

BACKGROUND

- Asthma is a chronic disease of the airways, which is at present a major public health problem all over the world due to its high prevalence (1-15%)¹
- Understanding and identifying impaired QoL is now recognised as an important component of asthma management
- Given its symptoms and impact on the patients' daily living, at present there are specific questionnaires to measure the QoL of patients with asthma as the Asthma Quality of Life Questionnaire (AQLQ)² or its reduced version the Mini AQLQ³
- ASMACOST study has among its objectives to estimate the costs associated with the management of the disease and to assess its impact on health-related Quality of Life

OBJECTIVE

To assess QoL and factors influencing it, in asthmatic patients in Spain.

METHODS

STUDY DESIGN

ASMACOST is a multicenter, prospective, observational, cohort study, carried out in 40 Spanish pneumology units.

During the 12-month period of the study, 3 visits were scheduled at 0, 6 and 12 months, and data on sociodemographic, clinical variables, asthma treatment, quality of life and health-care resource use was collected.

STUDY POPULATION

Patient inclusion criteria

- 18 years and older
- Diagnosis of asthma according to GINA (2006) criteria

Patient exclusion criteria

- Patients who in the opinion of the investigator should not be enrolled (psychiatric disorders, substance abuse and/or alcoholism, or with disabling conditions)
- Patients who are unable to understand and answer the questionnaires

VARIABLES

1. Physician-reported:

- Clinical variables: year of asthma diagnosis, severity of the disease, lung function [forced expiratory volume in 1 sec (FEV₁)], concomitant diseases
- Treatment information and health care resource use

2. Patient-reported Outcomes (PRO):

- Socio-demographic data: age, gender, educational level, job status
- Symptoms: symptom severity (coughing, wheezing, breathless, wake up at night)
- European Quality of Life-5 Dimensions (EQ-5D). Descriptive system (with health ratings based on this system) and Visual Analogue Scale (VAS)
- Self-estimated health status question: Likert scale, from 1 (very good health) to 7 (very bad health)
- Quality of Life Questionnaire:
 - Juniper Mini Asthma Quality of Life Questionnaire (Mini-AQLQ). It is a validated 15-question, self-administered instrument. The questions are grouped into four domains: activity limitations (4 items), symptoms (5 items), emotional functions (3 items) and environmental stimuli (3 items). A total score is also obtained (Juniper et al., 1999). The questions are scored on a scale of 1 to 7 (where 1 is greatest impairment and 7 is least impairment).

STATISTICAL ANALYSIS

- Descriptive analysis: mean and standard deviation (SD) were computed for quantitative variables, and for the qualitative variables the frequency distribution is presented. Correlation for bivariate descriptive statistics
- Association analysis: t-tests were used for dichotomic variables; for polytomous variables, analysis of variance (ANOVA) or Kruskal-Wallis non-parametric test were used instead
- Multivariate analysis: Statistically significant variables in bivariate analysis were included, and optimal scaling methods for multivariate categorical data were conducted. This method takes into account the scale of measurement of the variables included (nominal, ordinal or quantitative)

ETHICAL CONSIDERATIONS

- All patients gave their informed consent before entering the study
- The protocol was approved by the Clinical Research Ethics Committee of Hospital Vic (Spain)

RESULTS

1. SOCIO-DEMOGRAPHIC CHARACTERISTICS

A total of 40 pulmonologists throughout Spain recruited 536 patients in the study. The majority were women (n=346, 64.6%) with a mean age of 54 years (SD= 17.8 years).

Table 1. Sociodemographic characteristics

		n (%)
Gender	Male	190 (35.4%)
	Female	346 (64.6%)
Job status	Active Working	207 (38.7%)
	Unemployed	10 (1.9%)
	Retired/Disabled	165 (30.8%)
	Housewife	134 (25%)
	Student	20 (3.7%)
Educational level	Primary	309 (57.6%)
	Secondary	144 (26.9%)
	University	71 (13.2%)
Smoking status	Non Smoker	341 (63.6%)
	Ex-smoker	150 (28.0%)
	Smoker	43 (8.0%)

Table 2. Geographic characteristics

	n (%)
Regional Location	
Center	141 (26.3%)
East	198 (36.9%)
North	100 (18.7%)
South	97 (18.1%)
Habitat	
Rural	129 (24.1%)
Urban	407 (75.9%)
Coast/Inland	
Coast	207 (38.6%)
Inland	326 (60.8%)
Size	
<5,000 inhabitants	86 (16.0%)
5,000-50,000	141 (26.3%)
>50,000	309 (57.6%)



2. CLINICAL CHARACTERISTICS

Table 3. Clinical characteristics

		n (%)
BMI	BMI <25	167 (31.6%)
	BMI: 25-29	222 (42.0%)
	BMI ≥30	139 (26.3%)
Diurnal symptoms	≤ Once a week	130 (24.2%)
	> Once a week and <once a day	143 (26.7%)
	Daily. Exacerbations affect activity	146 (27.2%)
	Daily. Frequent exacerbations Limitation of physical activities	117 (21.8%)
Nocturnal symptoms	≤ Twice a month	169 (32.9%)
	> Twice a month	118 (23.0%)
	> Once a week	116 (22.6%)
	Frequent	110 (21.4%)
Pulmonary function	FEV ₁ o PEF ≥ 80% predicted PEF or FEV ₁ variability < 20%	146 (27.4%)
	FEV ₁ o PEF ≥ 80% predicted PEF or FEV ₁ variability 20-30%	118 (22.1%)
	FEV ₁ o PEF 60-80% predicted PEF or FEV ₁ variability > 30%	141 (26.4%)
	FEV ₁ o PEF ≤ 60% predicted PEF or FEV ₁ variability > 30%	128 (24.0%)

There is an adequate concurrent validity between Mini-AQLQ scores and other PRO frequently used in QoL measurement (table 4).

Table 4. Bivariate Analysis. Spearman Rho coefficients between Mini-AQLQ scores and other PRO

SPEARMAN - RHO coefficients	Health status	EQ-5D		Mini AQLQ					
		Ratings	VAS	Total	Sym	Env	Emo	Act	
Health status	Rho	1	-0.494	-0.587	-0.693	-0.688	-0.455	-0.568	-0.606
	N	537	537	450	535	536	537	537	536
EQ-5D	Ratings	Rho	1	0.627	0.63	0.522	0.501	0.429	0.687
		N	531	450	536	537	538	538	537
	VAS	Rho	1	0.637	0.584	0.446	0.492	0.635	
		N	450	449	450	450	450	449	
Mini AQLQ	Total	Rho	1	0.908	0.773	0.857	0.825		
		N	536	536	536	536	536		
	Sym	Rho	1	0.572	0.756	0.676			
		N	537	537	537	536			
	Env	Rho	1	0.579	0.560				
		N	538	538	537				
	Emo	Rho	1	0.579					
		N	538	538					
	Act	Rho	1						
		N	546						

Sym=Symptoms; Env=Environment; Emo=Emotions; Act=Activities

The Mini-AQLQ is able to discriminate QoL between asthma severity levels. As severity of symptoms are theoretically related to QoL, it's an indicator of construct validity of the instrument (table 5).

Table 5. Mini-AQLQ total scores, related to asthma severity

MINI-AQLQ	SEVERITY	N	Mean	SD	SE	Bilateral SIG.
Total	INTERMITTENT	116	5.75	0.96	0.09	
	MILD PERSISTENT	127	5.43	0.97	0.09	
	MODERATE PERSISTENT	151	4.89	1.17	0.10	
	SEVERE PERSISTENT	142	4.26	1.29	0.11	0.000

p<0.001 for all the domains of the Mini AQLQ: Symptoms, Environment, Emotions, Activities

As per the final multivariate model (table 6), with MiniAQLQ total score as dependent variable and after adjusting for all significant variables in the bivariate analysis, reported QoL was better for patients from Northern and Central Spain as compared with those from the South and the East (p<0.001), students and employed patients as compared with housewives and unemployed (p<0.01), for those who had received information about the disease compared with those who did not (p<0.01), for those with milder day-time symptoms (p<0.01) and for patients with higher education (p<0.05).

Regional location is a statistically significant factor related with all the domains of the MiniAQLQ. Job status, Information about asthma and Diurnal symptoms are related with at least two domains of the instrument.

Table 6. Multivariate Analysis. Regression coefficients on Mini-AQLQ scores

MINI-AQLQ	TOTAL		SYMPTOMS		ENVIRONMENT		EMOTIONS		ACTIVITIES	
	β	p	β	p	β	p	β	p	β	p
ZONE	0.19	0.000	0.22	0.000	0.13	0.011	0.25	0.000	0.12	0.000
AGE	-0.08	0.205	-0.02	0.733	-0.10	0.369			-0.18	0.006
GENDER									0.13	0.002
BMI	0.005	0.917	0.02	0.669					-0.02	0.636
COAST / INLAND	0.02	0.525	0.02	0.479	0.04	0.532	0.03	0.428	0.07	0.093
JOB STATUS	0.09	0.002	0.10	0.000	0.12	0.004			0.05	0.223
EDUCATIONAL LEVEL	0.09	0.056	0.11	0.006	-0.04	0.728			0.08	0.120
SMOKING STATUS					0.16	0.036				
INFORMATION ABOUT ASTHMA	0.11	0.005	0.14	0.001					0.08	0.041
ASTHMA SELF-MANAGEMENT PLAN					0.04	0.483				
DIURNAL SYMPTOMS	-0.31	0.001	-0.29	0.000	-0.08	0.769	-0.25	0.016	-0.36	0.000
NOCTURNAL SYMPTOMS	-0.18	0.221	-0.22	0.014	-0.12	0.847	-0.12	0.443	-0.18	0.243
PULMONARY FUNCTION	-0.02	0.818	0.08	0.487	-0.12	0.506	-0.03	0.817	0.06	0.613
Multiple R		0.56	0.52	0.41	0.45	0.56				
R squared		0.31	0.27	0.16	0.20	0.32				
Adjusted R squared		0.29	0.24	0.08	0.19	0.29				
DF		17	19	18	9	19				
Significance		0.000	0.000	0.008	0.000	0.000				

CONCLUSIONS

Some factors that can have a significant effect on patients' QoL, such as symptoms control and adequate information about asthma, are modifiable. This should be taken into account when managing with this pathology.

REFERENCES

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