Health Related Quality of Life for Patients with Bronchial Asthma

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Abstract

Background: Asthma is a worldwide health problem and a major disease affecting all age groups **.The aim of the study:** Was to assess health related quality of life for patients with bronchial asthma. **Research design:** A descriptive exploratory design was utilized. **Setting:** The study was conducted at chest outpatients' clinic of El Sheikh Zayed Al Nahyan Hospital, Cairo, Egypt. **Sample:** A convenient sample composed of (50) adult patients with bronchial asthma. **Tools:** Three tools were used. **First tool:** Structured interviewing questionnaire for patients with bronchial asthma was used, including two parts: **Part (I)** Socio-demographic characteristics of patients, **part (II)** Knowledge assessment sheet for patients with bronchial asthma **.Second tool:** Asthma Control Questionnaire (ACQ). **Third tool:** Asthma Quality of Life Questionnaire (AQLQ)**. Results**: Slightly less than three quarters of the studied patients had uncontrolled level over their disease. There was a significant statistical positive correlation between total level of knowledge and total level of quality of life at P-value =0.036 and there was a significant statistical positive correlation between total level of quality of life and total level of asthma control at P-value =0.040 among the studied patients. **Conclusion:** The majority of the studied patients had unsatisfactory total knowledge related to bronchial asthma disease. While regarding total level of health related quality of life, more than two fifths of them had a poor level, less than one third of them had average level, and more than one quarter of them had a good level. **Recommendations:** Increasing the awareness of the patients about the importance of maintaining health related quality of life of patients with bronchial asthma disease through campaigns, mass media and social networks. Further studies including larger samples of bronchial asthma patients from different geographical areas to generalize the results in Egypt.

Keywords: Bronchial asthma, Quality of Life (QoL).

Introduction:

Asthma is a worldwide health problem and a major disease affecting all age groups. It is a chronic disease involving the airways that carry air in and out of the lungs. In people with asthma, these airways are inflamed, making them very sensitive and often reacting to allergens or irritants. There is no cure for asthma; however, symptoms can be controlled with the proper diagnosis, medication, and management plan ***(Shaker et al., 2022).***

Prevalence always widely varying between countries and within every single country, and has been increasing with the presence of an allergy, as modern lifestyles are adopted and communities become more urbanized, that trend will continue over the next two decades. Variations in asthma prevalence between countries may be related to differences in climate, socioeconomic status, air pollution, lifestyle, and exposure to respiratory illness, as well as allergen level fluctuation ***(Yousef et al, 2021).***

According to World Health Organization (WHO) prevalence of asthma is approximately 358 million patients around the world; moreover, it is anticipated to become 400 million by 2025. According to centers for disease control and prevention, approximately 25 million people in the U.S. have asthma. This equals about 1 in 13 people. About 20 million U.S. adults age 18 and older have asthma. Asthma rates are highest in black adults in the U.S. Asthma is more common in female adults than male adults. Around 9.8% of female adults have asthma, compared to 6.1% of male adults. **In Egypt**, over 6.7% and 26.5% of the general adult and pediatric population, respectively, have asthma. The highest prevalence was noted in Greater Cairo and the northern portion of the country, where most urban populations live ***(Tarraf et al., 2021 a).***

Quality of life (QoL) is a significant endpoint as it reflects the impact of the disease from the patient's perception. Improper asthma management can have a substantial effect on the Quality of Life (QoL) (including physical, emotional, occupational, and social impacts, where the symptoms differ from one patient to another. Quality of life (QoL) is explained as

the perception that patients have of their position in life in relation to their aims, expectations, concerns, and standards. The patient's wellbeing is the standard clinical outcome to assess QoL and prevent morbidity from uncontrolled disease ***(Kharaba et al., 2022).***

Nursing interventions are effective in reducing asthma related emergencies, the frequency of acute asthma attacks, hospital admission, and improving quality of life among asthma patients ***(Tao et al., 2023).*** Nurse can support asthmatic patients from the beginning of diagnosis for teaching them coping strategies and increasing their self-efficacy ***(Karaarslan &Başbakkal, 2023).***

Significance of the Study

Asthma is the most common chronic illness of the adults. It has a major impact on the lifestyle and accounts for millions of missed person each year. Thirty percent of the young people with asthma have limited activity. Despite advances in the understanding of asthma, asthma morbidity has increased over the past decade. The prevalence of asthma and exercise-induced asthma is increasing worldwide, and assessment for this condition is a common reason for referral to pulmonary function laboratories***(Zepeda & Camara, 2021).***

Asthma is a public health concern in all nations that is not primarily connected to the country's degree of development. Asthma is putting a growing strain on governments, healthcare systems, families, and patients all across the world ***(Yousef et al, 2021).***

According to the ESMAA (Assessment of Asthma Control in Adult Asthma Population in the Middle East and North Africa) study, nearly half of the Egyptian patients are uncontrolled. Besides, nearly 75% of patients do not adequately adhere to proper asthma management plan ***(Tarraf et al., 2021 b).***

Aim of the study:

-This study aimed to assess health related quality of for patients with bronchial asthma through the following-:

1- Assessing knowledge of patients with bronchial asthma.

2- Assessing quality of life for patients with bronchial asthma.

Hypothesis/Research Question:

1. What is level of patients' knowledge with bronchial asthma?
2. What is level of health-related quality of life for patients with bronchial asthma?
3. Is there correlation between knowledge and health-related quality of life for patients with bronchial asthma?

1. Research design

A descriptive exploratory design was utilized to achieve the aim of this study. Descriptive research is designed to describe a group of individuals based on a set of variables to document their characteristics. It provides a basis for further investigation ***(Portney, 2020).***

2. Setting:

This study was conducted at chest outpatients' clinic of El Sheikh Zayed Al Nahyan Hospital which affiliated to specialized medical centers that affiliated to Ministry of Health, Cairo governorate. Chest outpatients' clinic was in the third floor and consists of a daily care unit and an outpatient clinic. The daily care unit consists of two rooms, each room has three beds and the out patients' clinic consists of two rooms, each room has two beds this setting was selected especially because it serves a large number of citizens from different areas affiliated to Cairo governorate.

3. The study Subject:

A convenient sample composed of (50) adult patients with bronchial asthma. Who visited the outpatient clinic through consecutive six months from the beginning of February (2023) until the end of July (2023) and accepted to participate in the study.

Sample size calculation:

Based on power analysis; Type I error (α) =0.05 with confidence level (1-α) =0.95 and Type II error (β) = 0.20, by power test (1- β) =0.80, the sample size was determined by using the Steven Thompson formula that has been adopted from ***(Gupta et al, 2016)*** according to the following equation:-

$$n = \frac{NxP(1-P)}{((N-1)x\,(d^2/z^2)) + P(1-P)}$$

Which:

n= is the required sample size

N= the population size (57)

Z= confidence level (1.96)

d= error level (5%)

p= proportion of population (0.5)

$$n = \frac{57x0.5(1-0.5)}{((57-1)x\,(0.05^2/1.96^2)) + 0.5(1-0.5)}$$

Therefore, the minimal sample size was found to be =50 participants.

Data collecting tools:

-Three tools were used for data collection

First tool: Patient's interviewing questionnaire It is divided into two parts:

Part I: Patient socio-demographic characteristics:

It was developed by the investigator in a simple Arabic language based on extensive review of relevant and recent literatures ***(Scibor et al.,2021)*** and ***(Lage et al.,2021)*** as age, gender, residence, marital status, educational level, occupation , effect of the disease on regular work , monthly income , number of family members ,number of rooms , home ventilation ,and crowding index .

Part II: Knowledge assessment questionnaire for patients with bronchial asthma.

This tool was designed by the investigator and written in simple Arabic language to assess the patients' knowledge about bronchial asthma after reviewing related current and recent literatures. It included 42 close ended questions categorized under the following nine domains:

- Definition of bronchial asthma "Seven questions."
- Causes of bronchial asthma "Four questions."
- Clinical manifestation of bronchial asthma "Four questions."
- Complications of bronchial asthma "Four questions."
- Treatment of bronchial asthma "Seven questions"
- Prevention of bronchial asthma "Four questions."
- Nutrition for bronchial asthma "Six questions."
- Life style "Four questions."
- Home hygiene instructions "Two questions".

Scoring system

Knowledge obtained from the studied patients was compared to a model key answer and graded as following-:

- Zero was given for each incorrect or don't know answer.
- One was given for each correct answer.

The total scores of knowledge were summed up and converted into a percentage score. It ranged from 0–42 degree which equal 100% and categorized as following-:

- Satisfactory knowledge if total score ≥75%.
- Unsatisfactory knowledge if total score from < 75%

Second tool: Asthma Control Questionnaire (ACQ).

This tool was adopted from ***(Juniper, 1998 & Khusial et al., 2020)*** to assess asthma control. It is a five point likert scale consisting of six items related to asthma during the night, asthma symptoms in the morning, activity limitation, and shortness of breath, usage of bronchodilator and asthma control rate.

❖ **Scoring system**

The total scores of asthma control were summed up and ranged from degrees 0–24 degrees. It was categorized as following-:

- Controlled if total score ≥ 20 degree.
- Uncontrolled if total score from < 20 degree.

Third tool: Asthma Quality of Life Questionnaire (AQLQ).

This validated tool was adopted from ***(Juniper, 1999 & Schatz et al., 2006)***. It was concerned with assessment of quality of life for patients with bronchial asthma. This tool consisted of three point likert scale and included thirty two statements divided into four sub scales as follows:

•Symptoms (Twelve items)
•Environment (Four items)
•Emotion (Five items)

•Activities (Eleven items)

❖ **Scoring system**

Responses of each statement was scored as follows: Rarely = 3, Sometimes= 2 and Always = 1. The total scores of quality of life were summed up and converted into a percentage score. It ranged from 0–96 degree which equal 100% and was categorized as following-:

- Poor QOL if total score ≤ 50%.
- Average QOL if total score from 50% - 75%
- Good QOL if total score ≥75%

Operational Design

The operational design included preparatory phase, tools validity and reliability, pilot study and fieldwork.

A- Preparatory phase

It included reviewing past and current, national, and international related literature using books, articles, journals, periodicals, and the internet to be acquainted with the subjects of the study and tools of data collection.

Content validity

The tools of data collection in this study.it was tested for appropriateness, relevance, correction, and clearance through a jury of (7) experts, five professors and two lecturers from Medical Surgical nursing department at the faculty of nursing Ain shams university.

Content reliability

Testing reliability of the proposed tools was done statistically by **Cronbach's alpha** test. The coefficient alpha for knowledge questionnaire =0.86.

B- Pilot study

A pilot study was carried out on 10% of the sample (5 patients) to test clarity and applicability of the data collection tools. The subjects who were included in the pilot study were included in the study sample because no modification was done after conducting the pilot study done, so the sample of pilot study included in the study.

C- Field Work

A written informed consent was obtained from each participant prior to the data collection after explaining the aim of the study. Data collection started and was completed within six months from the beginning of February (2023) until the end of July (2023). Data collection was done at the previous mentioned setting two days per week (Saturday and Tuesday) by the investigator in the morning shift between 8.00 AM to 12.00 PM. Patients' interviewing questionnaire data were collected from the patients themselves. Each patient took about 40-50 minutes for interviewing and completing the questionnaires data as the following; interview questionnaire took about 20-25 minutes, Asthma Control Questionnaire took about 5 minutes and Asthma Quality of Life Questionnaire took about 15-20 minutes.

Administrative design

Official letters were issued from the faculty of nursing, Ain Shams University. These letters were submitted to the medical and nursing director of El Sheikh Zayed Al Nahyan Hospital which is associated to specialized medical centers that relate to Ministry of Health.

Ethical considerations:

Written approval to conduct the study was obtained from the ethical committee in the faculty of nursing, Ain Shams University before starting the study. The investigator explained and clarified the aim of the study and how it will be conducted on the subjects before obtaining the consent of participation. The investigator assured maintaining anonymity and confidentiality of data of

subjects included in the study. The participants were informed about their right to withdraw from the study at any time without giving any reason.

Statistical Design

The collected data were organized, categorized, tabulated and statistically analyzed using the statistical package for social science (SPSS) version 24 and Microsoft Excel version 2010. Quantitative data were presented as mean and standard deviation (SD) while qualitative data were expressed as frequency and percentage. Chi-square test was used as a test of significance to test the relations between quantitative variables as the variables were not normally distributed.

Significance of the results:

- P-value > 0.05 Not significant (NS).
- P-value ≤ 0.05 Significant (S).
- P-value ≤ 0.01 Highly Significant (HS).

Results:

Table (1): Shows that, 52.0% of the studied patients were in age group 41-50 years old with mean ± SD age 41.87 ± 8.36 and 68.0% of them were males. Regarding residence, 74.0% of them were from rural areas, but in regards to their marital status, 78.0% of them were married. 46.0% of them were secondary education and 64.0% of them were employed. Moreover, 52.0% of them reported that the disease affects their regular work and 82.0% of them reported insufficient monthly income. Regarding the number of family member, 52.0% of the studied patients had more than 5 members in the family and 74.0% of them had 3 rooms. In addition, 62.0 % of them reported good home ventilation. 74.0% of the studied patients stated living in un-crowded houses while 18.0% of them reported living in crowded houses and only 8.0% of them mentioned living in overcrowded houses.

Figure (1): Explains that, 18.0% of the studied patients had satisfactory total level of knowledge while 82.0% of them had unsatisfactory total level of knowledge about bronchial asthma.

Figure (2): Represents that, 74.0% of the studied patients had uncontrolled level of bronchial asthma while 26.0% of them had controlled level of bronchial asthma.

Figure (3): Illustrates that, 42.0% of the studied patients had poor level of quality of life and 32.0% of them had average level. While, 26.0% of the studied patients had good quality of life.

Table (2): Demonstrates that, there was a significant statistical positive correlation between total level of knowledge and level of quality of life among the studied patients at P-value =0.036. Additionally, there was a significant statistical positive correlation between total level of quality of life and total level of asthma control among the studied patients at P-value =0.040.

Table (1): Frequency distribution of the studied patients according to their socio-demographic characteristics (n=50).

Demographic characteristics	N	%
Age (in years)		
20-30	7	14.0
31-40	11	22.0
41-50	26	**52.0**
>50	6	12.0
Mean ± SD 41.87± 8.36		
Gender		
-Male	34	**68.0**
-Female	16	32.0
Residence		
-Rural	37	**74.0**
-Urban	13	26.0
Marital status		
-Married	39	**78.0**
- Single	11	22.0
Educational level		
-Illiterate	3	6.0
-Elementary	8	16.0
-Secondary	23	**46.0**
-University	16	32.0
Occupation		
-Manual work	19	38.0
-Office work	13	26.0
-Un employed	18	36.0
Effect of disease on regular work		
-Yes	26	**52.0**
-No	24	48.0
Monthly income		
-Sufficient	9	18.0
-Insufficient	41	**82.0**
Number of family member		
1-2	6	12.0
3-5	18	36.0
>5	26	**52.0**
Mean ± SD 5.26 ± 2.3		
Number of rooms		
- One	5	10.0
- Two	8	16.0
- Three	37	**74.0**
Home ventilation		
- Good	31	**62.0**
- Average	12	24.0
- Poor	7	14.0
Crowding index		
- Over crowded	4	8.0
- Crowded	9	18.0
- Uncrowded	37	**74.0**

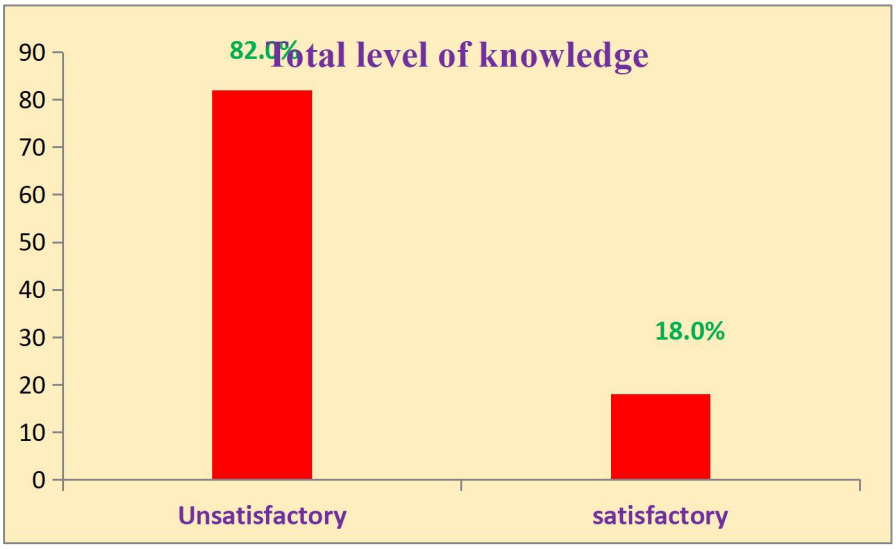

Figure (1): Percentage distribution of the studied patients according to their total level of knowledge regarding bronchial asthma (n=50).

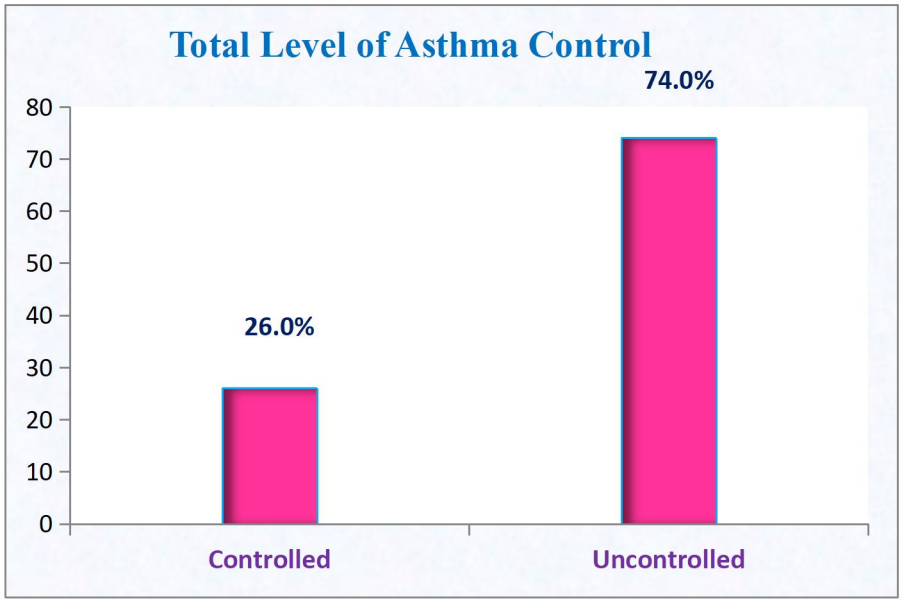

Figure (2): Percentage distribution of the studied patients according to their control about bronchial asthma (n=50).

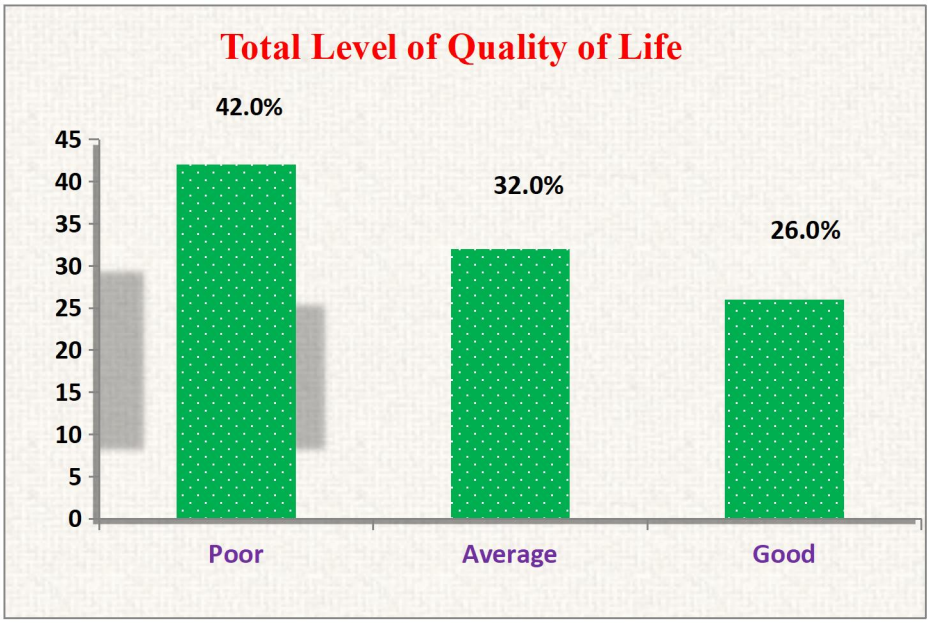

Figure (3): Percentage distribution of the studied patients according to their total level of quality of life (n=50).

Table (2): Correlation between total level of knowledge, asthma control, and quality of life among the studied patients (n=50)

Variables	Total level of quality of life	
	r	P-value
Total level of knowledge	0.631	**0.036* (S)**
Total level of asthma control	0.691	**0.040* (S)**

* P-value ≤ 0.05 Significant (S)

Discussion:

Part I: Socio-demographic characteristics of the studied patients

The results of the current study revealed that slightly more than half of the studied patients are aged 41-50 years with mean age 41.87 SD ± 8.36, almost two thirds were male, also slightly less than three quarters of them were from rural areas, more than three quarters were married, less than half of them were secondary education. While more than half of them the disease affected their regular work, more than one third of them had manual work, most of them had insufficient monthly income, beside more than half of them had more than five family members, slightly less than three quarters of them had three rooms in their house, and less than two thirds of them were living in good ventilated places .

These results comply with the study conducted by ***Ścibor et al., (2020)*** entitled "The association of exposure to pm_10 with the quality of life in adult asthma patients" in Poland concluding more than half of the studied sample were male and more than two fifths were educated.

In addition, it also matched with the results of the study conducted by ***Yousef et al., (2021***) entitled "Predictors of asthmatic children's quality of life in Damietta governorate" in Egypt which found that, more than two thirds of the studied sample were from rural areas and

More than three quarters of them belonged to middle and low socioeconomic classes .

These results disagreed with the study conducted by ***Adachi et al., (2019)*** entitled "Asthma control and quality of life in a real-life setting: a cross-sectional study of adult asthma patients" in Japan which found that less than two thirds of the studied patient were female with mean age 59.7± 14.5 years.

These results also disagreed with the results of the study carried out by ***Kontopoulou et al., (2023)*** entitled "Physical health-related quality of life in relation to Mediterranean diet deducing that, more than two thirds of the studied patients were female aged 57 years. On the other hand it is in agreement with the results of the current study as less than two thirds of them were married.

The results of the present study illustrated that, slightly less than three quarters of the studied sample were living in uncrowded homes.

This result is supported by the study carried out by ***Lubna et al., (2021)*** entitled "Socio demographic and socioeconomic factors as determinants for the health related quality of life of children and adolescents" in Egypt and inferring that, most of the studied samples were living in non - crowded homes .

This result as well is in accordance with the results of the study carried out by **Abdel-Hameed et al., (2021)** entitled "Assessment of quality of life of asthmatic children attending the outpatient clinic in Zagazig university hospital" in Egypt and reported that, slightly more than three quarters of the studied patients were living in un- crowded home. It also matches with the results of the current study as well in which more than half of the studied patients were male and almost two thirds of them were from rural areas.

From the investigators' point of view: this agreement or disagreement regarding the socio demographic characteristics may be due to different inclusion criteria of each study or may be due to different geographical locations in which each study have been conducted or due to different population dynamics of each country.

Part II: Total knowledge level of patient with bronchial asthma

Regarding patients' total level of knowledge regarding bronchial asthma, the present study explained that, the majority of the patients had unsatisfactory knowledge related to bronchial asthma.

This result in agreement with the result of the study conducted by ***Shamkuwar et al.,***

(2016) entitled "Evaluation of knowledge, attitude and medication adherence among asthmatics outpatients in tertiary care teaching hospital-A questionnaire based study" in India and reported that, the majority of the studied patients had un satisfactory knowledge related to bronchial asthma.

As well, this result in accordance with the results of the study conducted by ***Mohamed & Mohamed, (2023)*** entitled "Effect of training program regarding knowledge and self-care practices on patients with bronchial asthma" in Egypt which concluded that, less than three quarters of the studied patients had poor knowledge about bronchial asthma .

This result in contrary with the result of the study conducted by ***Gare et al., (2020)*** entitled "Knowledge, attitude, and practice assessment of adult asthmatic patients towards pharmacotherapy of asthma at Jimma University specialized hospital" in Ethiopia which demonstrated that, slightly more than one third of the study sample had unsatisfactory total knowledge about bronchial asthma .

Also, this result in congruent with the study of ***Asmare et al., (2021)*** entitled "Practice on metered dose inhaler techniques and its associated factors among asthmatic patients at debre markos comprehensive specialized hospital, east gojjam, Ethiopia: a prospective study" in Ethiopia who reported that less than one third of the studied patients had poor total knowledge regarding asthma.

From the investigators' point of view: these agreements may be due to the educational level of the studied patients, may be due to lack of health literacy, and illustrates the need for increasing the awareness of the communities about bronchial asthma through interventional programs or campaigns.

Part III: Total asthma control level among patients with bronchial asthma.

According to patients' total control level about bronchial asthma, the results of present study demonstrated that, slightly less than three quarters of the studied patients had uncontrolled total level of bronchial asthma and more than one fifth of them had controlled total level of bronchial asthma.

This result in the same direction with the study conducted by ***Elbanna et al., (2017)*** entitled "Effect of bronchial asthma education program on asthma control among adults at Mansoura district" in Egypt who found that, more than half of patients had uncontrolled total level of bronchial asthma .

Also, this result congruent with the results of the study carried out by ***Nguyen et al., (2018)*** entitled "Knowledge on self-management and levels of asthma control among adult patients in Ho Chi Minh City" in Vietnam who reported that, the majority of patients had asthma poor control level .

This result inconsistent with the results of the study conducted by ***Eissa et al., (2020)*** entitled "Outcome of an educational program on bronchial asthma self-management" in Egypt and found that, more than one third of patients had uncontrolled total level of bronchial asthma.

From the investigators' point of view: this congruent may due to the residence of the studied sample as less than three quarters were living in rural areas which characterized by low socio economic status, poor access to medical health, low health literacy and educational level, tradition (believing in evil eye and magic), and environmental factors (cold weather, ovens smoking, and pesticides).

Part IV: Total quality of life level for patient with bronchial asthma

In relation to total quality of life of patient with bronchial asthma, the present study illustrated that, more than two fifths had poor quality of life.

This result is supported by the results of the study carried out by ***Belachew et al., (2023)*** who reported that, slightly more than two fifths of the studied patients had poor quality of life .

This result contradict with the result of the study conducted by ***Ali et al., (2020)*** entitled "Assessment of quality of life in bronchial asthma patients" in Pakistan who concluded that, less than three quarters of the studied sample had poor quality of life .

This result as well contradict with the study of ***Garina et al., (2020***) entitled "The quality of life on asthmatic adolescent and its correlation with the severity and control of asthma" in Indonesia and found that , the minority of the studied sample had poor quality of life .

This result also disagreed with the results of the study carried out by ***Kharaba et al., (2022)*** which reported that, the most of the studied sample had poor quality of life.

From the investigators' point of view: these disagreements may be related to asthma control level because there is a forward relation between total quality of life and total asthma control level.

Part V: Correlations between the studied variables among the studied patients

Regarding correlation between total knowledge, total of asthma control, and total quality of life among the studied sample, the current study demonstrated that, there were a statistical significant positive correlation between patients' total quality of life and their total level of knowledge and between patients' total quality of life and their total asthma control.

These results are similar to the results of the study of ***Zeru et al., (2020)*** entitled "Assessment of asthma control and quality of life among asthmatic patients attending armed forces referral and teaching hospital" in Ethiopia who stated that, there was a highly statistical significant positive correlation between patients' total quality of life and their total asthma control.

In addition, these results supported by the study carried out by ***Cai et al., (2023)*** entitled "Effect of illness perceptions on asthma control and quality of life amongst adult outpatients with asthma" in China and found that , statistical significant positive correlation between patients' total quality of life and their total asthma control level .

These results as well in agreement with the results of the study of ***Hamad et al., (2022)*** entitled "Effect of supportive nursing care on symptoms severity and quality of life for patients with chronic obstructive pulmonary disease" in Egypt who found that, statistical significant positive correlation between patients' total quality of life and their total knowledge.

From the investigators' point of view: these agreements may be due to interference between knowledge , total asthma control level and total level of quality of life because patient who had a satisfactory total knowledge level will be aware how to deal and how to handle his disease and it will reflect on his total quality of life in positive way.

Conclusion:

Based on the research questions and the study findings it was concluded that:

The majority of the studied patients had unsatisfactory total knowledge and less than one fifth of them had satisfactory total knowledge concerning bronchial asthma disease. While regarding total level of health related quality of life, more than two fifths of them had a poor level, less than one third of them had average level, and more than one quarter of them had a good level.

Recommendations:

In the light of the findings of the current study the following recommendations can be suggested:

1. Increasing the awareness of the patients about the importance of maintaining health related quality of life of patients with bronchial asthma disease through campaigns, mass media and social networks.

2. Conducting educational programs periodically and regularly for patients to improve their knowledge regarding bronchial asthma disease at chest outpatients' clinics by nurses that will enhance their control over bronchial asthma disease.

3. Availability of relevant written and visual information about bronchial asthma disease at chest out patient's clinic to facilitate the education of patients about their disease such as educational booklets and brochures.

4. Further studies including larger sample size of patients with bronchial asthma from different geographical areas to generalize the results in Egypt.

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