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Multidimensional Clinical Burden and Health-Related Quality of Life among Patients with Chronic Obstructive Pulmonary Disease: A Baseline Comparative Analysis

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ABSTRACT

Background: Chronic obstructive pulmonary disease (COPD) is associated with persistent respiratory symptoms, airflow limitation, functional impairment, and reduced health-related quality of life (HRQoL). A multidimensional assessment incorporating physiological measures, dyspnoea, and patient-reported health status may provide a more comprehensive description of disease burden.

Objective: To describe the multidimensional clinical burden and HRQoL of patients with COPD at baseline and compare sociodemographic and clinical characteristics, physiological parameters, pulmonary function, dyspnoea severity, and HRQoL between the experimental and control groups of a quasi-experimental study.

Methods: This baseline comparative analysis included 122 patients with COPD enrolled in a quasi-experimental pre-test–post-test control-group study. Participants comprised 61 patients in each group and were recruited using non-probability purposive sampling. Baseline assessment included sociodemographic and clinical characteristics, anthropometric and physiological measures, pulmonary function parameters, modified Medical Research Council (mMRC) dyspnoea grade, and St George's Respiratory Questionnaire for COPD (SGRQ-C) scores. Continuous variables were compared using the Mann–Whitney U test, while categorical variables were compared using chi-square or exact tests, as appropriate.

Results: Most participants were aged over 50 years (83.61% in the experimental group and 72.13% in the control group), and most were male (67.21% and 78.69%, respectively). COPD had been diagnosed 1–5 years previously in 73.77% and 78.69% of participants, respectively. A history of smoking was reported by 36.07% of the experimental group and 22.95% of the control group. All participants reported sleep disturbance related to cough or breathlessness. No statistically significant between-group differences were observed in BMI (21.50 ± 5.25 vs 21.74 ± 5.16 kg/m²; p = 0.591), peak expiratory flow rate (3.39 ± 1.38 vs 3.43 ± 1.46 L/s; p = 0.904), FEV_1 (1.27 ± 0.49 vs 1.24 ± 0.51 L; p = 0.888), FVC (2.26 ± 0.71 vs 2.28 ± 0.69 L; p = 0.955), or FEV_1/FVC ratio (56.21 ± 10.23% vs 53.98 ± 11.72%; p = 0.278). Modified MRC grade 4 dyspnoea was observed in 78.7% of experimental participants and 83.6% of controls. SGRQ-C Symptoms scores were 90.07 ± 4.73 and 88.61 ± 5.71, respectively, while Activity scores were 100.00 ± 0.00 in both groups. Between-group differences were statistically significant for the Impact (p = 0.003) and Total (p = 0.001) scores, indicating poorer health status in the experimental group in these domains. Educational status also differed significantly between groups (p = 0.011).

Conclusion: Participants demonstrated substantial COPD-related burden, particularly in dyspnoea and disease-specific HRQoL. Although no statistically significant between-group differences were detected in the measured physiological and pulmonary function parameters, differences in educational status and selected HRQoL domains indicate that baseline imbalances should be considered when interpreting subsequent intervention outcomes.

Keywords: Chronic obstructive pulmonary disease; pulmonary function; dyspnoea; health-related quality of life; SGRQ-C; modified Medical Research Council scale; baseline characteristics.

INTRODUCTION

Chronic obstructive pulmonary disease (COPD) is a chronic respiratory disorder characterized by persistent respiratory symptoms and airflow obstruction, resulting in substantial morbidity, disability, and impaired health-related quality of life (HRQoL). The World Health Organization estimated that COPD caused approximately 3.4 million deaths worldwide in 2023, highlighting its continuing importance as a global public health concern. The Global Initiative for Chronic Obstructive Lung Disease (GOLD) emphasizes the importance of assessing symptoms, airflow limitation, and the broader clinical impact of COPD to guide patient management.

The burden of COPD is particularly important in low- and middle-income countries, where tobacco smoke, household air pollution, occupational exposures, and barriers to timely diagnosis and treatment may contribute to disease burden. In India, COPD represents an important public health challenge, although prevalence estimates vary according to population characteristics, diagnostic criteria, and study setting. These factors support the need for comprehensive clinical assessment that considers both physiological impairment and the consequences of COPD for patients' daily lives.

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COPD-related burden cannot be fully characterized by spirometric measurements alone. Patients with similar pulmonary function measurements may experience different levels of breathlessness, activity limitation, and perceived health status. The modified Medical Research Council (mMRC) dyspnoea scale is a simple measure of breathlessness-related disability and provides information that complements objective pulmonary function assessment. Previous research has demonstrated the usefulness of mMRC grading in evaluating disability among patients with COPD. Accordingly, assessing dyspnoea alongside physiological measures may provide a broader understanding of patients' clinical burden.

Health-related quality of life provides another important dimension of COPD assessment by capturing the perceived effects of symptoms and functional limitations on everyday life. The St George's Respiratory Questionnaire (SGRQ) was developed to assess health status in patients with chronic airflow limitation and includes Symptoms, Activity, and Impacts domains. The COPD-specific SGRQ-C was subsequently developed and validated for use among patients with COPD. Higher SGRQ-C scores indicate poorer health status; therefore, this instrument can complement clinical and pulmonary function measures by describing the patient-reported burden of disease.

A multidimensional approach incorporating pulmonary function, physiological parameters, dyspnoea severity, and disease-specific HRQoL is relevant to nursing assessment and respiratory care. These measures describe different aspects of COPD and should not be treated as interchangeable indicators. Examining them together can help characterize the baseline clinical profile of patients and identify differences between study groups before an intervention is evaluated

In quasi-experimental studies, baseline assessment is particularly important because participants are not necessarily allocated randomly to study groups. Differences in sociodemographic characteristics or patient-reported health status may influence the interpretation of subsequent outcomes. A detailed baseline comparison can therefore describe the initial clinical burden and identify potential imbalances that should be considered when interpreting later intervention findings.

The present study aimed to describe the multidimensional clinical burden and HRQoL of patients with COPD at baseline and compare sociodemographic and clinical characteristics, anthropometric and physiological measures, pulmonary function, dyspnoea severity, and disease-specific HRQoL between the experimental and control groups of a quasi-experimental study conducted in Moradabad, Uttar Pradesh, India.

OBJECTIVE

General objective

To compare the baseline multidimensional clinical burden and health-related quality of life (HRQoL) among patients with COPD in the experimental and control groups.

Specific objectives

1. To compare the baseline sociodemographic and clinical characteristics of patients with COPD between the experimental and control groups.
2. To compare baseline anthropometric and physiological parameters, including height, weight, body mass index (BMI), heart rate, and respiratory rate, between the two groups.
3. To compare baseline pulmonary function parameters, including PEFR, FEV_1, FVC, and FEV_1/FVC ratio, between the two groups.
4. To compare baseline dyspnoea severity, assessed using the modified Medical Research Council (mMRC) Dyspnoea Scale, and disease-specific HRQoL, assessed using the St George's Respiratory Questionnaire for COPD (SGRQ-C), between the two groups.

3.1 Study design

This manuscript presents a baseline comparative analysis of participants enrolled in a quantitative quasi-experimental pre-test–post-test control-group study. The parent study included an experimental group that received the Pulmonary Strengthening Package in addition to routine care and a control group that received routine care alone. Baseline data were collected before the intervention was implemented. Participants were subsequently followed up at one and two months as part of the parent study; however, the present manuscript focuses exclusively on comparisons of baseline characteristics, clinical parameters, and health-related quality of life (HRQoL) between the two groups.

3.2 Study Population and Sample

The study included 122 patients diagnosed with chronic obstructive pulmonary disease (COPD), comprising 61 participants in the experimental group and 61 in the control group.

The sample size was calculated using OpenEpi Version 3 based on a comparison of two means, with a 95% confidence level, 80% statistical power, and equal allocation between the two groups. A non-probability purposive

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sampling technique was used to recruit participants who met the predefined eligibility criteria and were willing to participate in the study.

3.3 Eligibility Criteria

Inclusion Criteria

Participants were eligible for inclusion if they:

1. Had been diagnosed with COPD.
2. Were aged over 35 years.
3. Were male or female.
4. Were willing to participate in the study.
5. Were able to understand and communicate in Hindi or English.
6. Had not practised yoga or structured breathing exercises before the study.

EXCLUSION CRITERIA

Participants were excluded if they had:

1. Severe dyspnoea or a clinically unstable condition.
2. Neurological or psychiatric disorders.
3. Major orthopaedic limitations.

3.4 Study Setting

The study was conducted at Teerthanker Mahaveer Hospital & Research Centre, Moradabad, Uttar Pradesh, India. The present manuscript reports a baseline comparative analysis of 122 patients with COPD enrolled in the parent quantitative quasi-experimental pre-test–post-test control-group study.

4. BASELINE ASSESSMENT

Baseline assessment was performed before implementation of the intervention and included:

1. Sociodemographic characteristics
2. Clinical characteristics
3. Anthropometric measures
4. Physiological measures
5. Pulmonary function
6. mMRC dyspnoea grade
7. Disease-specific HRQoL using SGRQ-C

The baseline assessment was conducted for both groups before intervention.

MEASURES

5.1 Anthropometric and physiological variables

The following parameters were assessed:

- Height
- Weight
- BMI
- Heart rate
- Respiratory rate

5.2 Pulmonary function

Pulmonary function measures included:

- PEFR
- FEV_1
- FVC
- FEV_1/FVC ratio

These variables were included as objective measures of respiratory function.
Current GOLD guidance identifies spirometry as essential for confirming COPD and provides the contemporary framework for interpretation of airflow obstruction.

5.3 Dyspnoea

Dyspnoea was assessed using the **modified Medical Research Council (mMRC) Dyspnoea Scale**, ranging from grade 0 to grade 4, with increasing grade indicating greater breathlessness and functional limitation.
The scale is an established measure of respiratory disability in COPD.

5.4 Health-related quality of life

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Disease-specific HRQoL was assessed using the **St George's Respiratory Questionnaire-COPD (SGRQ-C)**.
The questionnaire provides:

- Symptoms
- Activity
- Impacts
- Total score

SGRQ-C scores range from 0 to 100, with higher scores indicating poorer health status.
The SGRQ-C is specifically developed for COPD and has demonstrated validity and comparability with the original SGRQ.

STATISTICAL ANALYSIS

Descriptive statistics were used to summarize participant characteristics.
Categorical variables were expressed as **frequency and percentage**.
Continuous variables were summarized using **mean ± standard deviation** and, where appropriate, median and interquartile range.
For baseline between-group comparisons:

- Mann–Whitney U test was used for continuous variables.
- Chi-square test was used for categorical variables when appropriate.
- Fisher's exact or Fisher–Freeman–Halton exact tests were used where cell frequencies required exact testing.

A p value <0.05 was considered statistically significant.
The reports that SPSS was used for data analysis.

ETHICAL CONSIDERATIONS

Ethical approval was obtained from the Institutional Ethics Committee, Teerthanker Mahaveer University, Moradabad:

REFERENCE: TMU/IEC Nov. 23/140 **Date:** 07/12/2023
The study was prospectively registered with the Clinical Trials Registry–India:
CTRI/2024/12/078238
Written informed consent was obtained from participants, and confidentiality and anonymity were maintained. Participants were informed of their right to withdraw without penalty or loss of benefits.

RESULTS

8.1 Sociodemographic characteristics

The study included 122 participants, equally distributed between the experimental and control groups.
Most participants were aged >50 years: **83.61%** in the experimental group and **72.13%** in the control group. Men constituted 67.21% and 78.69%, respectively.
Educational status differed significantly between the groups (**p=0.011**). In the experimental group, 60.66% had primary education and only 3.28% had graduation or higher education, whereas 19.67% of control participants had graduation or higher education.
No statistically significant differences were observed for age, gender, religion or monthly family income.

Table 1. Sociodemographic characteristics of participants N = 122

Socio-Demographic Variables	Experimental n (%)	Control n (%)	p value
Age (years)			
35–40	2 (3.28)	3 (4.92)	0.181
41–45	4 (6.56)	5 (8.20)	
46–50	4 (6.56)	9 (14.75)	
>50	51 (83.61)	44 (72.13)	
Gender			
Male	41 (67.21)	48 (78.69)	

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Socio-Demographic Variables	Experimental n (%)	Control n (%)	p value
Female	20 (32.79)	13 (21.31)	0.221
Religion			
Hindu	33 (54.10)	24 (39.34)	0.102
Muslim	27 (44.26)	37 (60.66)	
Christian	1 (1.64)	0 (0.00)	
Educational Status			
Non-formal education	6 (9.84)	3 (4.92)	0.011*
Primary school	37 (60.66)	38 (62.30)	
Higher secondary	16 (26.23)	8 (13.11)	
Graduation and above	2 (3.28)	12 (19.67)	
Monthly Family Income (₹)			
<10,000	39 (63.93)	42 (68.85)	0.702
10,001–20,000	22 (36.07)	19 (31.15)	
20,001–30,000	0 (0.00)	0 (0.00)	
>30000	0 (0.00)	0 (0.00)	
Type of Housing			
Kuccha	0 (0.00)	0 (0.00)	'—'
Pucca	61 (100.00)	61 (100.00)	
Marital Status			
Unmarried	0 (0.00)	0 (0.00)	'—'
Married	61 (100.00)	61 (100.00)	

Values are presented as frequency (percentage). p values were calculated using the Fisher's Exact Test or Fisher–Freeman–Halton Exact Test. '—' Not computed (constant variable) * $p < 0.05$ indicates statistical significance.

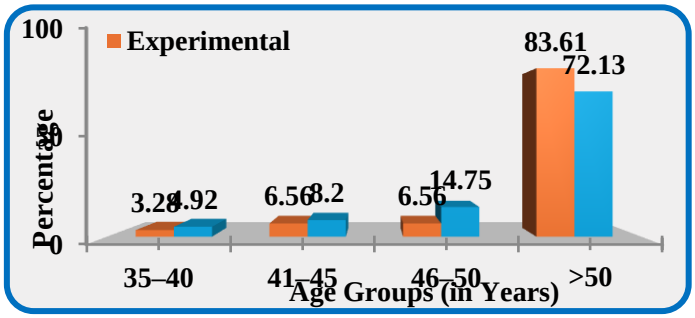

Figure 1: Multiple Bar Diagram Showing the Percentage Distribution of COPD Patients by Age in the Experimental and Control Groups

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The findings in Figure 1.1 indicate that the majority of patients in both groups were above 50 years of age, accounting for 83.61% in the experimental group and 72.13% in the control group.

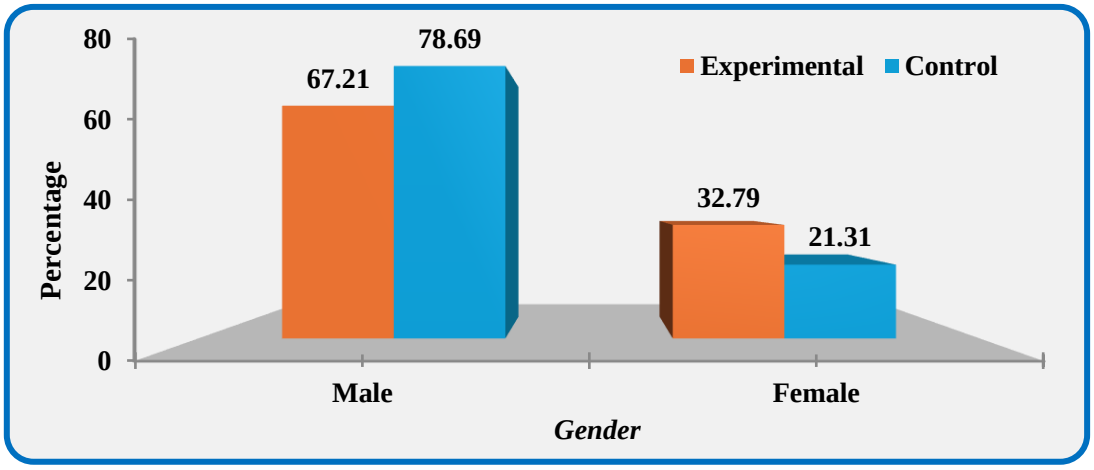

Figure 2: Multiple Bar Diagram Showing the Percentage Distribution of COPD Patients by Gender in the Experimental and Control Groups

The findings found that the Males constituted a higher proportion in both groups (67.21% in the experimental group and 78.69% in the control group).

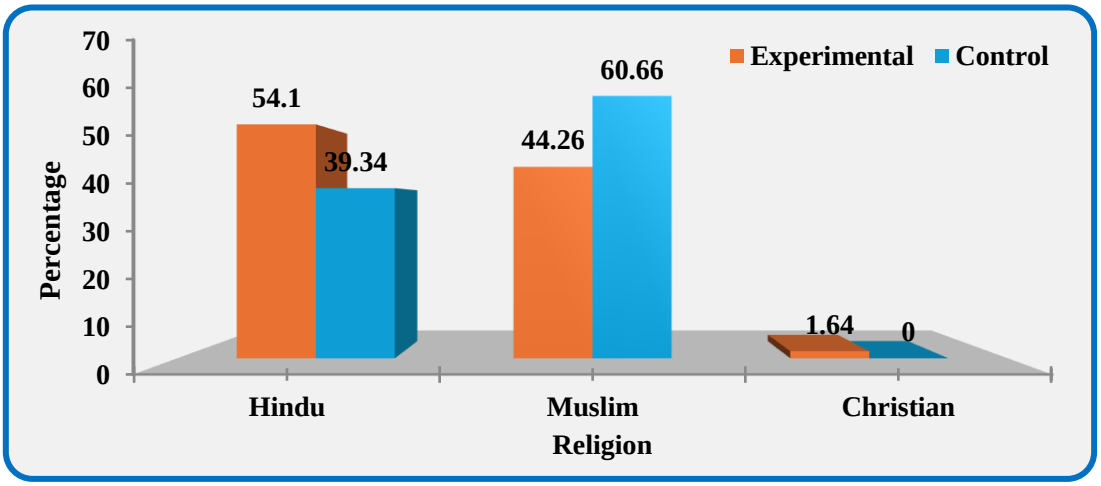

Figure 3: Multiple Bar Diagram Showing the Percentage Distribution of COPD Patients by Religion in the Experimental and Control Groups

With regard to religion, the experimental group had a higher proportion of Hindu patients (54.10%), whereas the control group included a greater proportion of Muslim patients (60.66%).

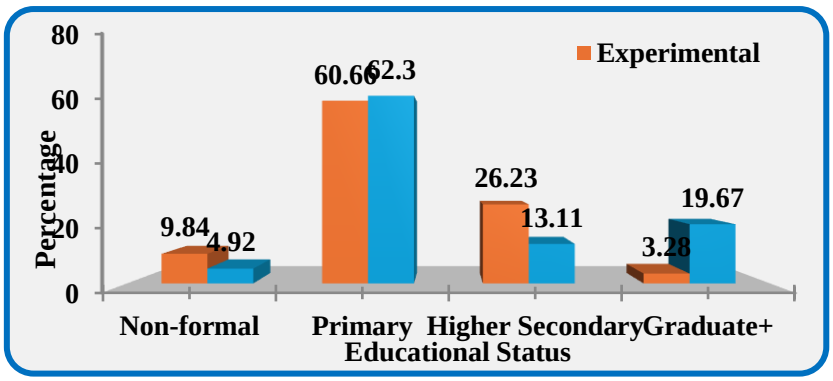

Figure 4: Multiple Bar Diagram Showing the Percentage Distribution of COPD Patients by Educational Status in the Experimental and Control Groups

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In both groups, the majority of patients had primary level education (60.66% in the experimental group and 62.30% in the control group), although variation was observed at higher levels of education.

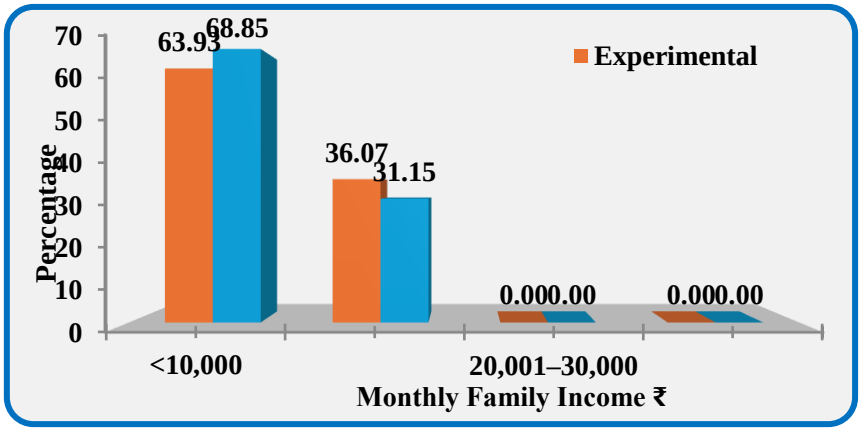

Figure 5: Multiple Bar Diagram Showing the Percentage Distribution of COPD Patients by Monthly Family Income in the Experimental and Control Groups

In terms of monthly family income, most patients in both groups reported an income below ₹10,000 per month (63.93% in the experimental group and 68.85% in the control group). All patients were married and resided in pucca houses, indicating uniformity in these variables.
Overall, the experimental and control groups were comparable with respect to most socio-demographic characteristics at baseline. A statistically significant difference was observed only in educational status ($p < 0.05$), which may be considered while interpreting the study findings. This baseline comparability enhances the internal validity of the study.

Clinical characteristics
Most participants had been diagnosed with COPD for **1–5 years**.
Approximately one-third of experimental participants (36.07%) and 22.95% of controls reported a smoking history. Most participants did not report comorbid conditions, although the proportion without comorbidity was higher in the experimental group (83.61%) than in the control group (72.13%).
Winter was the predominant season of reported COPD exacerbations in both groups.
Notably, **all participants reported sleep disturbance due to cough/breathlessness**.

Table 2. Clinical characteristics of participants (N = 122)

Clinical Variables	Experimental n (%)	Control n (%)	p-value
Duration Since Diagnosis of COPD			
< 1 year	4 (6.56)	0 (0.00)	0.181
1–5 years	45 (73.77)	48 (78.69)	
6–10 years	12 (19.67)	13 (21.31)	
> 10 years	0 (0.00)	0 (0.00)	
Total Duration of Illness			
1–2 days	10 (16.39)	7 (11.48)	0.185
3–4 days	15 (24.59)	7 (11.48)	
5–6 days	22 (36.07)	28 (45.90)	
> 6 days	14 (22.95)	19 (31.15)	
Number of Hospitalizations Due to Respiratory Problems			
1–2 times	30 (49.18)	30 (49.18)	1.000
3–4 times	31 (50.82)	31 (50.82)	
5–6 times	0 (0.00)	0 (0.00)	
> 6 times	0 (0.00)	0 (0.00)	
History of Smoking (Beedi /Cigarette)			
No	39 (63.93)	47 (77.05)	0.164

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Yes	22 (36.07)	14 (22.95)	
Presence of Comorbid Conditions			
Hypertension	2 (3.28)	3 (4.92)	0.421
Diabetes	4 (6.56)	5 (8.20)	
Other comorbidities	4 (6.56)	9 (14.75)	
None	51 (83.61)	44 (72.13)	
Season of COPD Exacerbations			
Winter	45 (73.77)	48 (78.69)	0.181
Summer	4 (6.56)	0 (0.00)	
Monsoon	12 (19.67)	13 (21.31)	
Sleep Disturbance Due to Cough/Breathlessness			
Yes	61 (100.00)	61 (100.00)	'—'
No	0 (0.00)	0 (0.00)	

Values are presented as frequency (percentage). p values were calculated using the Fisher's Exact Test or Fisher–Freeman–Halton Exact Test. '—' Not computed (constant variable). * $p < 0.05$ indicates statistical significance.

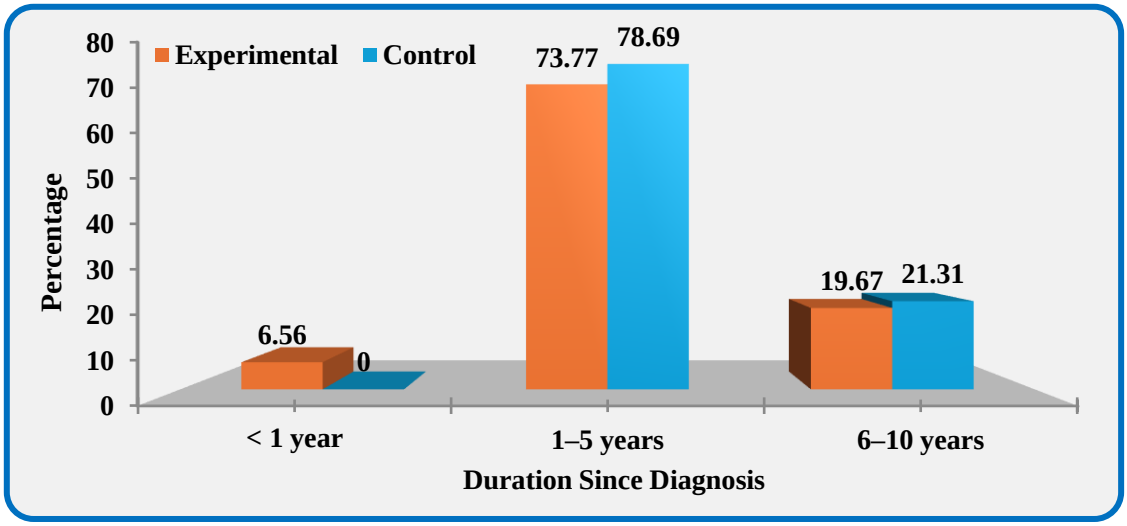

Figure 6: Multiple Bar Diagram Showing the Percentage Distribution of COPD Patients by Duration Since Diagnosis in the Experimental and Control Groups

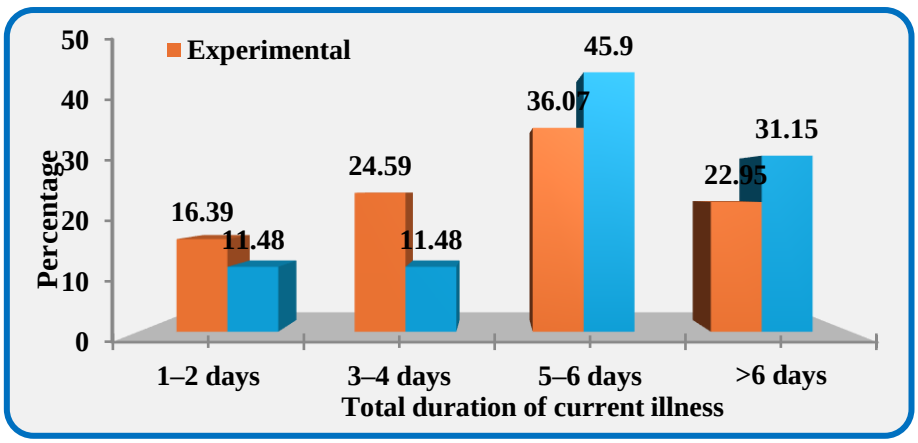

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Figure 7: Multiple Bar Diagram Showing the Percentage Distribution of COPD Patients by Total Duration of Illness in the Experimental and Control Groups

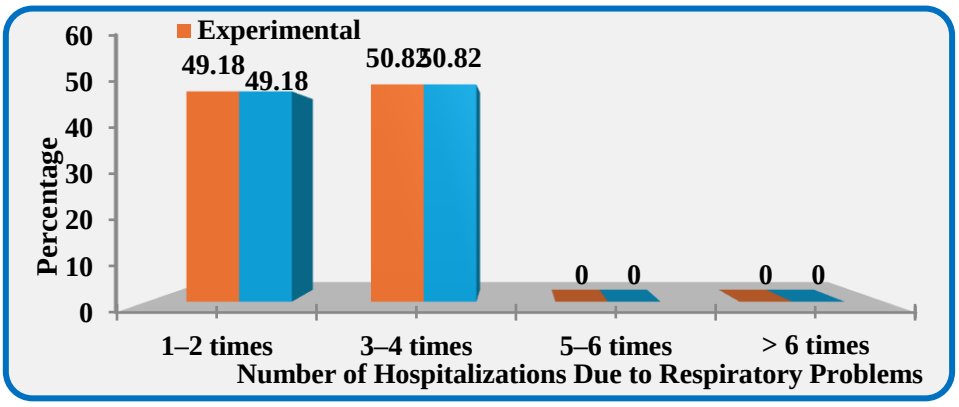

Figure 8: Multiple Bar Diagram Showing the Percentage Distribution of COPD Patients by Number of Hospitalizations Due to Respiratory Problems. In terms of hospitalization history

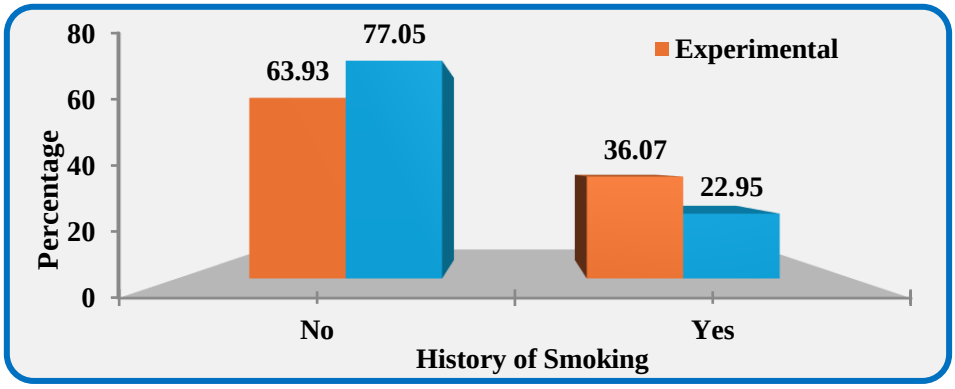

Figure 9: Multiple Bar Diagram Showing the Percentage Distribution of COPD Patients by History of Smoking in the Experimental and Control Groups

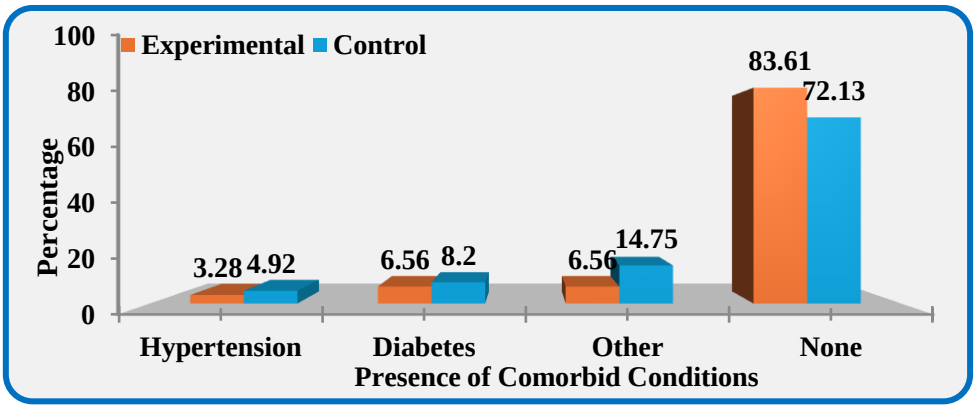

Figure 10: Multiple Bar Diagram Showing the Percentage Distribution of COPD Patients by Presence of Comorbid Conditions in the Experimental and Control Groups

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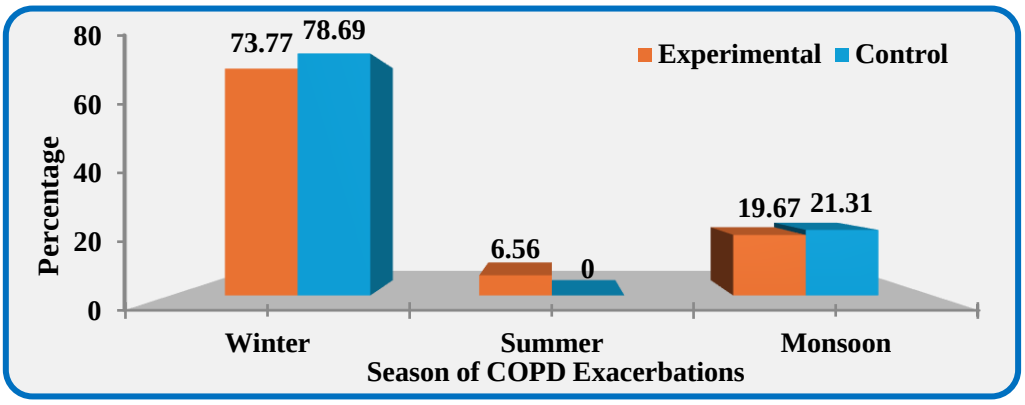

Figure 11: Multiple Bar Diagram Showing the Percentage Distribution of COPD Patients by Season of COPD Exacerbations in the Experimental and Control Groups

In relation to seasonal variation, the majority of patients in both groups experienced exacerbations during winter (73.77% in the experimental group and 78.69% in the control group), followed by monsoon and summer seasons.

8.3 Anthropometric and physiological parameters

There were no statistically significant baseline differences in height, weight, BMI, heart rate or respiratory rate. Mean BMI was approximately **21.5–21.7 kg/m²**, while mean respiratory rate was approximately **25.5–25.9 breaths/min**.

Table 3. Baseline anthropometric and physiological characteristics

Variable	Experimental Mean ± SD	Control Mean ± SD	U	Z	p
Height (cm)	160 ± 8	161 ± 10	2000.5	0.718	0.473
Weight (kg)	54.8 ± 12.7	56.5 ± 14.9	1985.0	0.638	0.523
BMI (kg/m²)	21.50 ± 5.25	21.74 ± 5.16	1965.5	0.538	0.591
Heart rate (beats/min)	82 ± 4	81 ± 4	1631.0	−1.187	0.235
Respiratory rate (breaths/min)	25.54 ± 2.83	25.93 ± 2.46	1966.5	0.551	0.582

8.4 Pulmonary function

Pulmonary function parameters were broadly comparable between groups.

Mean PEFR was 3.39 L/s in the experimental group and 3.43 L/s in controls. Mean FEV_1 was 1.27 and 1.24 L, respectively, while mean FVC was 2.26 and 2.28 L.

The mean FEV_1/FVC ratio was 56.21% in the experimental group and 53.98% in controls.

None of these between-group differences reached statistical significance.

Table 4. Baseline pulmonary function parameters

Parameter	Experimental Mean ± SD	Control Mean ± SD	U	Z	p
PEFR (L/s)	3.39 ± 1.38	3.43 ± 1.46	1884.0	0.120	0.904
FEV_1 (L)	1.27 ± 0.49	1.24 ± 0.51	1833.0	−0.141	0.888

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Parameter	Experimental Mean ± SD	Control Mean ± SD	U	Z	p
FVC (L)	2.26 ± 0.71	2.28 ± 0.69	1871.5	0.056	0.955
FEV_1/FVC (%)	56.21 ± 10.23	53.98 ± 11.72	1649.0	−1.084	0.278

8.5 Dyspnoea severity
A striking finding was the high baseline burden of dyspnoea.
No participant was classified as mMRC grade 0, 1 or 2.
Grade 3 was observed in:
21.3% of experimental participants
16.4% of controls
Grade 4 was observed in:
78.7% of experimental participants
83.6% of controls
The distribution did not differ significantly between groups (χ^2=0.482, p=0.487).

Table 5. Baseline mMRC dyspnoea severity

mMRC grade	Experimental n (%)	Control n (%)
Grade 0	0 (0.0)	0 (0.0)
Grade 1	0 (0.0)	0 (0.0)
Grade 2	0 (0.0)	0 (0.0)
Grade 3	13 (21.3)	10 (16.4)
Grade 4	48 (78.7)	51 (83.6)

8.6 Health-related quality of life
The SGRQ-C demonstrated a very high baseline disease-specific health-status burden.
Symptoms scores were high in both groups:
Experimental: **90.07 ± 4.73**
Control: **88.61 ± 5.71**
Activity scores were **100.00 ± 0.00 in both groups**, indicating the maximum score in this domain for every participant.
Impact scores were:
Experimental: **96.14 ± 2.45**
Control: **95.04 ± 2.10**
The baseline thesis table reports a statistically significant difference in Impact scores (**p=0.003**).
Total SGRQ-C scores were:
Experimental: **96.25 ± 1.53**
Control: **95.43 ± 1.37**
with a statistically significant difference (**p=0.001**).

Table 6. Baseline SGRQ-C health-related quality of life

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SGRQ-C domain	Experimental Mean ± SD	Control Mean ± SD	U	Z	p
Symptoms	90.07 ± 4.73	88.61 ± 5.71	1523.0	−1.734	0.083
Activity	100.00 ± 0.00	100.00 ± 0.00	1860.5	0	1.000
Impact	96.14 ± 2.45	95.04 ± 2.10	1305.5	−2.968	**0.003**
Total	96.25 ± 1.53	95.43 ± 1.37	1235.5	−3.203	**0.001**

Higher SGRQ-C scores indicate poorer health status.

DISCUSSION

Principal findings

This baseline analysis demonstrates that the COPD population enrolled in the study had a substantial and multidimensional disease burden. Three findings are particularly important.

First, the cohort was predominantly older adults and male participants. More than 70% of participants in both groups were aged >50 years, and men represented approximately two-thirds to four-fifths of the sample. This demographic pattern is broadly consistent with the higher COPD burden observed among older adults and men in recent Indian epidemiological evidence.

Second, the physiological and pulmonary function measures demonstrated considerable respiratory impairment. The mean FEV_1/FVC ratios were below 0.70 in both groups, consistent with the presence of airflow obstruction in this COPD cohort.. Contemporary GOLD guidance emphasizes spirometry as central to confirming airflow obstruction in COPD.

Third, and perhaps most clinically important, the patient-reported burden was extremely high. Nearly four-fifths of participants in the experimental group and more than four-fifths of controls had mMRC grade 4 dyspnoea. This indicates severe functional limitation and demonstrates why pulmonary function measures alone do not adequately characterize the patient's experience of COPD. The mMRC scale has been shown to provide clinically meaningful information regarding disability and health status beyond FEV_1 alone.

The SGRQ-C results reinforce this finding. Symptoms scores approached 90, while Activity scores reached the maximum possible value of 100 in both groups. Impact and Total scores were also extremely high. Because higher SGRQ-C scores represent poorer health status, these findings indicate severe disease-specific health-status impairment. The SGRQ and SGRQ-C are established measures of respiratory health status and were specifically developed for patients with chronic airflow limitation and COPD.

The uniformly maximal Activity score deserves particular attention. Although it indicates profound activity limitation in this cohort, the absence of variability means that this domain had limited discriminatory capacity at baseline. This should be acknowledged when interpreting the domain-level findings.

Another important finding is the significant difference in educational status between groups. Such an imbalance is relevant because education may influence health literacy, self-management, understanding of respiratory exercises and engagement with healthcare. Therefore, the two groups should not simply be described as completely “homogeneous” at baseline.

Similarly, if the baseline SGRQ-C differences reported in Table 4 are confirmed from the raw data, the experimental group began with poorer health status in the Impact and Total domains. This would strengthen the importance of using baseline-adjusted longitudinal analyses when evaluating intervention effects.

Clinical implications

The baseline findings have several implications for nursing and respiratory care.

1. Multidimensional assessment is necessary

COPD assessment should combine:
pulmonary function;
respiratory rate;
heart rate;
dyspnoea;
functional limitation; and
disease-specific HRQoL.

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The present findings demonstrate that severe patient-reported burden can coexist with relatively similar objective pulmonary measures.

2. Dyspnoea should be routinely assessed

With approximately 80% of participants classified as mMRC grade 4, dyspnoea represents a major clinical problem in this cohort.

3. HRQoL should be incorporated into nursing assessment

The extremely high SGRQ-C scores demonstrate that COPD affects much more than pulmonary physiology.

4. Education-sensitive interventions may be important

The significant educational imbalance suggests that health literacy and education should be considered when designing patient education and self-management interventions.

5. Baseline imbalance should inform intervention analysis

Future intervention analyses should account for baseline differences rather than assuming complete baseline equivalence.

STRENGTHS

Multidimensional baseline assessment combining objective and patient-reported measures.
Inclusion of both pulmonary function and dyspnoea assessment.
Use of a disease-specific HRQoL instrument.
Equal group size of 61 participants.
Prospective registration in CTRI.
Ethical approval and informed consent.
Standardized clinical measurement procedures.
Baseline data derived from participants subsequently followed longitudinally.

LIMITATIONS

The following limitations should be stated clearly rather than hidden:
Non-probability purposive sampling limits generalizability.
The study was conducted in selected hospitals in one geographic region.
Participants were not randomly sampled from the wider COPD population.
Baseline group allocation was not randomized.
A significant baseline difference was observed in educational status.
The reports inconsistent baseline SGRQ-C values across different analytical sections; these must be reconciled using the raw dataset before publication.
The SGRQ-C Activity domain showed no variability because all participants scored 100 at baseline, limiting its discriminatory value.
The baseline article describes association/comparison rather than causal relationships.

CONCLUSION

This baseline comparative analysis demonstrates a substantial multidimensional burden among patients with COPD enrolled in the study. The participants were predominantly older adults, with a high prevalence of severe dyspnoea, impaired pulmonary function and markedly poor disease-specific health status.
The absence of significant baseline differences in most physiological and pulmonary function measures suggests broadly comparable respiratory impairment between groups. However, the significant difference in educational status and the reported differences in selected SGRQ-C domains indicate that baseline equivalence should not be assumed across all dimensions.
The findings support a comprehensive COPD assessment strategy incorporating objective pulmonary function, dyspnoea severity and patient-reported HRQoL. Such multidimensional characterization provides important clinical context for evaluating subsequent pulmonary rehabilitation or nurse-led interventions.

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