Dyspnea Experience among Patients with Chronic Disease at Outpatient Settings: A Scoping Review

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Introduction

- Dyspnea is a subjective experience of difficulty in breathing, and it is a common symptom in patients with chronic diseases.
- The intensity and pattern of dyspnea varies depending on underlying diseases from minor to life-threatening diseases, and it is well known to affect daily living and change the quality of life.
- Determining the measurement method of dyspnea after accurately understanding the level and pattern of dyspnea according to the characteristics of each disease is meaningful as the first step when developing interventions for dyspnea.

Objectives

- Current study was aimed to understand dyspnea experience and interventions for dyspnea among patients with chronic disease at outpatient settings.
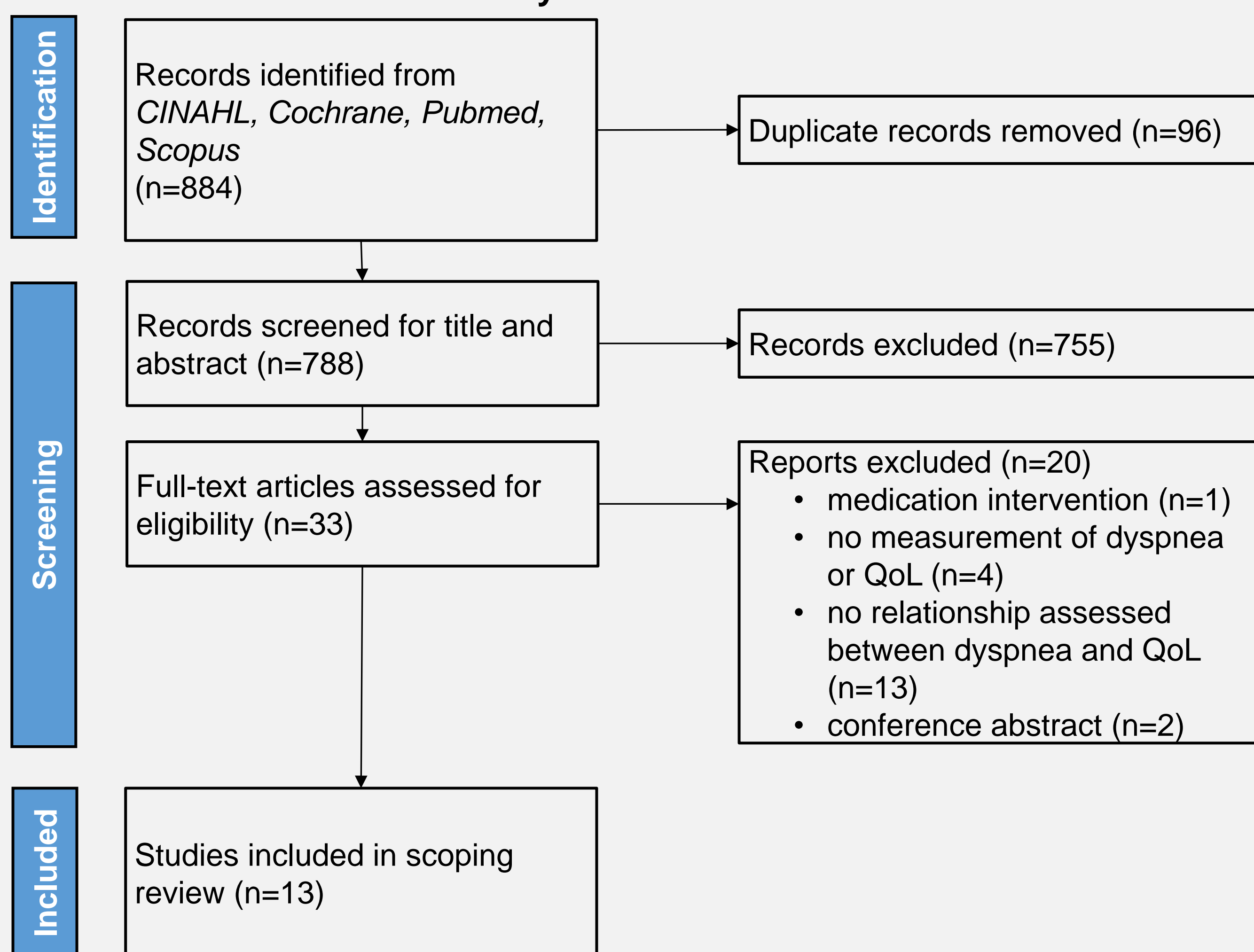
Methods

- A scoping review guided by Arksey and O'Malley's methodological framework
- Population: Patients with chronic disease; Concept: Dyspnea experience and intervention for dyspnea; Context: outpatient setting
- Search Strategy
  - Keywords: dyspnea, quality of life, outpatient setting
  - Databases: A structured search in Pubmed, CINAHL, Cochrane, and Scopus for peer-reviewed literature.
- Study Selection:
  - Inclusion Criteria (i) age of 19 years or older; (ii) parameters measuring dyspnea and quality of life; (iii) intervention targeting dyspnea; (iv) written in English; (v) published from January 2016 to April 2021
  - Exclusion Criteria (i) medication intervention

Results

General Characteristics

- A total of 13 articles were reviewed among the 788 publications identified

Figure 1. PRISMA flow chart for study selection

Identification

Records identified from CINAHL, Cochrane, Pubmed, Scopus (n=884) → Duplicate records removed (n=96)

Screening

Records screened for title and abstract (n=788) → Records excluded (n=755)

Full-text articles assessed for eligibility (n=33) → Reports excluded (n=20)
- medication intervention (n=1)
- no measurement of dyspnea or QoL (n=4)
- no relationship assessed between dyspnea and QoL (n=13)
- conference abstract (n=2)

Included

Studies included in scoping review (n=13)

- Design of the studies: Systematic review (n=3), Randomized controlled trial (n=3), quasi-experimental study (n=1), cross-sectional study (n=5), longitudinal study (n=1)
- Participants' mean age: 58.3 ± 4.2 to 74.5 ± 6.2

Acknowledgment

Results cont'd

Table 1. Summary of dyspnea experience and QoL among patients with chronic disease in outpatient settings

Disease	Number of studies (%)	Disease severity		Intensity of dyspnea	Measure of QoL	
COPD	8 (61.5%)	GOLD stage	3(moderate), 4(severe)	mild ~severe	CRQ-SAS, SGRQ-C, SF-36QoL	disease specific QoL
Lung cancer	3 (23.1%)	NSCLC stage	2~4 stage	mild	EORTC QLQ-C30,	disease specific QoL/ general QoL
Pulmonary embolism	2 (15.4%)	N/A	N/A	mild	EQ-5D, PEemb-QoL	general QoL
HF	3 (23.1%)	NYHA Class, LVEF	Under 40% (62.3%)	severe	MLHFQ, EQ-VAS	disease specific QoL/ general QoL

Note: COPD=Chronic Obstructive Pulmonary Disease; HF=Heart Failure; GOLD=The Global Initiative for Chronic Obstructive Lung Disease; NSCLS=Non Small Cell Lung Cancer; NYHA=New York Heart Association; LVEF=Left Ventricular Ejection Fraction; CRQ-SAS=Chronic Respiratory Questionnaire Self-Administered Standardized format ; SGRQ-C= St. George's Respiratory Questionnaire; SF-36QoL=Medical Outcomes Study Short-Form 36-item questionnaire; EORTC QLQ-C30=European Organization for the Research and Treatment of Cancer Quality of Life Questionnaire; EQ-5D=Euro Quality of Life-5 dimension ;PEemb-QoL=Pulmonary Embolism Quality of Life Questionnaire ;MLHFQ= Minnesota Living with Heart Failure Questionnaire; EQ-VAS=Euro Quality of Life-visual assessment scale

Table 2. Dyspnea measurement (PRO)

Measurement	Characteristics	Score
Borg scale of dyspnea	Intensity of dyspnea	0-10
Medical Research Council (MRC)	The perceived disability indicating the extent to which their breathlessness affects their mobility	1-5
Modified MRC	The degree of baseline functional disability due to dyspnea	0-4
COPD Assessment Test (CAT)	The impact of COPE Composed of 8 variable	Each variable: 0-5
NYHA Class	Functional classification of the heart failure	Class I-IV
Multidimensional Fatigue Symptoms Inventory (MFSI)	Assessment of fatigue which is a global, somatic, affective, cognitive, and behavioral symptom 83 items	Each item: 0-4
Clinical Symptom Inventory (SI)	Clinical symptoms of dyspnea along with other symptoms	0-10
EORTC QLQ-C30	Severity of dyspnea	1-4
Short of breath (SOB)	Self-developed measurement for a study	No dyspnea, mild, severe

Note: NYHA=New York Heart Association; EORTC QLQ-C30: European Organization for the Research and Treatment of Cancer Quality of Life Questionnaire

- Along with PRO, there were objective measurement used: **Pulse oximetry** measuring oxygen saturation; **Forced expiratory volume (FEV$_1$)** measuring the amount of air you can force from your lungs in one second; **Forced vital capacity (FVC)** measuring the amount of air that can be forcibly exhaled from your lungs after taking the deepest breath possible; and **6-minute walk test (6MWT)** measuring the aerobic capacity and endurance.
- Among six interventions identified, five interventions were **pulmonary rehabilitation for COPD patients** including exercise or educational program, and two of them utilized digital health such as telemonitoring and telerehabilitation program.
- QoL was measured as an outcome of dyspnea, and instruments for QoL were varied depending on diseases.

Conclusions

This review informed dyspnea experience and interventions to manage dyspnea among outpatient patients with chronic diseases. Studies investigated dyspnea of patients with lung or heart diseases. Dyspnea of COPD and HF needs further attention and needs to be evaluated with PRO measures as well as objective indicators such as FEV$_1$ or FVC. Digital health interventions could be considered as options to manage dyspnea especially in outpatient setting. Current study suggests future researchers to consider QoL as outcome of dyspnea.

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