Self-Management Abilities and Associated Factors among COPD Patients in Sulaymaniyah City, Iraq.

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Abstract

Background: Chronic obstructive pulmonary disease (COPD) is a progressive respiratory disorder requiring effective self-management. However, the relationship between self-management abilities and patients' sociodemographic and clinical characteristics remains underexplored in Iraq.

Objective: To assess associations between self-management abilities and sociodemographic and clinical characteristics among COPD patients in Sulaymaniyah City, Iraq.

Methods: A cross-sectional study enrolled 102 COPD patients from two respiratory hospitals. Data were collected using structured questionnaires including the COPD Self-Management Scale (CSMS), COPD Assessment Test (CAT), modified Medical Research Council (mMRC) Dyspnea Scale, and Morisky Medication Adherence Scale (MMAS-8). A pilot study (n=10) confirmed instrument reliability (Cronbach's α ≥0.70). Statistical analyses included Chi-square tests and Kruskal-Wallis H tests (p<0.05).

Results: Mean age was 68.5±10.7 years; 84.3% were male, 68.6% urban residents, and 56.9% had low education. Mean CSMS score was 67.49±12.94, indicating moderate self-management. Higher education (p=0.012), married status (p=0.001), longer disease duration (p=0.021), and smoking cessation after diagnosis (p=0.013) were significantly associated with better self-management. Age, gender, residence, comorbidities, and BMI showed no significant associations.

Conclusion: COPD patients in Sulaymaniyah demonstrate moderate self-management influenced by education, marital status, disease duration, and smoking behavior. Tailored educational interventions, smoking cessation programs, and social support strategies are essential to enhance self-management and improve patient outcomes.

1. Introduction

Chronic obstructive pulmonary disease (COPD) is a progressive pulmonary disorder characterized by persistent respiratory symptoms, including dyspnea, cough, and sputum production, resulting from structural abnormalities of the airways and/or alveoli (Tamondong-Lachica et al., 2023a). Patients may present with emphysema, obstructive bronchiolitis, or a combination of both (Özdemir, 2023a). Acute exacerbations represent the greatest burden on healthcare systems (Adeloye et al., 2022a).

Globally, COPD ranks as the fourth leading cause of death, accounting for 3.5 million deaths in 2021, with nearly 90% of fatalities in individuals under 70 occurring in low- and middle-income countries (Z. Wang et al., 2023a). Among adults over 40, prevalence reaches 12.64%, with higher rates in men (15.47%) versus women (8.79%) . In the Middle East and North Africa, COPD incidence increased 30.6% between 1990 and 2019, disproportionately affecting men and older populations (HAMA-AZIZ, 2022a). In Iraq, adult prevalence is estimated at 3-4%, consistent with regional patterns and underdiagnosis concerns (Gou et al., 2023a) .

Management of COPD involves both pharmacologic and non-pharmacologic strategies. Pharmacologic interventions include bronchodilators, inhaled corticosteroids, phosphodiesterase-4 inhibitors, macrolides, and mucolytics (Özdemir, 2023b; Pir, n.d.) . Non-pharmacologic approaches—smoking cessation, pulmonary rehabilitation, and nutritional monitoring—are critical for optimizing lung function and improving health outcomes (Osman, 2021; Pir, n.d.) .

Self-management is essential for effective COPD care, involving symptom monitoring, medication adherence, healthy lifestyle maintenance, and managing disease impact on daily activities (Jad et al., 2024a) . Effective self-management is shaped by multiple factors, including age, education, socioeconomic status, disease knowledge, social support, and psychosocial well-being, all influencing clinical outcomes and hospitalization risk (Zangana & Muhammad, 2024) .

 Research Gap and Study Importance

Despite the significance of self-management in COPD care, research exploring how sociodemographic and clinical characteristics relate to self-management abilities remains scarce in Middle Eastern and Iraqi populations. Most existing evidence originates from China or Turkey (Georgina Kirkpatrick BA PgCert RM RGN, 2022; Jacobsen, 2021) . In Sulaymaniyah specifically, no published studies have examined the determinants of self-management among COPD patients. This gap is critical because Iraq's healthcare system faces unique challenges, including limited access to pulmonary rehabilitation services, low health literacy rates, and inadequate patient education programs (Stoleski et al., 2025) . Furthermore, recent Iraqi data (2024-2025) indicate that COPD patients have poor awareness of disease management strategies, with significant educational needs (Stoleski et al., 2025) . This study addresses this regional gap by examining associations between patient characteristics and self-management abilities in Sulaymaniyah, Iraq, providing evidence to guide culturally and demographically tailored interventions for COPD patients in this context.

 The Objectives of the Project:

1. To identify sociodemographic and clinical characteristics of COPD patients.

2. To determine self-management ability levels in COPD patients.

3. To assess associations between patient characteristics and self-management abilities.

2. Patients and Methods:

Study design and setting

A descriptive cross-sectional study was carried out at two respiratory hospitals in Sulaymaniyah City, Iraq (German Hospital for Respiratory Diseases and Shar Hospital) from November 28, 2024, to February 27, 2025. These centers were chosen because they offer specialized respiratory treatment and serve a large number of COPD patients.

Sampling

A convenience sample of 102 patients with confirmed COPD was recruited. Of 124 patients screened, 22 were excluded for not meeting criteria or declining participation. Eligibility required: clinical COPD diagnosis ≥6 months, age ≥18 years, Kurdish communication ability, and informed consent provision.

Pilot Study

A pilot study was conducted with 10 COPD patients prior to main data collection to assess instrument clarity, cultural appropriateness, and feasibility. The pilot confirmed adequate internal consistency (Cronbach's α ≥0.70) across all scales and led to minor wording adjustments for better cultural relevance. Pilot participants were not included in the final sample.

Data Collection Instruments

Sociodemographic Section: Seven items covering age, gender, residence, education, marital status, living status, and occupation.

Clinical Characteristics Section: Nine items assessing disease duration, smoking status (before/after diagnosis), exposure to noxious substances, comorbidities, medications, home oxygen use, and anthropometric data.

Modified Medical Research Council (mMRC) Dyspnea Scale: Five-point scale (0-4) measuring activity-related breathlessness (Yang et al., 2023) .

COPD Assessment Test (CAT): Eight-item questionnaire (0-40) evaluating symptom burden, classified as low (0-10), medium (11-20), high (21-30), or very high (31-40) (Dai et al., 2024) .

Morisky Medication Adherence Scale (MMAS-8): Eight-item tool scoring adherence as high (8), medium (6-7), or low (<6) (Lin et al., 2024) .

COPD Self-Management Scale (CSMS): Twenty-three items across five domains: symptom management (6 items, 6-30), daily life management (8 items, 8-40), emotion management (5 items, 5-25), information management (3 items, 3-15), and self-efficacy (1 item, 1-5). Total score ranges 23-115, with higher scores indicating better self-management (Sarkar et al., 2024) .

Validity and Reliability

Content validity was established through expert review confirming item clarity, relevance, and cultural suitability (Content Validity Index confirmed adequacy). Internal consistency showed Cronbach's α ≥0.70 across all subscales. Test-retest reliability (two-week interval) produced intraclass correlation coefficients (ICC) ≥0.75, indicating stability.

Ethical Considerations

Ethical approval was obtained from the College of Nursing, University of Sulaymaniyah (Number 1584, 11/11/2024). Written informed consent was obtained from all participants after explaining study objectives. All ethical principles guiding human research were observed. Participants were informed of their right to withdraw at any time.

Statistical Analysis

Data were analyzed using SPSS version 23. Descriptive statistics included frequencies, percentages, means±SD, and medians (IQR). Normality was assessed via Shapiro-Wilk and Kolmogorov-Smirnov tests. Chi-square tests examined categorical associations; Kruskal-Wallis H tests analyzed non-normally distributed continuous data. Statistical significance was set at $p<0.05$ (95% CI).

3. Results

Sociodemographic Characteristics **(Table 1)**

Variable	Category	Frequency (n)	Percentage (%)
Age (years)	<50	6	5.9
	50-59	18	17.6
	60-69	18	17.6
	70-79	42	41.2
	≥80	18	17.6
	Mean ±SD	(68.5±10.7)	Min -Max (37 – 87)
Gender	Female	16	15.7
	Male	86	84.3
Residence	Urban	70	68.6
	Sub-urban	20	19.6
	Rural	12	11.8
Education Level	Illiterate	46	45.1
	Just read & write	12	11.8
	Primary	20	19.6
	Secondary	18	17.6

	Institute/University	6	5.9
Marital Status	Married	96	94.1
	Single	2	2.0
	Widow/Widower	4	3.9
Living status	Alone	6	5.9
	With family	96	94.1
Occupation	Self-Employee	26	25.4
	Paid-Employee	6	5.8
	Retired/ Jobless	58	56.8
	House-Wife	12	11.7

Participants' ages ranged from 37-87 years (mean 68.5±10.7), with 41.2% aged 70-79 years. Males comprised 84.3% of the sample. Most resided in urban areas (68.6%). More than half (56.9%) had low education (illiterate or basic literacy only), with only 5.9% holding university certificates. The vast majority (94.1%) were married, and 94.1% lived with family. Regarding occupation, 56.8% were retired or unemployed.

## Clinical Characteristics (Table 2)

Variable	Category	Frequency (n)	Percentage (%)
Duration of COPD in years since diagnosis	Less than 1 year	46	45.1
	1 – 4 years	18	17.6
	5 - 9 years	16	15.7
	10 - 19 years	16	15.7
	20 years or more	6	5.9
	Mean ± SD	(5.9 ± 7.4)	
Smoking Status before illness	Ex-smoker	30	29.4
	Smoker	66	64.7
	Non-smoker	6	5.9
Smoking status after illness	Ex-smoker	54	52.9
	Smoker	42	41.2
	Non-smoker	6	5.9
Exposure to dust or smoke in the workplace/ home before	Yes	74	72.5
	No	28	27.5

Exposure to dust or smoke in the workplace/ home after	Yes	38	37.3
	No	64	62.7
Number of Comorbidities	0	20	19.6
	1.0	36	35.2
	2.0	18	17.6
	≥3.0	28	27.4
	Mean ± SD	1.67 ± 1.28	
Number of medications	0	22	21.5
	1-2	43	42.2
	≥ 3	37	36.3
Need for supplemental oxygen at home	Yes	38	37.3
	No	64	62.7
BMI	Underweight: < 18.5	18	17.6
	Normal weight: 18.5 – 24.9	36	35.3
	Overweight: 25 - 29.9	32	31.4
	Obese: ≥30	16	15.7
	Total	102	100.0

Mean COPD duration was 5.9±7.4 years; 45.1% were diagnosed <1 year prior. Before diagnosis, 64.7% were smokers; after diagnosis, 52.9% became ex-smokers, while 41.2% continued smoking. Exposure to dust/smoke decreased from 72.5% to 37.3% after diagnosis. Most patients (80.4%) had ≥1 comorbidity (mean 1.67±1.28). Among participants, 78.4% used respiratory medications. Home oxygen was required by 37.3%. Regarding BMI: 35.3% normal weight, 31.4% overweight, 15.7% obese.

Dyspnea Severity (Figure 1)

Nearly half (45.1%) experienced severe dyspnea (mMRC grade 4), 35.3% had grade 3, 9.8% grade 2, 5.9% grade 1, and only 3.9% grade 0.
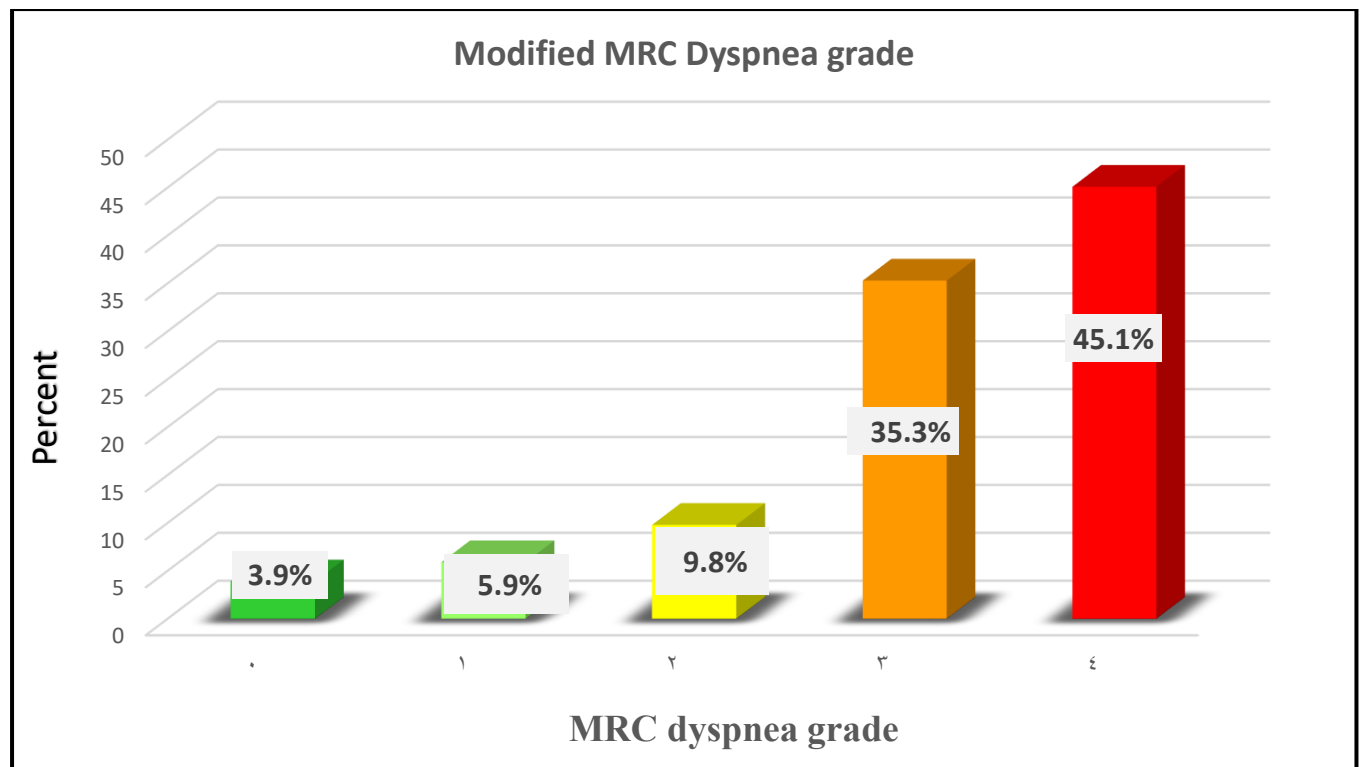
**Figure 1:** Modified MRC Dyspnea grade: (Assess the level of breathlessness)

COPD Symptom Severity **(Table 3)**

CAT level	Class	Frequency	Percent (%)
COPD Assessment Test	Low (<10)	10	9.8
	Medium (10–20)	32	31.4
	High (21–30)	50	49.0
	Very High (>30)	10	9.8

CAT scores: Low (<10): 9.8%, Medium (10-20): 31.4%, High (21-30): 49.0%, Very High (>30): 9.8%.

Medication Adherence (Figure 2)

Among 80 patients using medications: 57.5% moderate adherence, 30% low adherence, 12.5% high adherence (mean score 8.863/10).
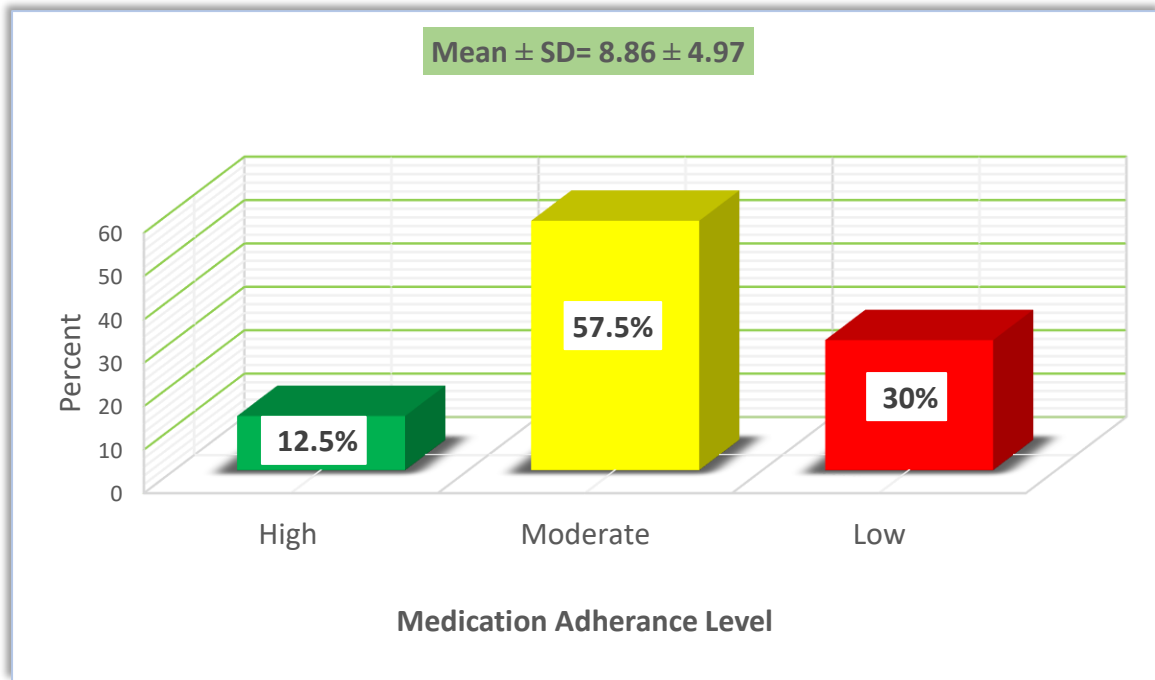
Figure 2: Morisky's Medication Adherence

COPD Self-Management **(Table 4)**

Dimensions	Mean ± SD	Min- Max	Median	Interquartile (25-75)
Symptom management (6-30)	19.39 ± 4.56	(10.0- 27.0)	20.0	(16.0- 23.0)
Daily Life Management (8-40)	21.41 ± 7.32	(8.0- 34.0)	20.0	(16.0- 27.0)
Emotion Management (5-25)	15.80 ± 4.43	(8.0- 25.0)	15.0	(12.0- 20.0)
Information Management (3-15)	10.88 ± 3.37	(3.0- 15.0)	11.0	(8.0- 14.0)
Self-efficacy (1-5)	4.15 ± 1.18	(1.0- 5.0)	5.0	(4.0- 5.0)
COPD Self-Management overall (0-100)	67.49 ± 12.94	(41.- 96.0)	69.0	(56.0- 78.0)

Overall CSMS mean: 67.49±12.94 (median 69.0), indicating moderate self-management. Domain scores: symptom management 19.39±4.56, daily life management 21.41±7.32, emotion management 15.80±4.43, information management 10.88±3.37, self-efficacy 4.15±1.18.

Associations with Sociodemographic Characteristics **(Table 5)**

		COPD Self-Management scale Overall	P. Value
Gender	Median (Q1 – Q3)	69.0 (56.0 – 78.0)	0.063 *

	Mean Rank (Female)	38.88	
	Mean Rank (Male)	53.85	
Other health problems (comorbidities)	Mean Rank (yes)	51.04	0.749 *
	Mean Rank (No)	53.40	
Age group	<50 (n=6)	75.0 (68.5-84.5)	0.47 **
	50-59 (n=18)	71.0 (57.0-82.0)	
	60-69 (n=18)	75.0 (61.5-85.0)	
	70-79 (n=42)	66.0 (55.0-78.0)	
	≥80 (n=18)	63.5 (54.0-75.0)	
Residence	Urban (n=70)	69.0 (56.0–78.0)	0.276 **
	Sub-Urban (n=20)	77.5 (60.0–83.0)	
	Rural (n=12)	71.0 (56.0–78.0)	
Educational level	Illiterate (n=46)	64.0 (54.0–77.0)	0.012 **
	Just Read & Write (n=12)	64.5 (54.0–76.0)	
	Primary (n=20)	67.0 (56.0–76.0)	
	Secondary (n=18)	73.5 (61.0–88.0)	
	Institute/University (n=6)	76.0 (67.5–86.5)	
Marital status	Married (n=96)	69.0 (56.0–78.0)	0.001 **
	Single (n=2)	76.5 (69.0–84.0)	
	Widow(er) (n=4)	56.0 (54.0–60.0)	

*= Mann-Whitney U   **= chi square (χ^2)

Educational level significantly predicted self-management (p=0.012), with higher education correlating with better scores (illiterate: 64.0, university: 76.0). Marital status was significant (p=0.001): married 69.0, single 76.5, widowed 56.0. Gender, age, residence, and comorbidities showed no significant associations.

Associations with Clinical Characteristics **(Table 6)**

		COPD Self-Management Scale overall	P-value
Duration of COPD Diagnosis	< 1 year (n=46)	68.0 (56.0–77.0)	0.021 *
	1–4 years (n=18)	61.5 (54.0–70.0)	
	5–9 years (n=16)	70.0 (66.0–78.0)	

	10–19 years (n=16)	75.0 (67.0–83.0)	
	≥20 years (n=6)	75.0 (60.0–80.0)	
Smoking Status After Illness	Smoker (n=42)	62.5 (56.0–78.0)	0.013 *
	Ex-Smoker (n=6)	68.0 (58.0–76.0)	
	Non-Smoker (n=54)	70.5 (58.0–80.0)	
	Mean Rank (Smoker)	41.31	
BMI	Underweight <18.5 (n=18)	64.0 (56.0–78.0)	0.754 *
	Normal 18.5–24.9 (n=36)	69.0 (56.0–79.0)	
	Overweight 25–29.9 (n=32)	69.5 (56.0–80.0)	
	Obese ≥30 (n=16)	69.0 (56.0–80.0)	

*= Chi square (χ^2)

Disease duration significantly affected self-management (p=0.021): <1 year 68.0, 1-4 years 61.5, ≥10 years 75.0. Smoking cessation was significant (p=0.013): smokers 62.5, ex-smokers 68.0, non-smokers 70.5. BMI showed no significant association (p=0.754).

4. Discussion

This study examined self-management abilities and associated factors among COPD patients in Sulaymaniyah City, revealing that moderate overall self-management was significantly influenced by education, marital status, disease duration, and smoking behavior, while age, gender, residence, comorbidities, and BMI showed no significant associations.

٤.1 Participant's sociodemographic characteristics:

Sociodemographic Profile

The study sample comprised predominantly elderly males (mean age 68.5±10.7 years), with over one-third aged 70-79 years, consistent with COPD's natural epidemiology as a disease developing typically after age 40, with increasing burden over time (Özdemir, 2023b; Tamondong-Lachica et al., 2023b).

Male predominance aligns with global patterns attributed to historically higher smoking rates and occupational exposures (Adeloye et al., 2022b; Z. Wang et al., 2023b).

Over two-thirds resided in urban areas, reflecting both environmental risk factors and healthcare accessibility (Gou et al., 2023b; HAMA-AZIZ, 2022b).

Educational attainment was notably low, with nearly half being illiterate, attributable to limited educational access in Iraq for this generation (Pir, n.d.).

Almost all participants were married, consistent with regional cultural norms (Jad et al., 2024b; Osman, 2021).

while over half were retired or unemployed, as expected, given advanced age and health-related work limitations (Georgina Kirkpatrick BA PgCert RM RGN, 2022; Jacobsen, 2021; Stoleski et al., 2025; Zangana & Muhammad, 2024).

Clinical Profile:

Mean disease duration was 5.09±7.4 years, though nearly half were diagnosed within the past year, likely reflecting delayed diagnosis due to insidious symptom onset (Dai et al., 2024; Lin et al., 2024; Yang et al., 2023). Almost two-thirds were smokers before diagnosis; post-diagnosis, ex-smokers increased to over half, though over one-third continued smoking (Blazer, 2025; Martins et al., 2021; Sarkar et al., 2024; Wen et al., 2024). Workplace/home dust and smoke exposure decreased from three-quarters to half post-diagnosis (Alsajri et al., 2025; Maulood et al., 2023; Murgia & Gambelunghe, 2022) . Over one-third had at least one comorbidity, reflecting COPD's systemic inflammatory nature (Chan et al., 2022; Ghafil et al., 2023; Kotlyarov & Kotlyarova, 2021). Most used 1-2 medications, with one-third requiring home oxygen (Duszyk et al., 2021; Tashkin et al., 2024). Nearly half were overweight or obese, potentially related to corticosteroid use and reduced activity (Functions & Aziz, 2025; Kakavas & Karayiannis, 2025; Shareef et al., 2024; Tse et al., 2023).

Symptom severity was substantial: almost half experienced grade 4 dyspnea (breathlessness during dressing), one-third grade 3 (stopping after 100 meters) (Carette et al., 2019; Jarab et al., 2023). CAT scores were predominantly high (almost half) or medium (one-third), correlating with dyspnea severity (Cherian et al., 2021; Finnegan et al., 2021). and potentially exacerbated by advanced age and low health literacy (Vaezi & Mirsaeidi, 2024).

Medication adherence was moderate overall (mean 8.863/10), with over half demonstrating moderate adherence, reflecting challenges of cognitive decline, polypharmacy, and low health literacy (Alwafi et al., 2024; Babazadeh et al., 2024; He et al., 2023; İlhan et al., 2025; Moradkhani et al., 2021; Tolley et al., 2023).

٤.2 COPD Self-Management Patterns

Overall self-management was moderate (67.49±12.94), with relatively stronger performance in self-efficacy (4.15±1.18) and symptom management (19.39±4.56), but weaker daily life management (21.41±7.32), emotion management (15.80±4.43), and information management (10.88±3.37). Low information management scores reflect limited health literacy and restricted access to structured education (Borge et al., 2024; Poureslami et al., 2020). Directly attributable to high illiteracy rates. Severe dyspnea (MRC grades 3-4) likely compromised daily life management, as symptom severity undermines physical capacity (Buarque et al., 2022; Poureslami et al., 2022; L. Wang et al., 2017). Recent evidence confirms that cognitive impairment inversely relates to self-management in elderly COPD patients (Zhang et al., 2025).

The relatively higher self-efficacy despite functional limitations may reflect strong family support in Kurdish culture, fostering psychological coping (Johansson et al., 2025; Rafii et al., 2024). However, the gap between confidence and actual behavior suggests that self-efficacy alone is insufficient when physical constraints are severe. International studies confirm that translating knowledge into effective daily behaviors remains challenging for those with advanced age and symptom burden (Bourbeau et al., 2018; Korpershoek et al., 2017). The substantial emotional burden aligns with evidence that anxiety and depression are prevalent in

COPD, impairing coping and disease management (Kareem & J. Kadhim, 2020; Martínez-Gestoso et al., 2022; Rafii et al., 2024).

٤.3 Predictors of Self-Management

Sociodemographic Factors

Educational level significantly influenced self-management (p=0.012), with higher-educated patients demonstrating better scores than illiterate individuals. Education enhances comprehension of medical advice, treatment adherence, and health information access (Aliakbari et al., 2022; Alsajri et al., 2025). Marital status also showed a significant association (p=0.001), with widowed patients scoring lowest. Spousal support facilitates medication adherence, lifestyle modifications, and emotional coping, while widowed patients experience isolation and a lack of practical assistance (Mahmood & Saleh, 2023; Yiğit, 2024).

Age was not a significant predictor of self-management, warranting careful interpretation. This finding likely reflects the restricted age range and sample homogeneity—the majority were 70-79 years with limited younger participant representation. This reduced variability likely diminished statistical power to detect age effects. While older patients typically experience greater frailty, dyspnea, and cognitive decline that hinder self-management (Korpershoek et al., 2016; Mahmood & Saleh, 2023). These effects may have been masked by the narrow age distribution. Moreover, disease severity rather than chronological age per se may have been the primary driver of self-management outcomes in this predominantly elderly, symptomatic cohort. The homogeneous age profile meant that age-related decline was relatively uniform across participants, potentially obscuring its independent contribution.

Gender differences were also non-significant (p=0.063), though males showed higher mean ranks. Several explanations warrant consideration. First, the male predominance in the sample (consistent with COPD epidemiology) limited female representation, potentially reducing statistical power to detect gender differences. Second, while sociocultural factors in the Kurdish context—men's greater social activity, healthcare access, and engagement with disease education versus potential restrictions on older, illiterate women—might theoretically create gender disparities, the disease's uniform physiological impact once established may overshadow these social influences. Third, other disease-related factors (severity, comorbidities, smoking behavior) may exert a stronger influence than gender alone on self-management capacity (Rafii et al., 2024),

The near-significant p-value (0.063) suggests a trend that might reach significance in larger, more diverse samples, indicating that gender effects may exist but require greater statistical power to detect reliably. Residence and comorbidities showed no significant associations. The lack of residence effect may reflect the urban majority (>two-thirds) in this hospital-based sample, limiting rural representation. Additionally, urban-rural healthcare access differences may be less pronounced in this regional context than in larger geographic areas. For comorbidities, the overall high multimorbidity prevalence likely normalized these factors, as when most patients have multiple conditions, comorbidity presence becomes less discriminating (Alter et al., 2022).

Clinical Factors

Disease duration significantly predicted self-management, with longer duration (10-19 years, ≥20 years) associated with higher scores than recent diagnosis (<1 year, 1-4 years). This reflects "experiential learning"—patients gradually develop symptom recognition, medication adherence skills, and lifestyle adaptations. Newly diagnosed patients struggle with limited knowledge and difficulty accepting chronicity (Ali, 2022). Smoking status post-diagnosis was significantly associated with self-management (p=0.013), with ex-smokers and non-smokers scoring higher than current smokers. Smoking cessation is fundamental to COPD management, improving symptom control and enhancing self-management confidence (Tashkin, 2021).

Body Mass Index showed no significant association (p=0.754), despite theoretical expectations. This null finding reflects the complex, bidirectional relationship between body weight and COPD outcomes. Underweight patients face muscle wasting and frailty, limiting physical activity, while overweight patients experience exercise intolerance yet may maintain medication adherence and other self-care strategies. These opposing effects may have canceled each other out statistically. Additionally, small subgroup sizes likely reduced power to detect BMI effects. International studies show mixed results on BMI-COPD relationships (Uchmanowicz et al., 2025), suggesting BMI's impact on self-management may be context-dependent or mediated by other factors not measured in this study, such as nutritional status, muscle mass, or exercise capacity (Huang et al., 2025).

Study Limitations

This study has several limitations. First, convenience sampling limits generalizability to all COPD patients in Iraq or the broader region. Second, the cross-sectional design prevents causal inference. Third, self-reported data may introduce recall bias. Fourth, the small female sample and limited younger participants may have prevented the detection of gender and age effects. Fifth, cultural and linguistic specificity to the Kurdish population limits broader applicability.

٤.4 Implications and Conclusions

These findings demonstrate that COPD self-management in Sulaymaniyah is influenced primarily by modifiable factors education and smoking cessation, and by social support structures. The absence of age and gender effects, while requiring cautious interpretation due to sample homogeneity and potential statistical power limitations, suggests that these demographic variables may be less important than disease-specific and behavioral factors in determining self-management capacity. This has important implications: interventions targeting health literacy, family support, early diagnosis education, and smoking cessation may be more effective than demographic-based approaches.

Specifically, healthcare interventions should prioritize: (1) tailored health education programs for illiterate and low-educated patients using verbal, visual, and family-centered approaches rather than written materials; (2) intensive support for newly diagnosed patients during the critical first year post-diagnosis when self-management skills are developing; (3) psychosocial and practical support interventions for widowed individuals to compensate for lost spousal support; (4) comprehensive smoking cessation programs with sustained follow-up given nicotine dependence challenges; and (5) culturally tailored pulmonary rehabilitation programs that leverage strong family support systems characteristic of Kurdish culture.

These strategies could bridge the gap between patients' self-efficacy and actual disease management behaviors, ultimately improving COPD outcomes in the Kurdistan region. Future

research with larger, more diverse samples is needed to definitively establish whether age and gender effects exist but were undetectable in this study, or whether disease-related factors truly predominate regardless of demographic characteristics.

5. Recommendations

1. Implement literacy-appropriate educational programs focusing on daily life and emotional management

2. Establish structured smoking cessation support with behavioral counseling

3. Provide early self-management training for newly diagnosed patients

4. Develop family-centered interventions leveraging social support networks

5. Expand access to pulmonary rehabilitation and psychosocial services

6. Integrate self-management education into primary care settings

7. Create culturally tailored programs addressing unique challenges of elderly, low-literacy COPD patients.

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