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Original Research

Patients' Awareness of Pharmacotherapy and Asthma Risk Factors at Private Clinics in Sanaa, Yemen

Khaled Al-Akhali[1,2*], Al-Worafi Y[3], Ali Salman Al-Shami[1], Abdullah Ahmed Al dahbali[2,4], Sakran Faiz Khaled Mohammed[2]

[1]Department of Pharmacy, Faculty of Medical Sciences, Thamar University, Dhamar, Yemen
[2]Lebanese International University, School of Pharmacy, Department of Biomedical Sciences, Republic of Yemen.
[3]Deputy Dean and Professor, College of Medical Sciences, Azal University for Human Development, Yemen
[4]Department of Clinical Pharmacy, College of Pharmacy in Sanaa University, Republic of Yemen

For Correspondence:
Khaled Al-Akhali
Thamar University, Faculty of Medical Sciences, Department of Pharmacy, Dhamar, Yemen
Email: alakhalikhaled@gmail.com
Tel.: +967 771625660

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Abstract

Background: Asthma is a chronic illness of the bronchi that is characterized by increased sensitivity to various triggers, inflammation of the airways, and obstruction. Childhood asthma is increasingly prevalent in underdeveloped nations, with Yemen being a notable example, despite being insufficiently recognized and treated.
Aim: This study aimed to investigate awareness of Yemeni population for asthma risk factors and the use of medication in private clinics.
Methods: The study included cross-sectional questionnaires sent to outpatients of private clinics specializing in pulmonary allergies in Sana'a, Yemen. We analyzed the survey findings and developed asthma awareness assessments for various demographic groups.
Results: We have supplied a complete set of 150 questionnaires for the research we conducted. A significant majority of patients (46%) included in the research were aged 15 and above, with females accounting for 53% of the total. Merely 1.3% of the individuals were not of Yemeni origin. 30.7% of the well-educated patients were unable to read or write. The prevalence of current wheezing among non-smokers without a family history of the condition was found to be extremely high. The majority of individuals surveyed reported suffering from allergies. The use of aspirin was the most common among the patients, with rate of 35.33%, followed by ibuprofen and diclofenac sodium at rates of 6.67% and 9.33%, respectively. Approximately half (50%) of people with asthma experience mild intermittent symptoms and have a preference for using an inhaler (86.7%). Prednisolone pills are used by 56.7% and 48.7% of other people not.
Conclusion: According to research, Yemeni patients have a limited understanding of their asthma condition. Furthermore, additional efforts should be made to disseminate bronchial asthma management.

Keywords: Awareness, Asthma, Pharmacotherapy, Risk Factors, Yemeni patients.

1. Introduction

Asthma is a heterogeneous condition characterized by chronic respiratory congestion, as stated by Global initiative for Asthma (GINA)[1]. The condition is characterized by the occurrence of respiratory symptoms such as difficulty breathing, shortness of breath, chest tightness, and coughing that vary in duration and intensity, along with changes in the restriction of air flow during exhalation. According to the National Institutes of Health's National Asthma Education and Prevention Program (NAEPP), exercise, cold air, mannitol, or isocaloric hyperventilation can narrow the airways in people with.

asthma. There is a significant correlation between the intensity of asthma symptoms and the level of airway hyperresponsiveness [2].

Asthma is a dynamic disorder that can arise after being exposed to sensitizing agents and can improve with the use of anti-inflammatory drugs or by reducing exposure to triggering environments. Asthma is composed of two components: a modifiable aspect resulting from airway irritation, and an extra-unyielding component generated by underlying structural changes in the airways, generally referred to as remodeling [3]. Obstacles to reducing the disease burden of asthma include poverty, pollution, tobacco use, limited education, cultural attitudes towards medications, and dependence on emergency care [4].

Intermittent airflow restriction is frequently reversible, either gradually or through therapy. While reversibility may not be fully achieved in certain asthma patients. Asthma is a prevalent chronic respiratory disorder that affects 1–18% of the global population in various countries. Asthma can be diagnosed based on a variety of symptoms, including wheezing, dyspnea, chest constriction, and/or puffing, as well as a recurring limitation of expiratory airflow. The intensity of both symptoms and airflow limits varies over time due to factors such as sensitivity to exercise or irritating exposure, environmental changes, and viral respiratory infections. Symptoms and restrictions in airflow may spontaneously diminish or be alleviated with medication, and in some cases, they may eventually disappear permanently. On the contrary, individuals with asthma may experience recurring exacerbations that can be life-threatening and have a significant impact on those affected. Asthma is commonly characterized by tracheal reactivity to specific or secondary stimuli, as well as persistent airway inflammation. These characteristics typically persist. Although symptoms may be absent during normal pulmonary function, they may improve following therapy. Three types of cells, such as eosinophil, mast cell cytokines, and substances that cause inflammation, such as interleukin-1 and steroid hormones, can result in inflammation and partial or complete blockage. These conditions can be resolved with prescription medicines or can heal naturally [5,6]. The airways in people with asthma are more sensitive to direct challenges like histamine or methacholine as well as, indirect challenges like adenosine monophosphate, exercise, cold air, mannitol, or isocaloric hyperventilation. This increased sensitivity is known as airway hyperresponsiveness. There is a significant correlation between the intensity of asthma symptoms and the level of airway hyperresponsiveness [2]. Asthma is a dynamic disorder that can arise after being exposed to substances that cause sensitivity, but it can also improve with the use of anti-inflammatory drugs or by reducing exposure to triggers. Asthma is composed of two components: a modifiable aspect resulting from airway irritation, and an extra-unyielding component generated by underlying structural changes in the airways, generally referred to as remodeling. Six obstacles to reducing the disease burden of asthma include poverty, pollution, tobacco use, limited education, cultural attitudes towards medications, and dependence on emergency care [5]. The aim of this study was to investigate awareness of Yemeni patients regarding asthma disease, risk factors for asthma, the severity of illness, use of drugs, side effects and pharmacotherapy of asthma.

2.Motheds

Study design

A cross-sectional survey was conducted over a one-month period, from December 2022 to January 2023. The study targeted outpatients with lung allergies who were receiving treatment at private clinics in Sana'a, the capital city of Yemen. The sampling size was determined using a survey method, where 150 Asthmatic patients provided the complete information required for evaluation during the mentioned period above. Asthmatic patients aged 15 years and older who do not have any other medical conditions were included in the study. While, patients without asthma and asthmatic children under the age of 15 were excluded. The questionnaire was validated by academic experts and reliability test (Cronbach's Alpha) was 0.83. It was found that every patient completed the 150 questionnaires that were given out during the investigation.

Study Tool and Data Collection

A self-administered questionnaire was utilized that was validated by academic experts and reliability test (Cronbach's Alpha) was 0.83. The questionnaire consisted of four distinct components, namely demographics, risk factors, drug-related issues, and illness severity. The demographic part included age, gender, nationality, and level of education. The second part included four questions that were designed to assess participants' understanding of asthma. The third part specifically addresses drug-related issues and emphasizes the disease's consequences. For instance, the utilization of non-steroidal anti-inflammatory medicines that is assessed based on their existence, frequency, and duration. Furthermore, the fourth part evaluates the severity of the condition. For instance, it evaluates the occurrence, regularity, and duration of asthma symptoms experienced within the past month.

Ethical Considerations

Prior to administering the survey, the Ethics Committee in the College of Medicine at LIU obtained ethical approval (REC#2022-07-65) and ensured that all participants supplied their agreement to participate in the research. The responses were both anonymous and confidential, and the participants were informed prior to answering the questionnaire. All the participants consented in writing and were assured of their confidentiality.

Statistical analysis

The data collected from the filled-out forms was entered in Excel spreadsheet and send it to the Statistical Program for Social Science Data (SPSS, version 20), for the purpose of analyzing the data. The outcomes have been assessed using both descriptive statistics. The frequency and proportion.

3. Results

A total of 150 patients, aged 15 years or above, participated in the study. The most of participants (53.3%) were female and 58% of them were between the ages of 15 and over 45 years. The majority, comprising, were of Yemeni nationality, 98.7%. Additionally, 20.7% (31 out of 150) had an educational level below secondary education. Around 25.3% of the participants were affiliated with a university. While, the largest proportion (30.7%) were unable to read or write (Table 1).

Table 1: The demographic characteristics of the sample (n = 150)

Variable	Number	Percentage
Age/Year		
15 – 25	21	14.0%
26 – 35	28	18.7%
36 – 45.	35	23.3%
> 45	66	44.0%
Gender		
Male	70	46.7%
Female	80	53.3%
Nationality		
Yemeni	148	98.7%
Not Yemeni	2	1.3%
Educational level		
Illiterate	46	30.7%
< Secondary school	31	20.7%
Secondary school	28	18.7%
University	38	25.3%
> University	7	4.7%

Table 2. shows patients' responding towards risk factors for asthma and drug-related asthma. Where, 88.7% of the patients experience allergies to animal hair, dust, chemicals, food etc. Furthermore, almost three-quarters (76.7%) of the patients were non-smokers, and two-thirds of them had no family history of allergic disease (66%). The majority of patients with asthma (94.7%) were not employed in the industry.

Table 2: Risk factors for asthma and drug-related asthma

Item	Frequency	Percentage
Risk factors for asthma		
Are you a smoker?		
Yes	35	23.3%
No	115	76.7%
Do you have a family history of allergic disease or asthma?		
Yes	51	34.0%
No	99	66.0%
Do you suffer from an allergy to some things such as animal fur, bird feathers, chemicals, dust, certain foods, liquids, pollen or preservatives?		
Yes	133	88.7%
No	17	11.3%
Do you work in a manufactory?		
Yes	8	5.3%
No	142	94.7%
Drug-related asthma		
Do you use one of the following drugs?		
Aspirin	53	35.3%
Ibuprofen	10	6.7%
Diclofenac sodium	14	9.3%
Don't use any of the drugs	73	48.7%

On the other hand, the findings indicate that 48.67% of patients did not take any non-steroidal anti-inflammatory medicines for asthma treatment. However, more than third (35.33%) of the patients chose use aspirin as a response whereas, ibuprofen and diclofenac sodium were only chosen by 6.67% and 9.33%, respectively.

Regarding to the severity of the disease" Mild intermittent" represented 50.0% and, " Severe persistent asthma" was the lowest percentage (11.3%). While, findings of the duration and frequency of symptoms associated with asthma intensity indicated to that a significant proportion (30.7%) of the patients experienced episodes of dyspnea for Once - twice a week. About more than ten percent (10.7%) of the respondents reported the waking up from sleep due to asthma one time weekly. The usual frequency of using a medical inhaler was found to be 1-2 times per day among 27.3% of the patients . The symptoms typically manifest among 82.0% of patients during the winter, which is the most prevalent season of the year (Table 3).

Table 3: Clinical features among asthmatic patients

Item	Frequency	Percentage
Severity of the disease		
What is the severity of the disease?		
Mild intermittent	75	50.0%
Mild persistent asthma	29	19.3%
Moderate persistent asthma	29	19.3%
Severe persistent asthma	17	11.3%
The severity of asthma symptoms		
Over the past month, how many times have you had difficulties of breath?		
More than once a day	11	7.3%
Once a day	16	10.7%
From 3-6 times a week	25	16.7%
Once - twice a week	46	30.7%
Never gets	52	34.7%
Over the past month, how many times have you wake up because of asthma symptoms (chest pain, coughing, chest restriction, wheezing or shortness of breath) during the night?		
Four nights or more a week	27	18.0%
2 – 3 nights in week	24	16.0%
Once a week	16	10.7%
1-2 during the month	20	13.3%
Never gets	63	42.0%
Over the past month, how many times used a medic inhaler or steam device (such as Ventolin)?		
Three or more times per day	16	10.7%
Once or twice a day	41	27.3%
2-3 times a week	30	20.0%
Once a week or less	15	10.0%
Never gets	48	32.0%
How many times have you had an asthma case and gone to the emergency clinic to receive treatment, over the past year?		
Six or more times	7	4.7%
3-4 times	8	5.3%
Once or twice times	34	22.7%
Never gets	101	67.3%
What more seasons of the year in which the symptoms of asthma appear you have..?		
Fall	1	0.7%
Winter	123	82.0%
Spring	15	10.0%
Summer	11	7.3%
What is your assessment of asthma control you have over the past year?		
Not controlled	5	3.3%
Poor control	26	17.3%
Limited control	50	33.3%
Good control	69	46.0%

Table 4 showed that the predominant method of treatment was inhalation therapy, accounting for 86.7% of cases. over about third (32.7%) of the patients used

inhaled flixotide steroid. However, prednisolone was found to be more frequently used in asthma management (56.7%). Additional, 84.7% of patients adhered to the drug schedule.

Table 4: Treatment of asthma and use of medications

Item	Frequency	Percentage
Do you use one of the inhalers?		
Yes	130	86.7%
No	20	13.3%
What are you using for inhalers?		
Ventolin	36	24.0%
Seretide	6	4.0%
Symbicort	35	23.3%
Flixotide	49	32.7%
Other	24	16.0%
Are any of these drugs also used to treat asthma?		
Singular	8	5.3%
Theophylline	7	4.7%
Prednisolone	85	56.7%
Don't use any of them	50	33.3%
Do you take the drugs on time?		
Yes	127	84.7%
No	23	15.3%

4. Discussion

The present study revealed that a significant proportion of patients, specifically 44% of those over the age of 45, and 53.3% were female. Moreover, a significant proportion of patients (30.7%) had shortness of breath on a weekly basis. Furthermore, a higher percentage of patients (68%) employed medical inhalers or steam devices (such as Ventolin). The study demonstrated that a significant proportion of the patients (30.7%) were illiterates, indicting in the same time that individuals with a lower education were more prone to developing asthma and respiratory issues. This result aligns with studies conducted by Sanna et al, [7], and by Tomas et al, [8].

The findings indicated that, allergens account for the bulk of asthma occurrences—specifically, 88.7% while family history of allergic disease or asthma accounts for 34%. The important to avoid allergens and irritants of the respiratory tract, such as smoking and detergents with strong odors, is underscored by the fact that 23% of the participants were smokers. Moreover, our findings indicated that a significant proportion of individuals with asthma, use aspirin (35.33%) and non-steroidal anti-inflammatory drugs (16%) that have the potential to exacerbate asthma symptoms. Specifically, ibuprofen (6.67%) and diclofenac (9.33%) were identified as commonly used medications with this potential. Such of medications were also reported by other study of Jenkins et al.2004 [9]. Levels of the disease severity among patients in the present study, were slightly similar to findings of a study conducted by Zureik et al. in Australia and New Zeakand, where reported that severity levels rates were 50%, 29%, and 21% for mild severe, moderate and severe conditions, respectively[10].

Furthermore, we found that the majority of patients (86.7%) employ inhaled corticosteroids. The recommended method of administration according to a study carried out by Mark FitzGerald et al. [11]. There is a greater understanding of the symptoms that can worsen asthma, compared to the findings of a studies by Wafa Allam [12] and Hyrkas-Palmu., et al [13], which revealed an increase in asthma symptoms during the winter. This aligns with that was reported by 82% of the patients in the present study.

5. Conclusions

Individuals with low educational attainment frequently experience symptoms of asthma, and the majority of them are afflicted by allergies. A significant number of people favor the administration of corticosteroid inhalation, followed by the consumption of prednisolone pills. Consequently, future educational endeavors should incorporate guidance on managing asthma...

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Authors Contributions
All authors contributed to the data evaluation, drafting, and revision of the publication. They provided final approval for the completed version and agreed to take responsibility for all aspects of the work.

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Conflicts of interest
The authors declare that there are no conflicts of interest.

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