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COPD has significant social and economic impact on a working-age population of COPD sufferers; an international survey

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Introduction:

Chronic Obstructive Pulmonary Disease (COPD) has significant effects on individuals, their families and society although the impact of COPD on a working population is not well understood. In a large, international study 'COPD Uncovered' we investigated the consequences of COPD on patients, families and society. Here we report descriptive results from a subset of these data, showing the impact of COPD on patients' work productivity, absenteeism, earnings, activity impairment, lifestyle and ability to plan for the future.

Methods:

A cross-sectional survey was undertaken in Germany, USA, UK (telephone interviews), China and Turkey (face-to-face interviews) and Brazil (telephone and face-to-face interviews). The questionnaire was developed using established instruments and included the validated Work Productivity and Activity Impairment (WPAI) questionnaire as well as additional questions on the impact of COPD on income and lifestyle.

Participants were aged between 45-68 years, who recalled a physician diagnosis of COPD. Disease severity was measured using the MRC dyspnoea scale (mild=1-2; moderate=3-4; severe=5). The financial impact of COPD was quantified as annual loss of income and lifetime loss. The underlying assumptions for this were based on:

- a retirement age of 65 years
- an average annual wage based on OND statistics from 2008/2009 of £467 ($721.5) weekly over a 33.4 hour week Exchange rate 1.545
- the premise that all countries pay the same hourly rate and that the number of hours lost per week due to COPD will remain constant over the respondents working lifetime.

Descriptive statistical analyses were conducted; data are presented as percentages, means ± standard errors (SE)

Results:

The sample included 2426 respondents evenly distributed between the six countries. There was a balanced distribution of respondents across genders and age ranges (Table 1) but a wide distribution of disease severity (according to MRC dyspnoea score), with China and Germany reporting the mildest disease.

The impact of COPD on work and lifestyle are shown in Table 2. 710 respondents (29%) were in paid work of whom 22.9% reported that their COPD affected their work productivity. Of those not in work (n= 1690), 26% (n = 447) reported giving up work because of their COPD. There was a wide variation in the impact of COPD on work and productivity between countries; countries with more severe populations of COPD patients appeared to miss more work because of their COPD and their productivity was more severely affected.

Table 1: Demographic and clinical data

	Number (%)
Gender	
Male	1180 (49%)
Female	1246 (51%)
Age range (m= 56.38 years)	
45–49	546 (23%)
50–59	927 (38%)
60–68	953 (39%)
Severity (MRC Dyspnoea scale)	
Mild (1–2)	849 (35%)
Moderate (3–4)	1102 (42%)
Severe (5)	521 (22%)
Missing data	44 (2%)

Table 2: Impact on work and lifestyle

	Country					
	Brazil	China	Germany	Turkey	UK	USA
MRC Dyspnoea score (mean (95%CI)	3.79 (3.67, 3.91)	1.62 (1.55, 1.69)	2.75 (2.62, 2.87)	3.49 (3.36, 3.63)	3.56 (3.44, 3.69)	3.81 (3.71, 3.91)
WPAI (n=710)						
Absenteeism (% work time missed due to COPD in the last week)	5.74%	1.9%	2.6%	11.75%	7.63%	2.06%
Presenteeism (% of employed respondents who were impaired while working in the last week due to COPD)	18.22%	3.94%	6.73%	18.21%	11.51%	9.21%
Work productivity loss (% overall work impairment in last week due to COPD)	3.13%	1.74%	1.72%	6.17%	4.95%	2.04%
Activity Impairment (% with activity impairment in the last week due to COPD)	18.47%	6.47%	8.33%	24.82%	20.55%	15.79%
Additional questions on the impact of COPD on income and lifestyle:						
Total household income decreasing (n=896)	33.8%	23.9%	34.8%	34.4%	43.3%	51.5%
Being concerned about the future consequences of their condition on earning ability (n= 710)	57.7%	38.1%	33.3%	60.7%	50.7%	31.6%
Not being able to plan for the future (n=2426)	39.2%	15.3%	33.5%	59.1%	54.0%	45.8%
Not being able to maintain the same lifestyle as before their condition (n=896)	80.4%	56.8%	77.7%	90.2%	84.4%	82.2%

In most countries, with the exception of Turkey, absenteeism as a result of COPD is minimal. However, presenteeism (the % people who continue working with impairment) is high as is the general level of impairment. In the USA absenteeism was lower despite the mean dyspnoea score being highest. Large numbers of respondents reported that their COPD had an impact on household income and concern about its future impact. Respondents also reported the fact that their COPD had a significant impact on their ability to maintain the same lifestyle as before they had COPD resulting in them being unable to plan for the future. The annual financial loss (n=677) was calculated as £1,170 (£180); $1,808 ($278) and the lifetime losses, £12,779 (£2,016); $19,743.5 ($3,114.7).

Discussion and conclusions:

In this study COPD had a significant impact on work, income and lifestyle choices. The variation in impact of COPD on work and productivity between countries may be a result of less severe disease, while symptom severity appears to be related to work productivity. The fact that absenteeism is lower in the USA may be a feature of pay and conditions in that country.

COPD is perceived by a large proportion of respondents worldwide as having a considerable effect on total household income and lifestyle, raising concerns in these patients about their future. COPD is reported to result in absenteeism, and reduced productivity employed . A large number of people eventually give up work because of COPD, so whilst they are still working, employers should take a more active role in supporting employees to remain effective in the workplace and stay employed for longer. This working-age group of individuals with COPD require specific management strategies to enable them to maintain active, productive lives for longer.

COPD UNCOVERED

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Patients of working age with COPD have reduced quality of life in comparison to available population norms; an international survey

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Introduction:

Chronic Obstructive Pulmonary Disease (COPD) is of growing concern world wide yet the impact on the daily life of a working population is seldom reported in the literature. 'COPD Uncovered' is an international study that has investigated the consequences of COPD from the perspective of the patient and the impact on health-related quality of life.

Methods:

A cross-sectional survey was undertaken in Germany, USA, UK (telephone interviews), China and Turkey (face-to-face interviews) and Brazil (telephone and face-to-face interviews).

Participants were required to be between 45-68 years old, with a recall of a physician diagnosis of COPD. A questionnaire was developed using established instruments for assessing disease severity. These included the MRC dyspnoea scale (scores; mild: 1-2; moderate=3-4; severe=5)) and the EuroQol 5D. The EQ-5D™ is a standardised instrument for use as a measure of health outcome. It is comprised of five dimensions (mobility, self-care, usual activities, pain/discomfort, anxiety/depression) and a visual analogue scale.

The EQ-5D™ provides a health-related quality of life score with a range of - 0.594 to 1 where 1 is approximated to full health and 0 represents a health state of 'death'. Population norm age bands vary between countries, and are available for the UK, Germany and USA only.

The following co-morbidities were also recorded: arthritis, cancer or tumour, anxiety, depression, diabetes, cardiovascular disease, hypertension. Respondents were also asked to list any other lung conditions in addition to COPD, including asthma.

Descriptive analyses were conducted; data are presented as percentages, means and 95% confidence intervals (CI).

Results:

The sample included 2426 respondents, evenly distributed between the six countries. There was a balanced distribution across gender and age range (Table 1), and a range of disease severity. 2404/2426 (99%) respondents completed the question relating to co-morbidities and of these 1809 (75%) reported >1 co-morbid condition. Mean EQ-5D scores for the total population in each country were: Brazil 0.64; China 0.93; Germany 0.63; Turkey 0.55; UK 0.53 and USA 0.50. Respondents had lower QOL than the age-related population norms, especially in the USA (see Table 2).

Respondents with moderate and severe disease reported the greatest number of co-morbidities (Table 2), as did the older populations (Table 4) although the amount of co-morbidities in the younger age groups were also high. Decline in quality of life (EQ-5D) was associated with increasing numbers of co-morbidities (Table 3 and Table 4). Compared to age-related country norms, quality of life was substantially impaired in patients with COPD.

Table 1: Demographic and clinical data

	Number (%)
Gender	
Male	1180 (49 %)
Female	1246 (51%)
Mean smoking pack year history	
37.8 years	
Age (m= 56.38 years)	
45–49 years	546 (23%)
50–59 years	927 (38%)
60–68 years	953 (39%)
Severity (MRC Dyspnoea score)	
Mild (1–2)	849 (35%)
Moderate (3–4)	1102 (42%)
Severe (5)	521 (22%)

Table 2: Co-morbidities vs disease severity

Co-morbidities	Mild % (SE)	Moderate % (SE)	Severe % (SE)
0 (n:578)	63.1 (2.0)	25.1 (1.8)	11.8 (1.3)
1–2 (n:1179)	33.2 (1.4)	45.2 (1.5)	21.6 (1.2)
≥3 (n:604)	13.6 (1.4)	54.1 (2.0)	32.3 (1.9)

Table 3: EQ-5D score by co-morbidities

Co-morbidities	0 Mean (SE)	1-2 Mean (SE)	≥3 Mean (SE)
EQ-5D score	0.807 (0.010)	0.661 (0.009)	0.418 (0.014)
n	594	1193	612

Table 4: Quality of Life (EQ-5D) and co-morbidities of respondents by country and compared to population norms

Country	Age category								
	40–49			50–59			60–69		
	EQ-5D Mean Value (95%CI)	**EQ-5D Norm**	**Mean no. of co-morbidities**	**EQ-5D Mean Value (95%CI)**	**EQ-5D Norm**	**Mean no. of co-morbidities**	**EQ-5D Mean Value (95%CI)**	**EQ-5D Norm**	**Mean no. of co-morbidities**
UK	0.63 (0.56, 0.70)	0.85	1.32 (1.01, 1.63)	0.50 (0.44, 0.56)	0.83	1.77 (1.50, 2.05)	0.53 (0.49, 0.57)	0.79	1.93 (1.76, 2.12)
Germany	0.67 (0.62, 0.72)	0.83	1.43 (1.19, 1.67)	0.61 (0.57, 0.66)	0.79	1.79 (1.60, 1.98)	0.64 (0.56, 0.72)	0.74	1.91 (1.58, 2.24)
	45-54			55-64					
	EQ-5D Mean Value (95%CI)	**EQ-5D Norm**	**Mean no. of co-morbidities**	**EQ-5D Mean Value (95%CI)**	**EQ-5D Norm**	**Mean no. of co-morbidities**			
USA	0.37 (0.25, 0.49)	0.87	3.93 (3.34, 5.42)	0.49 (0.44,0.53)	0.85	3.53 (3.28, 3.78)			

Discussion and conclusions:

In this survey of patients with COPD across six countries, increasing co-morbidities were associated with more severe disease and with declining quality of life. It is clear that COPD is having a significant impact on the daily activities and quality of life of the working age population involved in this study, particularly in those in the younger age groups whose life expectations may be greater than an older population.

Systemic inflammatory processes, which affect multiple organs of patients with COPD may be behind the relatively high rates of co-morbidities. It is evident that whatever the pathophysiological processes are at play, the affects in terms of EQ-5D (QOL) are significant in this relatively young population of patients with COPD.

Emphasis must be placed on methods that enhance the daily functioning of this younger working population, not purely in terms of respiratory symptoms. This will include pharmacological and non-pharmacological interventions aimed at improving patient well being. This should include health care professional educational programmes which reinforce that young patients with COPD have extensive pathology effecting their QOL and re-examining public policies; including work place polices, to enable the younger COPD population to improve their QOL and maintain active lifestyles.

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