5% among cases and 18.3 among controls,which is in agreement with the results of study done by Elfaki, N. K., 2017 in Saudi Arabia. that found the percentage of cases are active smokers was 26.6% and for controls were 22.8%[8].

Regarding second-hand smoke, this study shows that the percentage of cases was 50.8%,and for controls were 49.2%. which is in agreement with the results of study done by Elfaki, N. K., 2017 in Saudi Arabia. that found the percentage of cases was66.3% and for controls were 56.0%[8].

Regarding BMI(Body Max Index) this study shows that the higher percentage of cases was 37.5% were overweight (25-29.9) and the lower percentage of cases was 15.8% were obese II(=>35). which is in agreement with the results of study done by Muhammed, S. M et al,2012 in Baghdad which found that the higher percentage of asthmatic patients was45.7% were overweight (25-29.9). and the lower percentage of cases was 2.3% were obese II(=>35)[10]. But, it is disagreed with the results of study done by Rönmark, E.et al,2005 in northern Sweden that found that the higher percentage of cases was 42.1% were normal (20-24.9)[11]. This disagreement may be due to a different lifestyle in Iraq than in other countries.

Conclusions

Statistically significant was found between the type of heating system inside the house and asthma in adults. Also, between patients who had a family history of asthma and asthma in adults so Positive association was found between upper respiratory tract infection and asthma in adults.

Conflict of Interest: None

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Ethical Clearance: None

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