

Assessing Quality of Life during COVID-19 Outbreak among a Vulnerable Population with Pulmonary Disease

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Abstract

Original Research Article

Background: Individuals monitored for pulmonary disease represent a particularly vulnerable population to the Coronavirus. They present, prior to any COVID 19 exposure, a respiratory condition that could be complicated by a contamination with this virus. Thus, any exposure to this virus might have an impact on their health and their quality of life. **Objectives:** This study aims to evaluate health-related quality of life in this population during the Covid-19 pandemic; to analyze the associations of mental and physical quality of life measures with sociodemographic, physical, and psychological parameters; and to determine whether the Covid-19 pandemic and the related measures were associated with an immediate change in these scores. **Methods:** This is a cross-sectional, descriptive, and analytical study, conducted between May and June 2020. Quality of life assessment was carried out using the HRQoL SF 12 Health-Related Quality of Life Scale, and data were analyzed using SPSS software. **Results:** Of the 78 patients included, 41 (52.6%) were male with a predominance of the age range above 60 years (35.9%). The mean of the physical quality of life score PCS-SF12 was 33.16 (± 12.64), and the mean of the mental quality of life score MCS-SF12 was 41.64 (± 13.14). Statistical analysis revealed a significant difference in mental quality of life scores according to gender, education level, employment status prior to lockdown, asthma diagnosis, duration of follow-up for lung disease, follow-up for psychiatric pathology, and worsening of symptoms due to Covid-19 pandemic situation. **Conclusion:** While the quality of life of patients with lung disease is severely impacted by the nature of their illness, the pandemic and containment measures have exacerbated the situation. Psychological support is still needed to improve their mental health and thus their care.

Keywords: Coronavirus, COVID 19, SPSS software, mental quality of life score.

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INTRODUCTION

During the initial phase of every pandemic, the scientific society seems to be more interested in the various clinical manifestations and physical consequences of the disease, than in the mental health of the population.

The subjects followed for pulmonary disease constitute a particularly vulnerable population to the Coronavirus. They present, prior to any infection with the COVID 19, a respiratory symptomatology which could be complicated by this virus contamination.

Therefore, this pandemic situation could generate an additional stress to the one related to their clinical condition, and that could affect their quality of life.

The main purpose of our study was to evaluate the health-related quality of life of this population during the lockdown period and then to analyze the links between mental and physical quality of life measures and socio-demographic, physical and psychological parameters in order to identify the determinants of both quality of life scores.

This study also sought to determine whether the Covid-19 pandemic and the resulting measures were associated with an immediate change in quality of life scores, six weeks after the establishment of the containment measures and the announcement of the public health emergency in Morocco.

MATERIALS AND METHODS

This was a descriptive and analytical cross-sectional study conducted between May and June 2020,

six to ten weeks after the establishment of the containment measures and the announcement of the state of public health emergency, among a Moroccan population with a pulmonary disease (tuberculosis, asthma, COPD, cancer.....):

- Consulting or hospitalized at the Moulay Youssef University Hospital of pulmonology or;
- Consulting at the university psychiatric hospital Ar-razi of Salé;

Data collection was carried out by a psychiatry resident with the presence of a resident or a specialist in pulmonology (for the collection of data related to the diagnosis of pulmonary disease).

Inclusion Criteria

We included in this study, any patient aged over 18 years, followed for a pulmonary disease with an onset prior to the beginning of the lockdown related to the Covid-19 pandemic, able to conduct an interview and having agreed to participate in the study.

Exclusion criteria

Patients who were not able to answer the different questions during the interview or who had a follow-up of less than two months in pulmonology were excluded, in addition to those who had no common language with the interviewer (Berber speakers)

MATERIALS

An anonymous questionnaire was administered face-to-face to the participants, consisting of three parts: The first part, was devoted to socio-demographic and socio-economic data {age, gender, educational level, employment status before lockdown, employment status after lockdown, dependents (financial)}, and the second part to clinical data, including the exploration of the pulmonary disease (duration of follow-up, nature of the disease, long-term treatment, presence of respiratory

signs on a daily basis, worsening of symptoms following lockdown), the evaluation of addictive behaviors, the evaluation of the psychological state (follow-up for a psychiatric pathology) and sleep disorders. The last part of the survey included the different items of the SF 12 quality of life scale.

The Health Related Quality of Life Scale HRQoL SF 12 is a quality of life questionnaire that explores physical, emotional and social health. It provides two scores: a mental quality of life score and a physical quality of life score. A verified version in Moroccan dialectal Arabic was used¹ for better results [1].

Statistics analysis

1. The physical (PCS-SF12) and mental (MCS-SF12) scores:

The scores of the 12 questions were calculated so that a higher score corresponded to a better health status.

2. The descriptive study

Qualitative variables were described in terms of proportions and the quantitative variables in terms of mean and standard deviation.

3. The analytical study:

Was carried out to investigate the association between PCS and MCS and the explanatory variables (gender, age, ...) and the data were analyzed using SPSS 15 software. The threshold of significance was 0.05

RESULTS

Sample size

After establishing the above-mentioned inclusion and exclusion criteria, we were able to pool seventy-eight cases of patients with lung disease for at least two months (Figure 1).

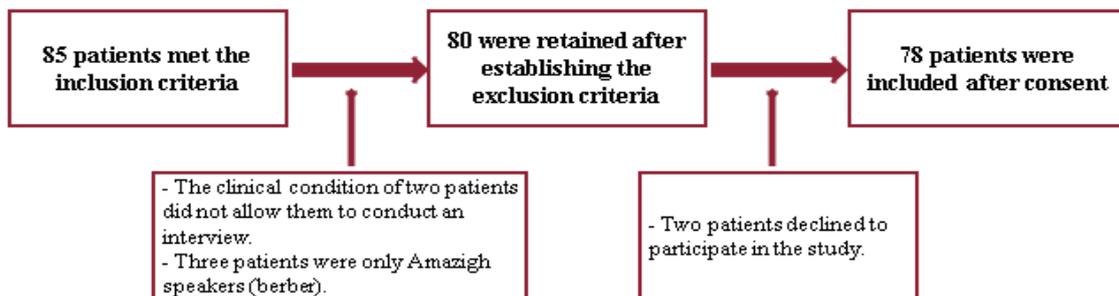


Figure 1: Flow-chart showing the different phases of recruitment of the cases in our study

Descriptive Results

Sociodemographic characteristics

Of the seventy-eight patients recruited, forty-one were male (52.6%), with a predominance of the over-sixties age range (35.9%).

More than half of our patients were married (N=41; 52.6%), forty-three percent had never received a school education (N=34), and 51.3% were unemployed even before the onset of the lockdown. Nevertheless, thirty-eight percent (N=30) of participants reported having financial dependents. The socio-demographic data is detailed in Table 1.

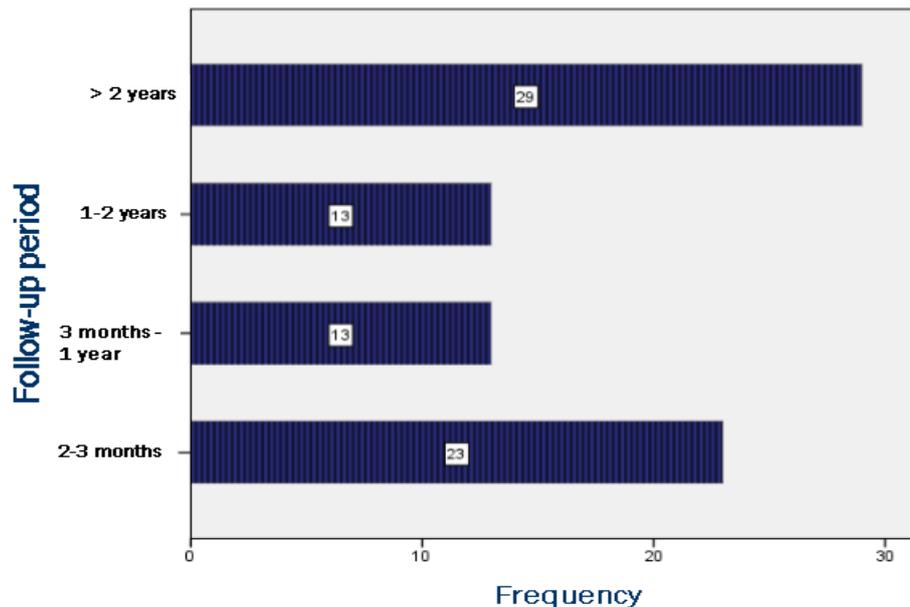
Clinical Parameters

In this section we tried to specify the nature of the pulmonary disease, its evolution time, the existence of breathing symptoms and their variations according to different situations, as well as the identification of any use of psychoactive substances.

The follow-up time for the pulmonary disease was greater than two years in 37.2% of cases. It was

also more than one year in 53.8% of cases and less than one year in 46.2% of cases (Graph 2).

The pulmonary conditions were distributed as follows: Asthma was the most frequent condition (33%), followed by tuberculosis (32%), chronic obstructive pulmonary disease (13%), pleurisy (9%), sarcoidosis (8%) and then primary or secondary lung cancer (5%).



Graphic 1: Duration of follow-up for lung disease in our sample.

Thirty-eight percent of the participants reported being on long-term treatment, and 56 patients (71.8%) reported the prior presence of daily respiratory symptoms.

Regarding the use of psychoactive substances: 23 patients reported tobacco use. Of these patients, 14 reported concurrent use of cannabis, two of alcohol and one of benzodiazepines. Of the patients with problematic tobacco use, four reported an increase in tobacco use after the lockdown.

Psychiatric parameters

The majority of patients in this study series had never been followed for a psychiatric disorder before (N=71; 91%).

Fifty-six percent (N= 44) reported worsening of breathing symptoms related to their lung disease as a result of conflict even before the emergence of this pandemic and 35.9% (N= 28) experienced worsening of these signs following the onset of lockdown. Sleep disturbance in the last month was reported by 36 individuals (46.2%).

Quality of life measured by SF12

In our sample, the mental quality of life scores were higher than the physical quality of life scores.

For the PCS-SF12 physical quality of life score, the mean was 33.16 with a standard deviation of 12.64, a minimum of 14.43, a maximum of 61.86, and a median of 29.65.

As for the mental quality of life score MCS-SF12, the mean was 41.64 with a standard deviation of 13.14, a minimum of 12.5; a maximum of 65.98 and a median of 41.10.

Analytical results

Analysis of associations between sociodemographic factors and physical and mental quality of life scores

Age

The analytical results did not show any statistically significant difference between the different age ranges in relation to the physical and mental scores (No influence).

However, patients under 60 years of age had a significantly higher PCS-SF12 score than those over 60 ($p=0.01$)

Gender

Female gender showed significantly low results (MCS-SF12: 36.15) compared to male gender (MCS-SF12: 46.78) regarding the mental score ($P < 0.0001$).

The analysis of variance of physical scores by gender did not objective statistically significant results.

Educational level

In terms of mental score, a statistically significant difference was found between the group of patients who did not attend school and the group who had continued their education up to secondary level (37.76 versus 47.96 respectively; $p = 0.025$) In terms of physical score, a significant difference was found between the group of patients who did not attend school and the groups with university and secondary education (29.34 versus 44.25; $p = 0.001$ and 29.34 versus 38.73; $p = 0.005$ respectively).

A further significant difference was found between the primary education group and the other groups of secondary and university education ($p = 0.006$; $p = 0.001$ respectively)

Other

The occupational status of the participants before confinement made a significant difference in both physical and mental scores with a p at 0.01 and 0.02 respectively.

The existence of family dependents was associated with a significant difference in the mental quality of life score only $p = 0.001$

Study of associations between clinical parameters and physical / mental quality of life scores**The pulmonary disease**

No significant difference was found between the different illnesses regarding the physical quality of life score.

Concerning the mental score, asthma induced a significant difference with a mean of 35.92; $p = 0.005$.

Duration of follow-up

The statistical analysis found a significant difference in the mental score according to the duration of follow-up $p = 0.001$ (Table 2).

Addictive behaviors

Statistical analysis found a significant difference in both physical and mental scores induced by the presence of addictive behaviors with a p respectively at 0.03 and 0.001 (Table 2).

Psychiatric pathology

The statistical analysis found a significant difference in the mental score if there was a psychiatric history, in case of worsening of symptoms following conflicts beside any pandemic context and in the presence of an exacerbation of breathing symptoms following the lockdown with p values of 0.011, < 0.0001 and 0.003 respectively (Table 2).

Table 1: Variations in physical and mental quality of life scores according to sociodemographic characteristics

	(N, %)	M (SD) PCS-SF12	<i>P value</i>	M (SD) MCS-SF12	<i>P value</i>
Age ranges (years)			<i>P = 0.32</i>		<i>P = 0.48</i>
18 – 20	2 (2,6)	42,76 (23,9)		38,08 (0,9)	
21 – 30	15 (19,2)	35,97 (11,47)		38,67 (13,9)	
31 – 40	12 (15,4)	37,43 (15,8)		40,74 (12,58)	
41 – 50	10 (12,8)	34,3 (13,59)		47,36 (10,17)	
51 – 60	11 (14,1)	30,86 (14,6)		37,63 (13,69)	
> 60	28 (35,9)	29,62 (9,42)		43,67 (13,94)	
Age (ans)			<i>P = 0.04</i>		<i>P = 0.33</i>
≤ 60 ans	50 (64,1)	35,13 (13,8)		40,65 (12,67)	
> 60 ans	28 (35,9)	29,62 (9,42)		43,67 (13,94)	
Gender			<i>P = 0.15</i>		<i>P < 0.0001</i>
Male	41 (52,6)	31,2 (12,41)		46,78 (12,34)	
Female	37 (47,4)	35,32 (12,69)		36,15 (11,78)	
Marital status					
Single	22 (28,2)	34,58 (14,16)		38,49 (13,63)	
Married	41 (52,6)	33,29 (11,72)		45,07 (12,81)	
Divorced	7 (8,9)	38,98 (15,29)		41,79 (13,95)	
widow ed	8 (10,3)	23,45 (4,58)		33,52 (7,72)	
Educational status			<i>P < 0.0001</i>		<i>P = 0.02</i>
None	34 (43,6)	29,34 (10,93)		37,76 (12,29)	
Primary level	15 (19,2)	27,71 (11,68)		45,74 (9,03)	
Secondary level	20 (25,6)	38,73 (11,58)		47,96 (12,11)	

University level	9 (11,5)	44,25 (12,38)		36,25 (17,85)	
Professionnal status before lockdown			P = 0.01		P = 0.02
unemployed	40 (51,3)	28,10 (8,72)		39,36 (11,77)	
Full-time job (public sector)	4 (5,1)	49,48 (6,91)		34,12 (16,97)	
Full-time job (private sector)	19 (24,4)	35,56 (14,42)		45,38 (12,18)	
Occasionnal-Job	2 (2,6)	38,23 (14,7)		51,72 (6,31)	
Retired	8 (10,2)	33,28 (11,71)		51,76 (14)	
Student	5 (6,4)	49,22 (13,48)		32,95 (14,42)	
Professionnal status after lockdown			P= 0,07		P= 0,32
No change	7 (28)	44,07 (11,5)		42,87 (10,62)	
working from home	5 (2)	49,17 (8,77)		31,37 (20,38)	
Temporary cessation of work	9 (36)	35,15 (15)		42,43 (14,64)	
Dismissed	4 (16)	27,52 (15,09)		51,59 (9,7)	
Dependents (financially)			P = 0.3		P = 0.001
Yes	30 (38,46)	35,02 (13,31)		47,68 (12,14)	
No	48 (61,53)	31,99 (12,19)		38,02 (12,45)	

Table 2: Variations in physical and mental quality of life scores according to clinical and psychological parameters

	(N, %)	M (SD) PCS-SF12	P value	M (SD) MCS-SF12	P value
Pulmonary disease					
Asthma	26 (33)	37,07 (12)	P= 0,05	35,92 (12,95)	p= 0,005
BPCO	10 (13)	26,79 (11,3)	P= 0,08	46,42 (11,56)	p= 0,23
Tuberculosis	25 (32)	32,11 (11,4)	P= 0,62	44,61 (13,99)	P= 0,18
Sarcoidosis	6 (8)	31,84 (8,8)	P= 0,079	35,48 (6,62)	P= 0,059
Infection	7 (9)	31,76 (17,51)	P=0,7	45,66 (9,98)	P= 0,4
Primitive or secondary lung cancer	4 (5)	22,83 (8,65)	P= 0,094	52,41 (9,51)	P= 0,09
Follow-up duration			P= 0,29		P= 0,001
< one year	36 (46,2)	31,53 (13,55)		46,73 (11,79)	
≥ one year	42 (53,8)	34,55 (11,78)		37,45 (12,83)	
Substances use			P=0,03		P=0,001
Yes	24 (30,8)	28,57 (11,46)		48,96 (10,96)	
No	54 (69,2)	35,19 (12,69)		38,53 (12,82)	
Psychiatric disease			P= 0,18		P= 0,011
Yes	7 (9)	39,20 (11,28)		29,81 (9,11)	
No	71 (91)	32,56 (12,67)		42,91 (12,92)	
Worsening of breathing symptoms / Conflicts			P= 0,26		P<0,0001
Yes	44 (56,4)	34,57 (12,95)		36,18 (12,07)	
No	34 (43,6)	31,33 (12,15)		48,93 (10,87)	
Worsening of breathing symptoms / lockdown			P= 0,001		P= 0,003
Yes	28 (35,9)	27,48 (8,45)		35,94 (11,34)	
No	50 (64,1)	36,33 (13,52)		44,98 (13,05)	

DISCUSSION

According to the definition proposed by the WHO, the quality of life is largely influenced by the physical health of the subject, his or her psychological state, his or her circle of relationships, his or her dependence or independence, as well as by the environment [2].

The International Labor Organization in its latest report published in 2021 [3], underlines the enormous impact of Covid 19 on the world's economies, resulting in high job loss levels. These impacts have been most severe in the Arab world, and

in Morocco specifically, and have exacerbated pre-existing labor market deficits.

As such, the respiratory disease, the COVID 19 pandemic, the confinement, and the increased job loss levels secondary to this situation, are all factors that would have affected the quality of life of our study population.

To our knowledge, our work is the first to explore quality of life in patients with respiratory disease in Morocco during a pandemic situation. In our series, the physical score scale (PCS) had a mean of

33.16 (± 12.64) while the mental score scale (MCS) had a higher mean of 41.74 (± 13.14).

These results are lower than the PCS and MCS score values reported by three national studies [1, 4, 5] exploring quality of life in the general population and in patients with high blood pressure, with the exception of our average mental score, which was higher than the average of a study carried out in Tetouan in the general population (Table 3) [4].

Internationally published studies [6, 7] of patients with lung disease have focused on subjects with chronic obstructive pulmonary disease and have used the same health-related quality of life measurement tool SF-12. The results of these studies have found higher physical quality of life scores than those found in our subsample of patients with COPD (Table 4).

As for mental quality of life, the mean MCS of our sample was close to the scores reported by other studies. In our study, patients under 60 years of age had significantly better physical quality of life scores

compared to patients over 60 years; with means of 35.13 and 29.62 respectively ($p = 0.04$). These results are consistent with those obtained by EL EMRANI ET AL [4] who found that people over 55 years of age have a significantly low physical score (55.1; $p \leq 0.01$). Indeed, aging is accompanied by physiological and biological modification that alters physical abilities apart from any superadded pathology.

We also found a significant relationship between gender and mental quality of life scores. Indeed, female gender was associated with a more impaired mental quality of life than male gender ($p < 0.0001$). This result is consistent with the results of El Emrani *et al.*, [4] and Martin *et al.*, [7] but was in contradiction with those of Filankembo Kava *et al.*, [5].

A significant relationship was observed between the worsening of respiratory symptoms after the declaration of a health emergency and the average physical and mental quality of life scores, which suggests that the pandemic has an impact on the quality of life of this population.

Table 3: Physical and mental quality of life scores in our series and other national and international series

Study	N	Population type	HRQoL	PCS-SF12	MCS-SF12
Our study	78	Pathologie respiratoire	SF-12	33,16 (± 12.64)	41,74 (± 13.14)
Stuy of El Amrani <i>et al.</i> , [4]	385	Population générale	SF-36	45,8 ($\pm 8,4$)	40,9 ($\pm 11,4$)
Study of Sehli <i>et al.</i> , [1]	688	Population générale	SF-12	67,95 ($\pm 66,36$)	43,91 ($\pm 33,51$)
Study Filankembo Kava <i>et al.</i> , [5]	404	Hypertendus	SF-12	49.8 (± 0.2)	52.7 (± 9.5)

Table 4: Physical and mental quality of life scores in the case of COPD

Study	N	Popoulation type	HRQoL	PCS-SF12	MCS-SF12
Our study	78	Pathologie respiratoire	SF-12	33,16 (± 12.64)	41,74 (± 13.14)
Our study	10	BPCO	SF-12	26,79 (± 11.3)	46,42 (± 11.56)
Wacker <i>et al.</i> , [6]	60	BPCO grade 1	SF-12	47.83 (± 9.60)	50.44 (± 8.81)
Wacker <i>et al.</i> , [6]	41	BPCO grade 2	SF-12	44.23 (± 10.30)	51.98 (± 9.02)
Martin <i>et al.</i> , [7]	9405	BPCO	SF-12	36.8 \pm 10.4	47.2 \pm 11.2

Limitations of the study

The size of our sample was small given the context of the pandemic, which imposed a reduction in the number of consultants and hospitalizations, except for those requiring urgent care. Consequently, this could have influenced our results of average physical and mental quality of life scores (PCS-SF12 and MCS-SF12) in the sense that the patients whose health condition was the most serious were those who were obliged to come for consultation despite the state of lockdown.

Our study population was limited to patients attending the University Hospital, and did not include those followed in the private sector, primary care facilities, and regional hospitals. Indeed, patients followed in private practices would not have the same sociodemographic profile as those followed in public institutions. On the other hand, those followed at regional centers would not have the same clinical profile of the disease as those followed at university

centers. All these elements could considerably influence the measurement of quality of life.

CONCLUSION

Overall, the perception of mental quality of life in relation to health in our population was average, with moderately high to relatively low scores.

Physical quality of life scores were significantly correlated with age; education level, employment status prior to lockdown, substance use, and worsening of breathing symptoms after reporting Covid-19-related health measures.

Mental quality of life scores were significantly correlated with gender, education level, employment status before the lockdown, having dependents, asthma diagnosis, duration of follow-up for lung disease, substance use, follow-up for psychiatric illness, and

worsening of symptoms following conflict or with the beginning of Covid-19 pandemic.

These results suggest that quality of life should be better taken into account in the lung disease management program in order to optimize the quality of care offered to this category of patients.

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