Impact of Asthma on the quality of life of people in Developing Countries: A Narrative Review of Published Studies 2011-2021

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Submitted: 24th Feb., 2023; Accepted: 23rd April., 2023; Published: 30th April., 2023
DOI: https://doi.org/10.54117/jcbr.v3i2.3
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Abstract

Asthma is one of the leading causes of emergency room visit in the tropics and 60% of adults with asthma have uncontrolled asthma. We assessed the impact of uncontrolled asthma on the quality of life of people in developing countries. The study was a narrative review of published studies between 2011 and 2021. A total of 25 studies conducted in 13 different countries were used in this review. These studies involved 12(48%) studies in 6 developed countries, 9 (36%) studies from 7 developing countries and 4 (16%) studies in Nigeria. Asthma impacted negatively on the physical, socioeconomic, and emotional health of its victims in developing countries. The impact negatively affected their overall quality of life.

Keywords: Asthma, developing coutries, narrative review, population health, quality of life, health-related quality of life

Inroduction

The word "asthma" is from the Greek ἄσθμα which means "panting" (Mason, 2010). Asthma is a chronic inflammatory disorder of the airways characterised by chronic inflammation and hyper responsiveness that lead to episodes of wheezing, breathlessness, chest tightness, and coughing especially at night or in early morning. These episodes are usually associated with variable widespread airflow obstruction within the lung that is often reversible either spontaneously

or with treatment (Cukic *et al.*, 2012). The World Health Organization (WHO) estimates about 250 000 deaths from asthma every year (Adeloye *et al*., 2013). The prevalence of asthma in Nigeria is high with variability across regions and age groups. The number of persons with clinical asthma in Nigeria is approximately 13 million and likely rank among the highest in Africa (Ozoh *et al.,* 2019).

Asthma often begins in childhood and is thought to be caused by a combination of genetic and environmental factors (Martinez, 2007). Environmental factors include exposure to air pollution andallergens. Other potential triggers include medications such as aspirin and beta blockers (World Health Organization (WHO), 2013). Asthma can affect quality of life in several ways. This disease impacts people differently and affect their daily life in many ways. Some of them skip school or work because of their condition. Many asthmatics limit their physical activity because of their asthmatic symptoms (Pat, 2020; Snyder, 2019).

Asthma is a serious public health problem globally, with an estimated 300 million affected individuals, with great variation between countries (To *et a*l., 2012). The prevalence of asthma is increasing in most countries especially developed countries (Global Initiative for Asthma. However, most of the asthma burden occur in low and middle income countries (GINA), 2023). Lack of strategies put in place to ensure optimal control of the disease often leads to progression of the disease, with concomitant reduction in patient quality of life, increased health care cost burden and unnecessary deaths which usually occur outside hospitals (Bousquet *et al*., 2005). Studies have shown that the financial burdendue to asthma is high and is especially skewed towards those with severe disease (Braido *et al.,* 2009; Akinbami *et al*., 2012; Sullivan *et al*., 2013). It includes in- patient admission costs, transport costs to health facilities, purchase of medications, loss of productivity due to work and school absenteeism which negatively impact a patient's HRQoL. Childhood asthma accounts for many lost school days and the affected children may be denied academic achievement and social interaction (Bener, 2007).

Several studies have evaluated the impact of asthma on quality of life (Dogra *et al.,* 2011; Refaat and Gawish, 2015; Upton *et al*., 2016). They showed that, generally, asthmatics have their daily life activities disrupted. The studies showed that moderate to severe asthma has led to a worseQuality of Life (QoL) compared to mild persistent asthma (Stagi, 2018). The quality of life in asthmatics was reported to get worse when it coexists with anxiety and/or depression (Moussavi *et al.,* 2007; Moussas *et al*., 2008; Reed *et al*., 2010). A literature review of various studies related to impact of asthma on quality of life is necessary to put the impacts in proper perspective. This will facilitate the identification of gaps for further research. Therefore, these study was carried out to review the studies related to impact of asthma on quality of life.

Methods

Study design

The study was a narrative literature review involving past works related to the impact of asthma on quality of life published in English Languagefrom 2011 to 2021.

Setting

The study was conducted on e-copies of relevant article drawn from electronic databases. The databases used included: PubMed, Google Scholar, ResearchGate and ScienceDirect.

Study population

The population are studies carried out on the impact of asthma on quality of life published between 2011 to 2021 found on four databases (PubMed, Google Scholar, ResearchGate, and ScienceDirect).

Study criteria

Inclusion

The search was restricted to studies published in English Language from 2011 to 2021 and asthmatic studies in developing countries present in PubMed, Google Scholar, ResearchGate, and ScienceDirect.

Exclusion

Studies within this period that involved only asthma or quality of life with incomplete methods were excluded.

Data Collection

A total of 162 articles were identified through database searches; after removing 76 duplicates, all remaining titles and abstracts were independently reviewed for eligibility. Then, 91 articles that did not satisfy the inclusion criteria due to reasons such as absence of any words or concepts related to asthma and quality of life. Studies focusing only on asthma or quality of life and not being a research paper were also excluded. The remaining 25 articles including 22 full-text articles and 3 abstract studies were included in the literature review. The data were entered into a proforma designed for the extraction of the data

Data analysis

After determining the eligibility of the articles, study data was entered into evidence tables that listed the author and year, sample, design, parameters and main findings of each study.Then, the accuracy and completeness of these data were evaluated.

Results

Table1 shows the details of countries and the number of included studies. A total of 25 studies conducted in 13 different countries were used in this review. These studies involved 12(48%) studies in 6 developed countries, 9(36%) studies from 7 developing and 4(16%) studies in Nigeria.

Table 1: Details of countries and the number of included studies.

Regions	Number of studies	Countries
Developed countries	12	United States, Canada, Netherlands, Australia, United Kingdom and Spain.
Developing countries	13	Brazil, Saudi Arabia, Thailand, India, Poland and Egypt
Total	**25**	

Table 2: Summary table of studies related to impact of asthma on the quality of life in developed published in developed countries

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Author (s)/ year	Country	Study Design	Sample size	Parameters	Main findings
Urrutia *et al.,* 2012.	Spain	Cross - sectional study	354 adults' asthmatics aged 18 years and older.	Impact of Anxiety and Depression on Disease Control and Quality of. Life in Asthma Patients.	Among patients with asthma, anxiety and depression adversely affected asthma control and quality of life, raising the possibility that treating these psychological comorbidities could improve asthma control and quality of life.
Stucky *et al.,* 2015	United States	Cross-sectional study	2032 adults with asthma aged ≥18 years.	Understanding asthma-Specific quality of life: moving beyond asthma symptoms and severity.	The results indicated that asthma severity and asthma symptoms are strong predictors of asthma-specific QoL only when not controlled for aspects of asthma control.
Sundbom *et al*., 2016.	United Kingdom	Cohort study	369 patients, aged 12–35.	Effects of poor asthma control, insomnia, anxiety and depression on quality of life in young asthmatics.	The Asthma Control Test (ACT) score was the single most important variable in predicting asthma-related quality of life. Combining the ACT score with the data on insomnia, anxiety and depression showed considerable additive effects of the conditions. Hence, the recommend the routine use of the ACT and careful attention to symptoms of insomnia, anxiety or depression in the clinical evaluation of asthma-related quality of life.
Hernandez *et al.,* 2018.	Spain	Cross-sectional study	222 primary care patients with persistent asthma (18-40 years old).	Impact of asthma on women and men: Comparison with the general population using the EQ-5D-5L questionnaire.	Persistent asthma had a moderately negative Health Related Quality of Life (HRQoL) impact on patients of both genders, and the youngest women was identified as a high-risk group which merits further research. The study identified asthma control as the major contributor to improved HRQoL in patients, regardless of their gender, suggesting that asthma HRQoL negative impact could be alleviated by achieving a good control of the symptoms.
McDonald *et al*., 2018	Australia	Qualitative study	25 people with severe asthma.	Health-related quality of life burden in severe asthma.	Novel targeted treatments had an impact on HRQoL for people with severe asthma but, patients continued to experience an excessive burden on their physical, emotional and social functioning.
Pate *et al.,*	United	Cross-	39321 adults	Impaired Health-related	Multiple sociodemographic, behavioural, and health status

2019.	States	sectional study	with Asthma aged 18 years and older.	Quality of Life and Related Risk Factors among U.S. Adults with Asthma.	indicators were associated with impaired HRQoL among adults with asthma in the United States. Providing strategies to address potential risk factors such as low income, physical inactivity, smoking, and obesity or underweight should be considered to improve HRQoL among adults with asthma.
Kansen *et al.,* 2020.	Netherlands	Cross-sectional study	527 children within 7-18 years.	Perceived triggers of asthma impair quality of life in children with asthma.	A higher number of perceived triggers of asthma were associated with reduced HRQoL in children with asthma. Especially, non-allergic triggers were associated with reduced HRQoL.
Kosse *et al.,* 2020.	Netherlands	Cross-sectional study	243 adolescents With asthma aged 12–18 years.	Asthma control and quality of life in adolescents: The role of illness perceptions, medication beliefs, and adherence.	The study suggests that stimulating positive illness perceptions and medication beliefs might improve adherence, which in turn might lead to improved disease control and better Quality of Life (QoL).
Ali *et al.,* 2020.	Canada	Cross-sectional study	134 adults with Asthma aged ≥18 years.	Assessment of Quality of Life in bronchial asthma patients.	The severity of asthma significantly contributed to poor quality of life. The study identified several factors responsible for the poor quality of life of patients with asthma. These factors consisted of advanced age, increased asthma severity, poor control of asthma, low education level, and low socioeconomic status.
Sullivan *et al.,* 2020.	United States	Retrospective study	2681 asthmatics Patients ≥12 years-old with persistent asthma	Impact of allergies on health-related quality of life. in patients with asthma.	The presence of allergies with persistent asthma was associated with a significant deleterious impact on several different measures of HRQoL.
Song *et al.,* 2021.	United States	Cross-sectional study	10,222 asthma patients aged ≥ 18 years.	Health-Related Quality of Life and Health Utilities of Mild, Moderate, and Severe Asthma: Evidence from the Medical Expenditure	Asthma patients had worse physical HRQoL than mental health, especially patients with severe asthma. The study suggests that the management of physical health of female, older aged, and low education patients with asthma should be focused on improving HRQoL.

				Panel Survey.	

Asthma Control Test (ACT), Health-Related Quality of Life (HRQoL), Quality of Life (QoL), EQ-5D-5L: Euro Quality 5 Dimension self-assessed, 5-component scale health related quality of life questionnaire

Table 3: Studies related to impact of asthma on the quality of life in developing countries published in English from year 2011 to 2021.

Author(s)/year	Country	Design	Sample	Parameters	Main findings
Al Zahrani *et al*., 2014.	Saudi Arabia	Cross-sectional study	200 Saudi asthmatic boy children, aged 7 - 17 years.	The impact of bronchial asthma on quality of life among affected children and adolescents in Taif city, Saudi Arabia	The impact of impaired control asthma was higher in children than in adolescents and affected adversely their sporting activities, sleeping pattern, school attendance, and increase frequency of admission to emergency hospitals due to asthma.
Alith *et al*., 2015.	Brazil	Qualitative study	400 asthmatic patients by age group; 12-17 years, 18-40 years, and ≥ 41years.	Negative impact of asthma on patients in different age groups.	Asthma had a greater impact on the patients between 12 and 17 years of age, which might be attributable to poor treatment compliance.
Matsunaga *et al*., 2015.	Brazil	Cross-sectional study	100 children and adolescents with. asthma aged 7- 17 years.	Evaluation of quality of life according to asthma control and asthma severity in children and adolescents.	Quality of life appeared to be directly related to asthma control and asthma severity in children and adolescents, being better when asthma is well controlled and asthma severity is lower.
Halwani et al., 2016.	Saudi Arabia	Cross-sectional study	135 asthma patients aged 11-to-19 years.	Impact of asthma on Quality of Life of adolescent patients from Saudi Arabia.	Asthma lowered the health-related quality of life of Saudi adolescent patients, in terms of physical, emotional, symptoms, and environmental triggers, impairing mainly the severe asthmatics.
Uchmanowicz., 2016.	Poland	Cross-sectional study	100 patients (73 female, 27 male) aged 18–84 years.	Clinical factors affecting quality of life of patients with asthma.	Only some factors had effect on patients QoL Patients exhibiting better symptom control have higher QoL scores. Asthma patients' QoL decreased as time from onset increased. A lower QoL was

					reported by patients who visit allergy clinics more often and those often hospitalized due to. asthma. Smoking also contributed to a lower QoL in asthma patients.
Hossny et al., 2017.	Egypt	Cross-sectional study	81 adult patients.	Severe asthma and quality of life.	Severe asthma was detrimental to the quality of life of patients. Therapies targeted to improve
Sritipsukho *et al.,* 2015.	Thailand	Cross-sectional study	1,440 pupils, aged 12-14 years.	Effect of allergic rhinitis and asthma on the quality of life in young Thai adolescents.	Respiratory allergy had a significant effect on the quality of life in young Thai adolescents. Emotional functioning was affected the most and plays an important role in psychological health. disturbance. Asthma affected quality of life more than allergic rhinitis, especially considering psychological health dimensions.
Nalina *et al.,* 2015.	India	Cross-sectional study	85 asthma patients aged 18-65 years.	Assessment of quality of life in bronchial asthma patients.	Asthma patients had poor quality of life. There was greater impairment in quality of life in females, obese and middle age patients indicating that sex, body mass index and age are determinants of HRQoL in asthma patients. QOL include the approved and emerging biologics as well as combating risk factors and comorbidities and improving the levels of disease control.
Banjari *et al.,* 2018.	Saudi Arabia	Cross-sectional study	106 children with bronchial asthma within the ages of 7-17 years.	The Relation between Asthma Control and Quality of Life in Children.	Most asthmatic children were uncontrolled with poor quality of life. The study recommends that the psychosocial well-being should be assessed during clinic visits for a better comprehensive approach and effective improvement of outcome.
Geraldo *et al.,* 2019.	Brazil	Cross-sectional study	102 individuals, 51 asthmatics and 51 non-asthmatics.	The impact of asthma on quality of life and anxiety: a pilot study.	Asthmatics had worse indicators of quality of life and anxiety, even though the symptoms of asthma were under clinical control.

Table 4. Studies related to impact of asthma on the quality of life in Nigeria published in English within the year 2011 to 2021.

Author(s)/ year	State	Design	Sample	Parameter	Main findings	Themes
Adeniyi *et al.,* 2012.	Ondo	Cross-sectional study	55 asthmatic patients aged 17–75 years	Health-related quality of life among patients with bronchial asthma in Ile-Ife, Nigeria.	Asthma resulted in significant impairment of HRQoL which correlates poorly with the spirometric measurement. Gender affeced the HRQoL of the asthmatic, with the female sex appearing to predict a poorer quality of life.	Health aspects.
Oni *et al.,* 2014.	Benin	Cross-sectional study	120 relatively Stable asthma patients (49 male and 71 female).	Does health-related quality of life in asthma patients correlate with the clinical indices?	The overall assessment showed that quality of life about asthma was low in this study and correlated with some clinical asthma indices. The determinants of quality of life in this study included the duration of asthma, body mass index, asthma severity, medication use and gender.	Health aspects.
Desalu *et al.,* 2019.	Ilorin, Enugu, Sokoto and Ado-Ekiti.	Multicentre and descriptive study	172 adult asthma patients.	Physical and socioeconomic impact of asthma in Nigeria: experience of patients attending three tertiaries hospitals.	Asthma caused broad and substantial physical and socioeconomic impacts in the sample of patients. Exploring these impacts and engaging the patient is imperative for holistic management and good health outcomes.	Physical, social and economic aspects.
Awopeju, 2021.	Osun State	Cross-sectional study	82 adult asthmatics.	The relationship between asthma and HRQoL	Asthma control was associated with better quality of life and atopy.	Emotional aspects.

Discussion

This review suggested limited number of studies on the impact of asthma on the quality of life in developing countries. The average rate of research productivity in this areas was about one study per year over the past ten years. Although, more studies were found in some past asthma impact reviews, none of them investigated the impact of asthma on quality of life. They mostly focused on areas such as psychosocial aspects, psychological, physical health factors (Al-khateeb and Alkhateeb, 2015; Stanescu *et al*., 2019). This review revealed that asthma had a negative impact on quality of life which is consistent with past reviews (Al-khateeb and Al khateeb, 2015). Most of the studies conducted in developed and developing countries explored the role of asthma control and severity in the quality of life of asthmatic patients (Gonzalez-Barcala *et al.,* 2012; Stucky *et al*., 2015; Ali, 2020).

This study indicates that asthma impaired quality of life especially the uncontrolled and severe asthma. Anxiety, depression and insomnia also contributed in adversely affecting the quality of life of the asthmatics (Urrutia *et al.,* 2012; Sundbom *et al*., 2016). Other factors responsible for the poor quality of life of asthmatic patients were visible. They include: advanced age, increased asthma severity, poor control of the asthma, lower education level, presence of stressful events, poor socioeconomic status and need to be admitted to hospital (Gonzalez-Barcala *et al.,* 2012; Ali, 2020).

Advanced age was identified as a factor that greatly impaired the quality of life in the asthmatic patients. However, in this study, most of the articles from developing countries showed that asthma had more impact in children and adolescents and contrary to other studies by Alith and Matsunaga (Alith *et al.,* 2015; Matsunaga *et al.,* 2015). Gender also played a role in affecting the quality of life in asthmatics with the females having a greater impact and correlated with past studies Wijnhoven *et al*., (2003) and Naleway *et al.,* (2006). The themes identified in the studies were the physical, social, economic, emotional and health aspects of the impact of asthma on the quality of life which was consistent with the studies done in other developing countries (Al-Zahrani *et al;* 2014; Alith *et al.,* 2015; Sritipsukho *et al.,* 2015; Halwani *et al*., 2016; Uchmanowicz., 2016; Hossny *et al*., 2017; Banjari *et al*., 2018; Geraldo *et al.,* 2019).

Conclusion

The studies conducted on the impact of asthma on quality of life were limited especially in developing countries. Asthma impaired the quality of life especially the severe and uncontrolled asthma. It predominantly affected their physical, socioeconomic, and emotional health. The themes of studies conducted in Nigeria focused mainly on health-related quality of life in asthma. Asthma education and awareness programs should be provided in order to improve poor asthma control or management especially patients with lower educational skills. Safe and healthy environment should be provided in order to reduce asthma triggers.

Provision of mental health services for patients with asthma should be examined.

Conflict of interest: The authors have none to declare.
Funding: None was received.

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