

# Assessing Knowledge and Awareness of Asthma and Chronic Obstructive Pulmonary Disease Among the Iraqi Population

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**Purpose:** Asthma and chronic obstructive pulmonary disease (COPD) are chronic respiratory diseases that result from persistent inflammation of the bronchial tubes. This study aimed to evaluate general attitudes and knowledge of Iraqi individuals towards asthma and COPD and to determine factors associated with higher knowledge levels, particularly considering the increase in pollution levels in developing countries.

**Patients and Methods:** A cross-sectional study was conducted using a Google Forms questionnaire distributed across various social networking platforms. The questionnaire collected demographic data (age, gender, marital status, and economic status) alongside participants' knowledge about chronic respiratory diseases.

**Results:** A total of 1033 Iraqi adults participated, 61% of whom were women. Most participants were non-smokers (82.4%) and did not report having chronic diseases (85.7%). Although majority demonstrated high levels of knowledge about COPD and asthma (68.8% and 59.8%, respectively). Nearly half of the participants believed that smoking is the main cause of asthma. Binary logistic regression analysis revealed that female gender, working in the medical field, and presence of chronic conditions were significantly associated with higher asthma knowledge levels ( $p < 0.05$ ). While younger age, higher income levels, and working in the medical field were significantly associated with higher COPD knowledge levels ( $p < 0.05$ ).

**Conclusion:** This study showed that while most Iraqis possess good knowledge of chronic respiratory diseases, awareness remains limited and influenced by factors such as socioeconomic status. It is essential to conduct further research on awareness related to respiratory diseases and to develop incentive programs aimed at improving societal awareness.

**Keywords:** asthma, COPD, Iraqi adults, knowledge, awareness, respiratory

## Introduction

Chronic respiratory diseases are among the prevalent and critical health conditions today. These conditions are defined as a group of diseases that affect the respiratory system, including the lungs and airways.<sup>1</sup> The impact of these diseases includes prolonged illness, an increased likelihood of hospitalization, and financial costs that significantly strain the government budget.<sup>2</sup> Respiratory diseases have been increasing steadily in recent years due to the increase in the spread of pollutants and pathogens.<sup>1,3</sup> In addition, there is substantial evidence that respiratory viral infections can contribute to the development of asthma in early childhood and are a major trigger of exacerbations in both asthma and COPD.<sup>4</sup> These infections lead to increased airway inflammation and hyperresponsiveness, worsening disease outcomes and increasing healthcare burden. The exact mechanisms by which viral infection contribute to the development or

exacerbation of these diseases are not yet fully understood. The term “chronic respiratory disease” encompasses many conditions that affect the respiratory system, with the most common being chronic obstructive pulmonary disease (COPD) and asthma.<sup>5</sup> COPD is the most common and severe respiratory disease. It is classified as the third leading cause of death globally, having resulted in at least 3.2 million deaths in 2019.<sup>6</sup> Smoking is the primary cause of COPD.<sup>7</sup> There are several additional factors contributing to the emergence and development of the disease, including occupational exposure, air pollution, genetic factors, and age.<sup>8</sup> COPD is caused by chronic inflammation in the pulmonary airways, which significantly impairs flow of air into and out of the lungs, resulting in difficulty breathing and shortness of breath.<sup>9</sup> The prevalence of COPD in developing countries, including Iraq, is higher than in more developed nations.<sup>10</sup>

Asthma is an inflammatory disease of the lower respiratory tract and ranks as the second-most common respiratory disease. Asthma is more common in children than in adults, with symptoms that include shortness of breath, difficulty breathing, and coughing.<sup>11</sup> The World Health Organization reports that over 262 million people worldwide suffer from asthma, and 455000 deaths occurred due to asthma in 2019.<sup>12</sup> Approximately 16.3% of schoolchildren in Iraq are affected by asthma.<sup>13</sup> The diagnosis of chronic respiratory diseases, as well as the distinction between asthma and COPD, relies primarily on lung function tests.<sup>9</sup>

Asthma and COPD are both chronic inflammatory airway diseases that share some overlapping features, including airflow limitation, respiratory symptoms, and exacerbations triggered by infections and environmental exposures. While they are distinct conditions with different pathophysiologies and typical age groups, they are often compared in public health studies due to similarities in risk factors, underdiagnoses, and the need for long term self-management.<sup>14</sup>

Scientific knowledge of respiratory diseases, including asthma and COPD, is relatively poor in many societies.<sup>10,15,16</sup> A lack of knowledge can lead to delayed diagnosis, inadequate management, and increased disease burden. While good knowledge and awareness of COPD and asthma are essential for early detection, prevention, effective management, and overall improvement of respiratory health, limited information is available regarding the level of knowledge and awareness about asthma and COPD among the Iraqi population. Understanding the level of public knowledge is critical for designing effective interventions aimed at reducing the impact of these conditions on public health. Therefore, the present study aimed to assess the level of awareness and knowledge among the Iraqi population about respiratory diseases, particularly asthma and COPD.

## Materials and Methods

This cross-sectional study was conducted from January to March 2023. A questionnaire was designed using Google Forms, and its link was distributed by the research team across various social networking platforms, including Facebook, WhatsApp, Instagram, Viber, and Telegram. The survey was shared in general community groups and public forums to ensure diverse participation. The questionnaire targeted a wide range of individuals from Iraqi society, regardless of occupation, social status, or academic background. Eligibility criteria included being 18 years or older and currently residing in Iraq. At the beginning of the survey, a screening question confirmed the participant’s age and residency area. Those who selected an age below 18 or residency outside of Iraq were automatically exited from the questionnaire and were not allowed to proceed.

## Ethical Approval

Participant consent for this study was obtained by providing information about the study, followed by a question, at the beginning of the questionnaire: “Do you agree to participate in the study?” If the response was “yes”, the participant proceeded to complete the questionnaire; if they answered with “no”, they were automatically exited from the questionnaire. No personal information that could identify participants was collected, and all data were kept confidential and used solely for the purpose of this study. Ethical approval for conducting this research was obtained from Al-Zaytoonah University (approval number 3\11\2022-2023). This study was conducted in accordance with the principles of the Declaration of Helsinki.

## Study Design and Data Collection

The questionnaire used in the study was developed based on review papers and several previous studies conducted in countries outside Iraq.<sup>17,18</sup> The content of the questionnaire was translated into Arabic, the native language of Iraqi society. The questionnaire interface included general information about the study and its purpose, to ensure that participants were well informed before providing any information. Before starting the questionnaire, participants were required to click on a button stating, “I agree to participate in this study”. They were then directed to a follow-up question: “Are you Iraqi and do you live in Iraq?” If the answer was “yes”, participants could proceed to complete the remaining sections of the questionnaire; if the answer was “no”, the questionnaire ended automatically.

The questionnaire consisted of three sections, each containing several questions. The first section contained general questions, such as sex, age, weight, height, and whether the participant had any chronic condition which was defined as a condition that last 1 year or more and require ongoing medical attention or limit activities of daily living or both.<sup>19</sup> In addition, this section included questions about whether the participant studied or worked in the medical field, engaged in sports, and their smoking status (non-smoker, ex-smoker, smoker, or living with smokers). Furthermore, it assessed participants' monthly income and level of education. The second section of the questionnaire focused on knowledge about COPD, including questions about whether the participant has heard about the disease, its causes, the organs it affects, its symptoms, the medications used for treatment, and the medical examinations used for diagnosis. The third and final section focused on knowledge about asthma, covering whether asthma is contagious or hereditary, a chronic or short-term condition, its nature and symptoms, the medications used for treatment, and the effects of asthma medications. The knowledge score was computed by adding one point to each correct answer and zero points to all incorrect answers. When their response had been submitted, participants were presented with a message thanking them for their participation.

## Tool Validity

To ensure the integrity and content validity of the questionnaire, it was reviewed by a panel of four experts (two pulmonologists and two clinical pharmacists) who confirmed its content validity. Additionally, the questionnaire was pilot tested with 30 members of the general public to confirm face validity and confirm clarity and ease of understanding.

## Sampling and Sample Size Calculation

Convenience and snowballing methodology were applied in the present study. The required sample size for this study was calculated using the Krejcie and Morgan method,<sup>20</sup> which is based on the formula for estimating sample size from a given population at a 95% confidence level with a 5% margin of error. Based on the estimated adult population in Iraq, the minimum required sample size was determined to be 385 participants. The study recruited substantially more participants (1033 participants) to increase the validity and generalizability of the study results.

## Statistical Analysis

All statistical analyses were conducted using the Statistical Package for the Social Sciences, version 28. Categorical variables were presented as frequencies and percentages. The normality of the continuous variables, the COPD knowledge score, and the asthma knowledge score were assessed using Q-Q plots. These plots revealed that the scores were non-normally distributed. Therefore, the median and interquartile range (IQR) were used to present these variables. The medians for COPD and asthma knowledge were computed, and participants scoring above the median were classified into the “high” level group, while the rest were placed into the “low” level group. The Wilcoxon test was performed to evaluate differences between asthma and COPD knowledge scores. Two binary regression models were constructed to analyze variables associated with the levels of knowledge about COPD and asthma. The independent variables in these regression models were sex, age, income level, level of education, working or studying in the medical field, smoking status, exercise activity, and the presence of chronic conditions. The significance level was set at  $p < 0.05$ .

## Results

The present study enrolled 1033 participants, of whom 61% were female (see Table 1). Over half of the participants were aged 21 to 30 years (59.6%), and 45% were in the lower-middle income group. Additionally, 47.2% held bachelor’s degrees, and 50% were employed in the medical field. Furthermore, the majority of participants were non-smokers, with no chronic conditions (82.4% and 85.7%, respectively).

**Table 1** Sociodemographic Characteristic of the Participants

Variables		Frequency (%)
Sex	Male	403(39%)
	Female	630 (61%)
Age	18–20	113 (10.9%)
	21–30	616 (59.6%)
	31–40	208 (20.1%)
	>40	96 (9.3%)
Income Level	Low	138 (13.4%)
	Lower-middle	465 (45%)
	Middle-high	378 (36.6%)
	High	52 (5%)
Level of education	Secondary school or less	65 (6.3%)
	Diploma	32 (3.1%)
	University Student	260 (25.2%)
	Bachelor’s degree	488 (47.2%)
	Higher education	188 (18.2%)
Regular exercise	Yes	293 (28.4%)
	No	740 (71.6%)
Presence of chronic conditions	Yes	148 (14.3%)
	No	885 (85.7%)
Working or studying in the medical field	Yes	517 (50%)
	No	516 (50%)
Smoking Status	Non-smoker	851 (82.4%)
	Former smoker	40 (3.9%)
	Current smoker	142 (13.7%)
Cigarette use	No	944 (91.4%)
	Yes	89 (8.6%)
E-cigarette use	No	1005 (97.3%)
	Yes	28 (2.7%)

(Continued)

**Table 1** (Continued).

Variables		Frequency (%)
Hookah use	No	947 (91.7%)
	Yes	86 (8.3%)
Passive smoking	Yes	472 (45.7%)
	No	561 (54.3%)

Table 2 displays the items used to evaluate participants' COPD knowledge. Items with the highest proportion of correct responses were "What organ is affected by chronic obstructive pulmonary disease?", followed by "Can dust and chemicals in factories and closed places cause chronic obstructive pulmonary disease?" (88.4% and 74.9%, respectively).

**Table 2** COPD Knowledge Items

Items		Frequency (%), or Median (Q1-Q3)
Have you ever heard of chronic obstructive pulmonary disease?	No	440 (42.6%)
	Yes	593 (57.4%)
Can chronic obstructive pulmonary disease cause death?	Yes*	495 (47.9%)
	No	45 (4.4%)
	Do not know	493 (47.7%)
Chronic obstructive pulmonary disease affects	Blood	2 (0.2%)
	Heart	12 (1.2%)
	Liver	2 (0.2%)
	Lung*	913 (88.4%)
	Do not know	104 (10.1%)
The main cause of chronic obstructive pulmonary disease is	Diabetes Mellitus	2 (0.2%)
	Hypertension	37 (3.6%)
	Smoking*	732 (70.9%)
	Do not know	262 (25.4%)
Can dust and chemicals in factories and closed places cause chronic obstructive pulmonary disease?	Yes*	774 (74.9%)
	No	15 (1.5%)
	Do not know	244 (23.6%)
In which age group is chronic obstructive pulmonary disease most common?	Children	40 (3.9%)
	Young people	74 (7.2%)
	Adults >40 years old*	332 (32.1%)
	All ages	309 (29.9%)
	Do not know	278 (26.9%)

(Continued)

**Table 2** (Continued).

Items		Frequency (%), or Median (Q1-Q3)
One of the symptoms that appear inpatients with chronic obstructive pulmonary disease is	Shortness of breath	208 (20.1%)
	Dry cough	22 (2.1%)
	Productive cough	9 (0.9%)
	All the above mentioned symptoms*	579 (56.1%)
	Do not know	215 (20.8%)
Are there medications and therapeutic methods for the treatment of chronic obstructive pulmonary disease?	Yes*	523 (50.6%)
	No	49 (4.7%)
	Do not know	461 (44.6%)
What medical examination is required to diagnose chronic obstructive pulmonary disease?	Blood analysis	22 (2.1%)
	Chest X-ray	266 (25.8%)
	Pulmonary Function Testing (PFT)*	441 (42.7%)
	Liver Function Tests	4 (0.4%)
	Do not know	300 (29%)
COPD Score		5 (3–6)
Knowledge Level	High	711 (68.8%)
	Low	322 (31.2%)

**Note:**\*statistically significant at  $p < 0.05$ .

In contrast, the item with the lowest proportion of correct responses was “In which age group is chronic obstructive pulmonary disease most common?”, with a correct response rate of 32.1%. The median knowledge score was 5 (IQR: 3–6), out of a maximum possible score of 9.

Nine items assessed participants’ asthma knowledge (Table 3). The item with the highest proportion of incorrect answers was “Is smoking the main cause of asthma?” (49.7%). In contrast, the items with the lowest proportion of incorrect answers were “Is asthma a contagious disease?”, followed by “Is asthma a chronic disease?” (9.5%, and 12.7% respectively). The median asthma knowledge score was 5 (IQR: 4–6) out of a maximum possible score of 9. Based on this, 59.8% were of participants were classified into the high knowledge group, while 40.2% were placed in the low knowledge group.

The Wilcoxon test was conducted to evaluate differences between asthma and COPD scores, as asthma scores were significantly higher than COPD scores ( $p = < 0.001$ ).

Two binary regression models were constructed to assess the association between various characteristics and participants’ COPD and asthma knowledge. As shown in Table 4, participants aged 21 to 30 years higher odds of being in the high knowledge group for COPD compared to the oldest group (> 40 years old). Similarly, participants in the high-income group were more likely to belong to the high knowledge group for COPD than those in the low-income group (OR = 1.736, 95% CI = 1.031–2.923,  $p = 0.038$ ; OR = 2.721, 95% CI = 1.237–5.983,  $p = 0.013$ , respectively). In contrast, participants who were not in the medical field and those who did not exercise regularly had lower odds of being in the high COPD knowledge group (OR = 0.241, 95% CI = 0.180–0.323,  $p < 0.001$ ; OR = 0.700, 95% CI = 0.517–0.949,  $p = 0.021$ , respectively).

**Table 3** Knowledge About Asthma Items

Items		Frequency (%), or Median (Q1-Q3)
Have you ever heard of asthma?	Yes	1016 (98.4%)
	No	17 (1.6%)
Can asthma cause death?	Yes*	591 (57.2%)
	No	282 (27.3%)
	Do not know	160 (15.5%)
Is asthma a contagious disease?	Yes	35 (3.4%)
	No*	935 (90.5%)
	Do not know	63 (6.1%)
Is asthma considered a genetic disease?	Yes*	634 (61.4%)
	No	228 (22.1%)
	Do not know	171 (16.6%)
Is asthma a chronic disease?	Yes*	902 (87.3%)
	No	51 (4.9%)
	Do not know	80 (7.7%)
Is smoking the main cause of asthma?	Yes	342 (33.1%)
	No*	520 (50.3%)
	Do not know	171 (16.6%)
What are the symptoms that appear in the patient with asthma?	Wheezing	35 (3.4%)
	Shortness of breath	228 (22.1%)
	Cough	34 (3.3%)
	All the above mentioned symptoms*	685 (66.3%)
	Do not know	51 (4.9%)
In which age group is asthma most common?	Children	187 (18.1%)
	Young people	41 (4%)
	Adults >40 years old	0 (0%)
	All ages*	695 (67.3%)
	Do not know	110 (10.6%)
Asthma Score		5 (4–6)
Knowledge Level	High	618 (59.8%)
	Low	415 (40.2%)

**Note:**\*statistically significant at p (< 0.05).

**Table 4** Binary Regression for Variables Associated with Participants' Knowledge About COPD and Asthma

Variables		COPD				Asthma			
		P-value	OR	95% CL for OR		p-value	OR	95% CL for OR	
				Lower	Higher			Lower	Higher
Sex	Female	0.149	1.510	0.863	2.640	0.015	2.021	1.149	3.555
	Male	(Reference group)							
Age	18–20	0.810	1.088	0.548	2.158	0.494	0.785	0.392	1.572
	21–30	0.038	1.736	1.031	2.923	0.387	1.269	0.740	2.174
	31–40	0.466	1.227	0.708	2.124	0.395	1.282	0.723	2.275
	>40	(Reference group)							
Income Level	Lower-middle	0.151	1.356	0.895	2.055	0.655	1.099	0.726	1.663
	Middle-high	0.985	0.996	0.647	1.533	0.124	1.409	0.910	2.183
	High	0.013	2.721	1.237	5.983	0.152	1.789	0.808	3.963
	Low	(Reference group)							
What is your level of education?	Secondary school or less	0.087	0.560	0.288	1.088	<0.001	0.325	0.169	0.625
	Diploma	0.923	1.046	0.424	2.580	0.141	0.532	0.230	1.232
	University Student	0.345	0.774	0.454	1.318	0.553	0.843	0.479	1.484
	Bachelor's degree	0.803	0.952	0.645	1.404	0.125	0.723	0.478	1.095
	Post grad	(Reference group)							
Do you work in the medical field?	No	<0.001	0.241	0.180	0.323	<0.001	0.508	0.377	0.683
	Yes	(Reference group)							
Smoking Status	Former	0.097	1.877	0.892	3.949	0.407	1.372	0.649	2.899
	Current	0.441	0.855	0.574	1.274	0.135	0.742	0.503	1.097
	Non-smoker	(Reference group)							
Regular exercise	No	0.021	0.700	0.517	0.949	0.880	1.024	0.754	1.389
	Yes	(Reference group)							
Presence of chronic conditions	No	0.313	0.816	0.549	1.211	0.012	0.572	0.370	0.883
	Yes	(Reference group)							

The results indicated that sex, level of education, working or studying in the medical field, and the presence of chronic conditions were independently and significantly associated with asthma knowledge levels. Females had twice the odds of being in the high-level group compared to males (OR = 2.021, 95% CI = 1.149–3.555, p = 0.015). Participants who did not have a chronic condition and those who were not working in the medical field had lower odds of being in the high-level group compared to their counterparts (OR = 0.883, 95% CI = 0.572–0.370, p = 0.012; OR = 0.683, 95% CI = 0.508–0.377, p < 0.001, respectively). Additionally, participants with a secondary school education or lower were less likely to be in the high-knowledge group compared to those with postgraduate degrees (OR = 0.325, 95% CI = 0.169–0.625, p < 0.001).

## Discussion

The present study aimed to evaluate the knowledge and awareness in the Iraqi population regarding respiratory diseases, specifically asthma and COPD. The findings of this study indicate that approximately two-thirds of the participants demonstrated good knowledge regarding asthma and COPD. These findings contrast with a recent study conducted in Syria, where only 25% of the study sample reported ever having heard of COPD.<sup>10</sup> In Slovenia, public knowledge and awareness of COPD were also low, with half of the study sample having never heard of the condition.<sup>21</sup> A recent Indian study highlighted that more than half of their population had poor knowledge about asthma and COPD.<sup>22</sup> Similarly, a multi-centre Chinese study found that only 18.31% of participants had good knowledge about asthma.<sup>23</sup>

Ghorpade et al<sup>24</sup> studied the level of awareness of COPD among populations in rural areas in India and reported a mere 1% awareness rate. In contrast, other studies conducted in different countries have documented higher awareness rates. For instance, in Turkey,<sup>25</sup> good awareness was reported among 49% of the study sample,<sup>26</sup> while in Japan, 21% of the participants demonstrated good awareness.<sup>27</sup> The variation in awareness rates may be attributed to several factors, including healthcare infrastructure, socioeconomic disparities, cultural beliefs, public health policies, research efforts, and the prevalence and burden of these diseases.

A recent study conducted in Saudi Arabia, which assessed asthma knowledge and awareness among the general population. The Saudi study found that while most participants recognized asthma as a chronic and non-infectious disease, awareness regarding its potentially life-threatening complications and certain symptoms such as dry cough was lower. Similarly, our results showed that although many Iraqi participants had good general knowledge about asthma, specific aspects such as disease severity and certain triggers or symptoms were less well understood. These similarities underscore the need for targeted educational programs across Middle Eastern populations to improve disease specific awareness and health outcomes.<sup>28</sup>

The results of the regression analyses in the present study offer valuable insights into the associations between sample characteristics and knowledge levels regarding COPD and asthma among different demographic groups. Several factors appeared to influence awareness of these illnesses, including age, income, sex, education level, working or studying in the medical field, and the presence of chronic conditions. Our findings showed that younger participants tended to have higher knowledge levels compared to their older counterparts. This may be because younger individuals may have greater exposure to health education programs, easier access to digital platforms for information gathering purposes, as well as greater health consciousness.

Participants with higher income levels were more likely to demonstrate higher levels of COPD knowledge compared to those from lower-income groups, suggesting that socioeconomic status plays a part in COPD awareness; higher-income individuals may have easier access to healthcare resources, educational materials, and health promotion opportunities.<sup>29</sup>

Conversely, participants who did not exercise regularly were less likely to exhibit high levels of knowledge about COPD. This finding is consistent with a previous study conducted by Hadakie et al,<sup>10</sup> which demonstrated a link between employment in healthcare-related fields and increased awareness about COPD. These results highlight the importance of healthcare professionals possessing knowledge about COPD and the role of regular exercise in promoting awareness and understanding of this disease.

Regarding asthma, our findings showed strong associations between gender, education level, medical field involvement, the presence of chronic illness, and asthma knowledge levels. Females were twice as likely to belong to the high knowledge group compared to males. This could be attributed to the fact that females are more likely to be affected by asthma and thus more likely to seek information about the condition than males.<sup>30</sup>

Participants without chronic conditions or not working in the medical field had lower odds of belonging to the high asthma knowledge group compared with their counterparts. This may be explained by the fact that individuals with chronic illnesses tend to be exposed to more information about asthma, similar to those working or studying in the medical field. Furthermore, participants with only secondary school education or less were less likely to belong to the high knowledge group compared to those with postgraduate degrees. This finding highlights the positive influence of higher education on asthma knowledge. Higher levels of education provide access to academic resources, foster critical thinking skills, and offer health education opportunities, all of which contribute to increased awareness and understanding of asthma.

## Strengths and Limitations

This study contributes to existing literature on asthma and COPD knowledge and awareness among Iraqis, particularly by evaluating awareness levels across society as a whole. It sheds light on an understudied area and establishes a benchmark for future research efforts and interventions. The findings of this study have significant implications for healthcare professionals and policymakers. Healthcare providers can use these findings to design tailored interventions aimed at increasing understanding of respiratory diseases among diverse demographic groups. Similarly, policymakers can use these insights to effectively allocate resources and develop strategies to address knowledge gaps. Additionally, this study highlights the need for comprehensive respiratory health education programs targeted at populations with lower knowledge levels, such as older individuals or those with lower levels of education.

However, this study has several limitations that should be considered. First, this research utilized an online questionnaire, which inherently introduces potential recall, and selection biases and excludes individuals without internet access. Nonetheless, prior studies have demonstrated that web-based research is a cost-effective approach capable of producing samples representative of the broader population at a reduced expense.<sup>31</sup> This method facilitates access to otherwise unreachable individuals and offers a secure, private setting, encouraging respondents to provide accurate and honest answers compared to face-to-face interviews.<sup>32</sup>

With the global increase in internet users, it has been proposed that the socio-demographic characteristics of participants recruited through online surveys increasingly mirror those of the general population.<sup>33</sup> This trend is observable in Iraq, where internet penetration has reached approximately 81.7%<sup>34</sup> as of early 2025. This percentage is likely higher when excluding individuals under the age of 18, suggesting that online surveys in Iraq can effectively capture a broad and representative segment of the adult population. Second, this study employed a convenience sampling approach, which could have resulted in selection bias. Convenience sampling involves selecting individuals who are readily available and accessible, which may not accurately represent the broader population. As a result, the findings may be influenced by characteristics unique to the selected participants, thereby limiting the generalizability to larger populations. Third, it is important to note that this study did not assess interventions designed to enhance awareness, as this was beyond its scope. Future research should design and evaluate such interventions to provide a more comprehensive understanding of effective approaches for increasing awareness. Finally, A approximately half of the participants (50%) were employed in the medical field, a proportion higher than typically found in the general population. While this may potentially limit the generalizability of our results, it is important to consider that healthcare professionals play a central role in managing asthma and COPD, as well as in disseminating knowledge and awareness regarding these conditions. Furthermore, our relatively large sample size ( $n = 1033$ ), substantially exceeding the minimum recommended sample ( $n = 385$ ), supports sufficient statistical power to perform subgroup analyses and directly compare asthma and COPD knowledge levels between medical and non-medical participants. This allows for a more comprehensive exploration of differences that may arise from occupational representation.

## Conclusion

This study highlights that a significant proportion of individuals in Iraq demonstrate good knowledge regarding asthma and COPD. Furthermore, awareness levels are influenced by several factors, including age, income, sex, education, occupation, and the presence of chronic conditions. This research could help identify potential disparities in knowledge across different demographic and socioeconomic groups.

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## Disclosure

The authors declare no conflicts of interest related to this study.

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