COACTION

Health related quality of life and psychological variables among a sample of asthmatics in Ile-Ife South-Western Nigeria

Mosaku S. Kolawole[1]*, Awopeju F. Olayemi[2], Erhabor E. Gregory[2], Adewuya O. Abiodun[3], Obaseki O. Daniel[2] and Adeniyi O. Bamidele[2]

[1]Department of Mental Health, Obafemi Awolowo University, Ile-Ife, Osun, Nigeria; [2]Department of Medicine, Obafemi Awolowo University, Ile-Ife, Osun, Nigeria; [3]Department of Psychiatry, Lagos State University Teaching Hospital, Lagos, Nigeria

Background: Assessment of health related quality of life (HRQL) has become central to assessing the self-perceived impact of physical and mental impairment on patient's health. Studies have reported a high rate of psychological disturbances among asthmatics; however, the impact of these psychological factors on HRQL remains unexplored.

Objectives: To assess the health related quality of life among a sample of asthmatics and to identify the psychological and clinical variables that affect quality of life among asthmatics.

Method: A total of 81 patients attending the clinic were assessed using the Mini-Asthma Quality of Life questionnaire (Mini-AQLQ), and the Hospital Anxiety and Depression Scale (HADS). Sociodemographic and clinical variables were also obtained from the patients, the lung function was assessed using Peak Expiratory Flow Rate (PEFR).

Results: Mean age of all the patients was 35.22 (SD$\pm$14.36) with a mean duration of asthma symptoms of 17.5 (SD$\pm$14.4) years. Mean peak expiratory flow was 336 l/min (SD$\pm$74.12). Anxiety was present in 44.4% of respondents, while 40% of respondents reported the presence of depressive symptoms, 48.1% of the respondents reported low scores on the asthma quality of life questionnaire. Poor quality of life was associated with the presence of psychological symptoms, female sex, and lower educational level.

Conclusion: Psychosocial variables are just as important as clinical variables as determinants of health related quality of life among asthmatics.

Keywords: *quality of life*; *asthma*; *anxiety*; *depression*; *psychosocial*

Asthma is one of the most common diseases in the world, it affects all ages and sex, and is found in all geographical regions of the world. It is reported to affect up to 300 million people worldwide (1). It is associated with significant medical morbidity and has also become an important cause of burden in terms of its personal, social and economic impact on individuals, health care facilities, and governments globally (2). There is growing evidence that the traditional asthma outcome measures such as respiratory symptoms and pulmonary functions do not totally express patients' perception of the limitation determined by the condition (3). Assessment of health related quality of life [HRQL] has become central to assessing the self-perceived impact of physical and mental impairment on patients' health (4). Asthma has been directly related to impaired asthma-related quality of life including increased work and school absences, an inability to perform household chores, and restriction of social activities (5).

Previous studies in Nigeria (6) and from other parts of the world (7, 8) has shown that psychological factors are important in asthma. Studies have also shown that the prevalence of depression, anxiety, and emotional disorders in hospital clinic samples is higher than in controls (9). Adams et al. (10) in their study also concluded that psychological factors, especially coping styles, need to be

taken into account when using health related quality of life as outcome measures.

A physical and electronic search did not reveal any study in Nigeria assessing the health related quality of life in this group of patients, neither has any study examined the effect of psychological and clinical variables on quality of life among asthmatics in Nigeria. The aim of this study was to assess the quality of life among asthmatics attending the chest clinic of the Obafemi Awolowo University Teaching Hospitals Complex Ile-Ife Hospital and identify psychological and clinical variables that are associated with health related quality of life among asthmatics.

Methods

Subjects

A total of 81 consecutive adult patients with physician diagnosed asthma were recruited from the asthma clinic of Obafemi Awolowo University Teaching Hospital Ile-Ife Osun State Nigeria. The study was conducted between January and June 2010.

Patients were eligible if they have a primary diagnosis of asthma. The diagnosis of asthma was confirmed on symptoms consistent with asthma and a chart evidence of bronchodilator reversibility test of $FEV_1 \geq 15\%$ with at least 200 ml, 20 min after inhalator of 400 microgram of B_2-agonist (Salbutamol).

The patients were clinically stable with no exacerbation or hospital admission and no change in medication dosage or frequency in the last 4 weeks in order to avoid any bias in patients' opinion about their health status. Patients with other comorbidity conditions like COPD and hypertensive heart disease and those with pre-existing recognized psychopathology were excluded. Eligible patients were interviewed by a team of researchers led by the second author in a prepared room in the clinic.

Ethical clearance for the study was obtained from the institutions ethical committee. After the purpose of the study was explained, each patient gave a written consent before being included.

Study design

All patients were screened for eligibility. The participant completed sociodemographic questionnaires that capture variables such as the age, sex, occupational status, and clinical variables such as duration of symptoms. Each patient completed the Mini-Asthma Quality of Life Questionnaire (11) and Hospital Anxiety and Depression scale (12).

The lung function was assessed by peak expiratory flow meter (Micro Medical Ltd, Rochester, UK) after due explanation of the procedure and accompanied demonstration. The best of three satisfactory readings was recorded describing the procedure.

Instruments

Mini-Asthma Quality of Life Questionnaire (Mini-AQLQ) (11): The original asthma quality of life questionnaire is a disease specific instrument with 32-items that was designed to measure functional impairments that are most troublesome to adult asthma patients (13). It has four domains: symptoms (12 items), activity limitation (11 items), emotional function (5 items), and environmental stimuli (4 items), validation studies have shown that it has good evaluative and discriminative properties (13, 14). The Mini-AQLQ was developed by the same author with the aim of having a measure with the same specification as the original AQLQ, but short and easy to complete. The Mini-AQLQ has 15 items that are divided into four domains, these are symptoms domain (5 items), activity domains (4 items), emotional domain (3 items), and environmental domain (3 items). All items are equally weighted. The questionnaire is analyzed directly from the scores recorded and expressed as the mean score per item for each domain thus the score ranges from 1 to 7 for each domain, and for the overall quality of life score that is the mean score of all the items. Higher scores indicate better quality of life. The internal consistency test done showed a Cronbachs alpha coefficient of 0.8469, while the alpha for each domain and the overall AQOL ranged from 0.7454–0 8332. On the Mini-AQOL, for this study a score of mean $+/- 1$ standard deviation is graded 'fair', a score $<$ mean $-$ 1 standard deviation is graded poor quality of life, while $>$ mean $+1$ standard deviation is graded good quality of life

Hospital Anxiety and Depression Scale [HADS] (12): The Hospital Anxiety and Depression scale has been widely used to detect anxiety and depressive symptoms in general medical outpatient populations. It is also intended to measure the severity of emotional disorder. It has seven depression questions and seven anxiety items. The fourteen (14) items are rated on a 4-point scale ranging from absence of symptom, or the presence of a positive feature (scoring 0) to maximum symptomatology or absence of positive features that scores 3 (10). The instrument has been widely used and standardized among Nigerians where a minimum score of eight (8) on each of the subscales has been observed to indicate the presence of significant symptoms (15).

Statistics: All data were analyzed using the statistical package for the social sciences (Version 11), Chicago, IL. Descriptive statistics were used and the test of association was done using chi squared test for proportions and student 't' test for mean values. Pearson's correlation was also used, while regression analysis was used to assess the predictive values of some variables.

Results

The mean age of respondents was 35.22 (SD$\pm$14.36), with a male female ratio of 1:1, mean duration of asthma symptom 17.9 (SD$\pm$14.49) (Table 1). Twelve (14.8%)

Table 1. Sociodemographic characteristics of respondents

Variable	Frequency (%)/Mean (SD)
Age	
Mean (SD)	35.22 (14.36)
Age at onset of asthma	
Mean (SD)	17.9 (14.39)
Sex	
Male	42 (51.9)
Female	39 (48.1)
Marital status	
Married	45 (55.6)
Single	36 (44.4)
Educational status	
Up to secondary education	21 (25.9)
Up to tertiary education	60 (74.1)
Occupational status	
Government employed	30 (37.0)
Privately employed	27 (33.3)
Unemployed	9 (11.1)
Student	15 (18.5)

Table 2. Clinical, psychological and mini-AQOL variables

Variable	Frequency (%)/ Mean (SD)
Mean PEF (SD)	336/min (74.12)
Mean values of the mini-AQOL domains mean (SD)	
Symptoms domain	3.75 (1.34)
Emotional domain	4.10 (1.90)
Environmental domain	3.60 (2.20)
Activity domain	4.50 (1.48)
AQOL overall	3.58 (1.78)
Perceived severity of asthma by patient	
Mild	24 (29.6)
Moderate	42 (51.9)
Severe	15 (18.5)
Number of hospitalization for asthma in the past year	
0	39 (48.1)
1	30 (37.0)
2	8 (9.9)
>3	4 (4.9)
Medication	
Short acting bronchodilators alone	33 (40.7)
Short acting bronchodilators + inhaled steroids	30 (37.1)
Long and short acting bronchodilators + inhaled steroids	18 (22.2)
Smoking	
Yes	15 (18.5)
No	66 (81.5)
Alcohol use	
Yes	21 (25.9)
No	60 (74.1)
HAD scores	
Anxiety present	36 (44.4)
Absent	45 (55.6)
Depression present	39 (48.9)
Absent	42 (51.9)

have had two or more hospital admissions due to asthma symptoms in the past one year, other clinical variables are shown in Table 2.

The mean quality of life in the various domains of the Mini-AQOL were symptoms domain 3.6 (SD$\pm$1.34), emotion domain 4.0 (SD$\pm$1.90), environment domain 3.0 (SD$\pm$2.20), activity domain 4.5 (SD$\pm$1.48) and the mean overall AQOL was 3.58 (SD$\pm$1.78). Variables significantly associated with the overall quality of life included the presence of anxiety symptoms ($\chi^2 = 7.9$, $P = .02$), depressive symptoms ($\chi^2 = 6.45$, $P = .04$), the number of hospital admissions because of asthma in the past year ($\chi^2 = 9.6$, $P = .05$), number of asthma attacks in the past month ($\chi^2 = 15.7$, $P = .003$), low educational status ($\chi^2 = 6.6$, $P = .04$), smoking ($\chi^2 = 10.96$, $P = .004$), and alcohol use ($\chi^2 = 23.47$, $P = .001$).

There is also a significant negative correlation between the overall quality of life and patient's age, peak expiratory flow (PEF), anxiety symptoms, depressive symptoms, and asthma attacks (Table 3). Regression analysis using overall asthma quality of life score as dependent variable showed that anxiety ($t = 0.27$, $p = .01$), low educational status ($t = 2.75$, $p = .007$), and female gender ($t = 2.37$, $p = .02$) all significantly predicted low quality of life.

Discussion

Asthma is a disease that can result in varying degrees of restrictions affecting the physical, emotional, and social spheres of a patient's life, thus affecting patient's quality of life.

In this study, the presence of psychological symptoms resulted in low quality of life scores in all the domains of the asthma quality of life questionnaire; Adam et al. (10) had reported that people with both asthma and psychological distress have poorer quality of life. Mancuso et al. (16) also reported that asthmatics reporting the presence of depressive symptoms have worse health related quality of life than asthma patients with similar disease activity but fewer depressive symptoms. Reports have also shown that psychological factors may influence asthma management in many ways, for example, depression is associated

Table 3. Correlation between mini-AQOL domains scores and other variables (Pearsons)

Variables	Age		PEF		Depression scores		Anxiety scores		Asthma attacks in past month	
	r	P-value	r	P-value	r	P-value	r	P-value	r	P-value
Symptom	−0.07	0.51	−0.26	0.01*	−0.29	0.01*	−0.28	0.01*	−0.33	0.01*
Emotion	−0.24	0.01*	−0.16	0.39	−0.03	0.81	−0.45	0.001*	−0.41	0.01*
Environment	−0.28	0.01*	−0.38	0.04*	−0.13	0.23	−0.14	0.3	−0.17	/0.12
Activity	−0.28	0.01*	−0.18	0.33	−0.32	0.001*	−0.28	0.01*	−0.44	0.01*
Overall AQOL	−0.31	0.001*	−0.39	0.04*	−0.27	0.05*	−0.26	0.01*	−0.35	0.01*

r – Pearsons correlation values.
*Significant at $P < .05$.

with decreased problem solving ability (17), memory (18), and attention span (19), this may slow decision making and affect asthma management. Anxiety can also influence asthma self-management behavior. Thus as in other studies (10, 16), this study suggests that the comorbidity of asthma and psychological symptoms affect the quality of life of asthmatics.

Other factors that were significantly associated with quality of life in our sample of asthmatics include the number of asthma attacks in the past month and the number of hospital admissions related to asthma in the past year. This is not surprising since the presence of asthma symptoms affect quality of life, while improvement in symptoms result in improvement in patients' perceived quality of life (11). The educational status of the patients was also significantly associated with asthma quality of life. Sociodemographic factors such as socioeconomic status, level of education, and others had been reported as important independent factors that influence quality of life among asthmatics (20), our results corroborates these findings.

There was also an inverse relationship between the peak expiratory flow (PEF) rate and overall asthma quality of life (AQOL). The peak expiratory rate (PEF), which is an indication of lung function and may indicate disease severity, confirms that the more severe the patients diseased condition the worse the patient's quality of life.

Regression analysis also indicates that both psychological symptoms and sociodemographic variables are important predictors of quality of life among asthmatics. The presence of anxiety, which is an indication of distress, along with a low educational level and female gender are all important predictors of low quality of life among asthmatics. Physicians caring for this group of patients will do well to take note of this group of patients with a view to improving their quality of life.

Limitation to this study included the fact that assessment was done only once thus change in patients' diseased state and quality of life could not be assessed.

The instrument used was also not compared to another instrument thus its effectiveness cannot be fully assessed. Objective assessment of disease severity was also not done. All these may affect the generalizability of the findings.

Conclusion

This study has shown that psychological and socio-demographic factors apart from disease specific variables are important determinants of quality of life among asthmatics.

Conflict of interest and funding

References

1. Global Initiative for Asthma (2008). Global strategy for asthma, management and prevention. NIH publication No 02-3659 2007 update. Cape Town (South Africa): Global Initiative for Asthma.
2. Mcfadden ER, Gilbert IA. Asthma. N Engl J Med. 1992; 327: 1929–37.
3. Jenkins CR, Then FC, Wheatley JR, Reddel HK. Traditional and patient-centred outcomes with three classes of asthma medication. Eur Respir J. 2005; 26: 36–44.
4. Guyatt GH, Feeny DH, Patrick DL. Measuring health-related quality of life. Ann Intern Med. 1993; 118: 622–29.
5. Bosley CM, Fosbury JA, Cochrane GM. The psychological factors associated with poor compliance with treatment in asthma. Eur Respir J. 1995; 8: 899–904.
6. Mosaku SK, Erhabor GE, Morakinyo O. Specific psychiatric morbidity among a sample of asthmatics in South Western Nigeria. Int J Psychiatr Med. 2001; 37: 151–61.
7. Ten Brinke A, Ouwerkerk ME, Zwinderman AH, Spinhoven P, Bel EH. Psychopathology in patients with severe asthma is associated with increased healthcare utilization. Am J Respir Crit Care Med. 2001; 163: 1093–6.
8. Campbell DA, Yellowlees PM, McLennan G. Psychiatric and medical features of near fatal asthma. Thorax. 1995; 50: 254–9.
9. Janson C, Björnsson E, Hetta J, Boman G. Anxiety and depression in relation to respiratory symptoms and asthma. Am J Crit Care Med. 1994; 149: 930–4.

10. Adams RJ, Wilson DH, Taylor AW, Daly A, Tursan d'Espaignet E, Dal Grande E, et al. Psychological factors and asthma quality of life: a population based study. Thorax. 2004; 59: 930–5.

11. Juniper EF, Guyatt GH, Cox FM, Ferrie PJ, King DR. Development and validation of the Mini Asthma Quality of Life Questionnaire. Eur Respir J. 1999; 14: 32–4.

12. Zigmond AS, Snaith RP. The Hospital Anxiety and Depression Scale. Acta Psychiatr Scand. 1983; 67: 361–70.

13. Juniper EF, Guyatt GH, Epstein RS, Ferrie PJ, Jaeschke R, Hiller TK. Evaluation of impairment of health related quality of life in asthma: development of a questionnaire for use in clinical trials. Thorax. 1992; 47: 76–83.

14. Chhabra SK, Kaushik S. Validation of the asthma quality of life questionnaire (AQLQ-UK English version) in Indian asthmatic subjects. Indian J Chest Dis Allied Sci. 2005; 47: 167–73.

15. Abiodun OA. A validity study of the Hospital Anxiety and Depression Scale in general hospital units and a community sample in Nigeria. Br J Psychiatry. 1994; 165: 669–72.

16. Mancuso CA, Peterson MGE, Charlson ME. Effects of depressive symptoms on health related quality of life in asthma patients. J Gen Intern Med. 2000; 15: 301–10.

17. Silberman EK, Weingartner H, Post RM. Thinking disorder in depression. Arch Gen Psychiatry. 1983; 40: 775–80.

18. Paykel ES, Michael A, Sahakian BJ. Cognitive impairment in remission of bipolar affective disorders. Psychol Med. 2000; 30: 1025–36.

19. Lemelin S, Baruch P, Vincent A, Laplante L, Everett J, Vincent P. Attention disorder in clinical depression: deficient distraction or processing resource deficit. J Nerv Ment Dis. 1996; 184: 114–21.

20. Apter AJ, Reisine ST, Affleck G, Barrows E, ZuWallack RL. The influence of demographic and socioeconomic factors on health related quality of life in asthma. J Allergy Clin Immunol. 1999; 103: 72–8.

*Dr Mosaku SK
Department of Mental Health
Obafemi Awolowo University
Ile-Ife, Osun State, Nigeria
Tel: +2348037115412
Email: kmosaku@yahoo.co.uk