

Screening for COPD risk using self-reported breathlessness and respiratory health related quality of life: a cross-sectional web survey analysis of 8779 respondents

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Introduction

Chronic obstructive pulmonary disease (COPD) is a largely preventable condition marked by persistent respiratory symptoms and irreversible airflow limitation, causing about 3.5 million deaths annually, most in low- and middle-income countries. Many cases remain undiagnosed, and active screening with spirometry is generally not recommended; instead, guidelines advise targeted case finding among high-risk individuals. Web-based self-assessment tools may support this by identifying people likely to have COPD and prompting medical follow-up. This study evaluates a freely accessible [Norwegian web-based tool](#) combining selected demographic questions with three respiratory questionnaires, mMRC, CAT, and the K-BILD to estimate COPD risk.(1-3)

Material & methods

Only respondents with complete datasets were included in the analysis. COPD risk was algorithmically classified as “high-risk” or “low-risk” based on responses related to age (≥35 vs <35 years), smoking or dust exposure, history of exacerbations, and mMRC score. Individuals classified as high-risk for COPD received a prompt recommending consulting their general practitioner. Group comparisons were performed using chi-squared or ANOVA. All analysis were exploratory with no corrections for multiple testing

Self-risk assessment with three yes/no questions:

- Are you older than 35?
- Have you been exposed to smoke or dust?
- Do you have chronic respiratory symptoms?

If any response was yes, two follow-ups were asked:

- Number of exacerbations in the past year
- Breathlessness (mMRC scale)

Low risk was defined as <35 years or combinations without symptoms, exposure, or exacerbations.

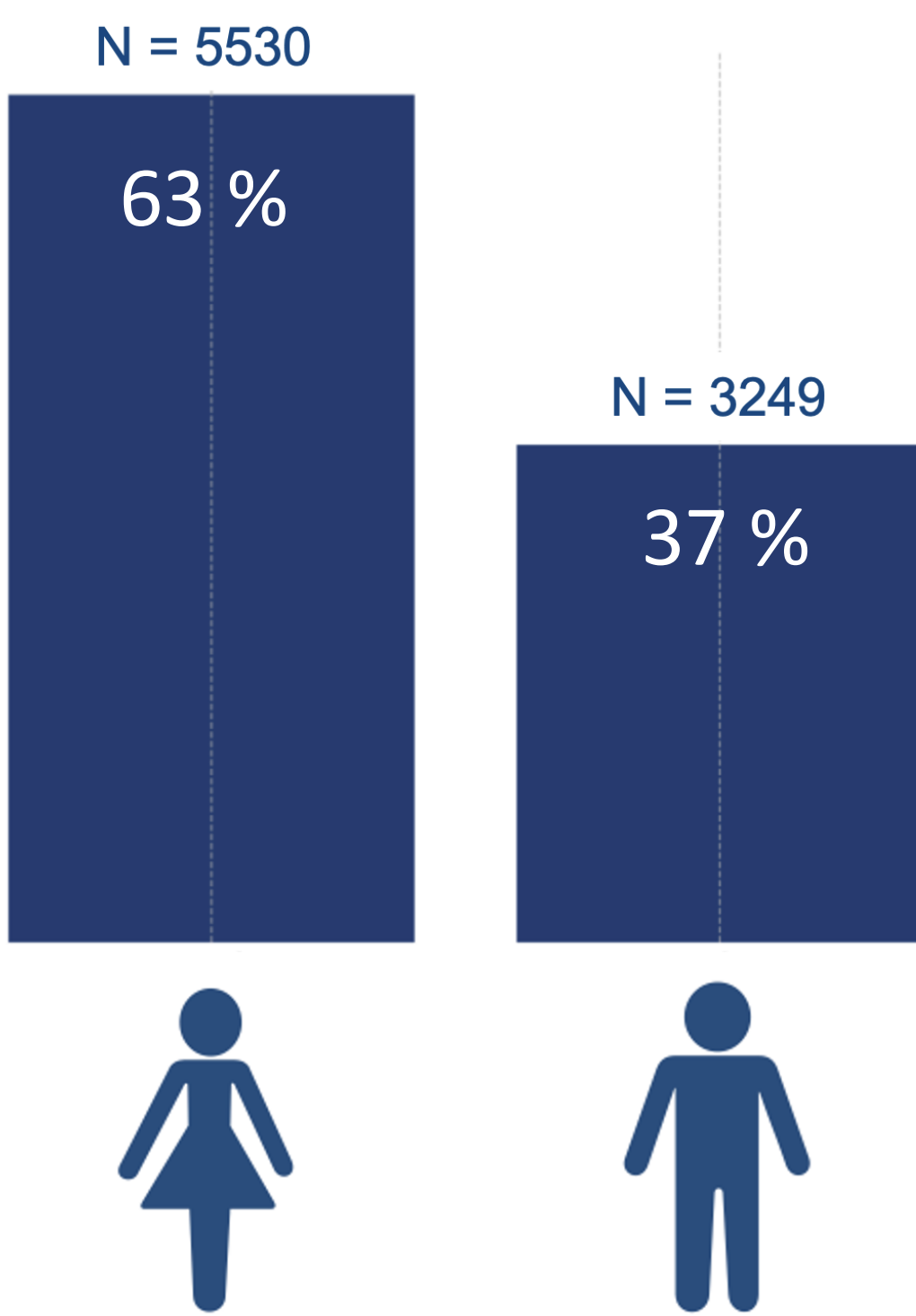
High risk was defined as: age ≥35, smoke/dust exposure, chronic symptoms, and ≥1 exacerbation in the past year or mMRC > 0. All participants were invited to complete:

Analysis

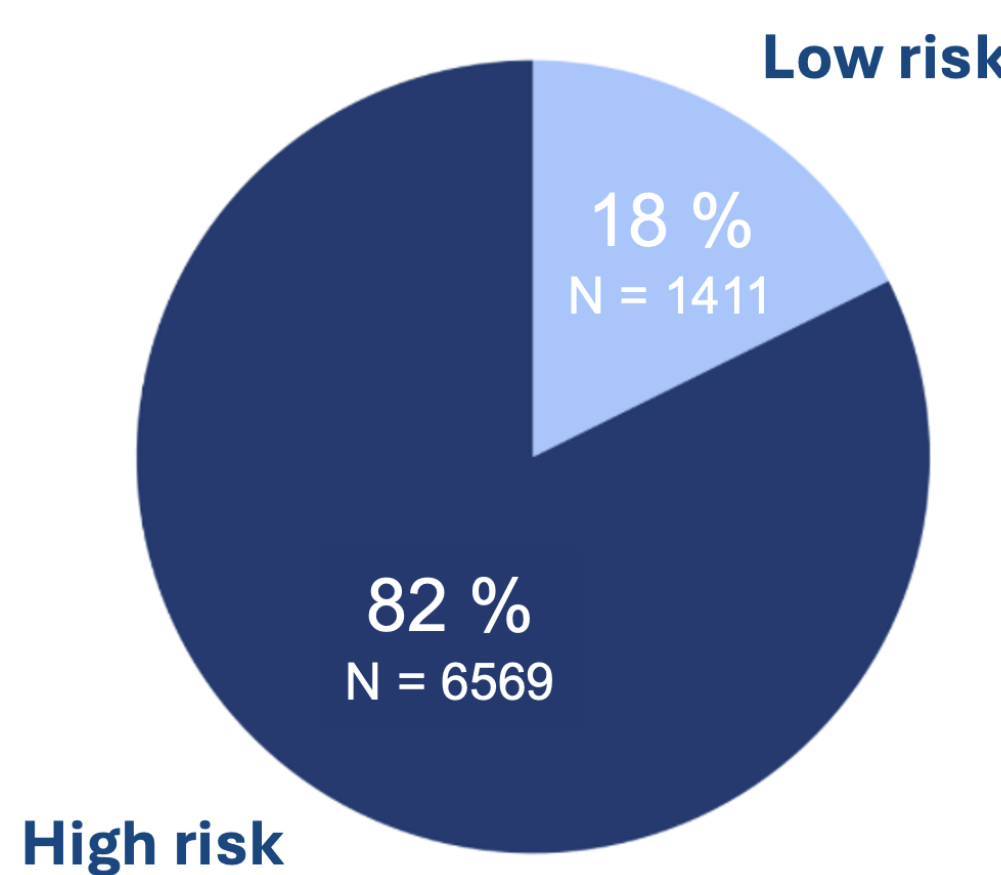
Only complete responses to all respiratory questionnaires were analysed. Group comparisons for CAT, mMRC, and K-BILD used ANOVA, adjusted for age, sex, and smoking status, overall and by smoking subgroups. The K-BILD financial item was analysed separately. Spearman’s correlations assessed associations between CAT and mMRC, K-BILD, and the financial item.

Results

Gender distribution



COPD risk groups



Of the 8779 responses collected between Oct 2018 and Nov 2024 (63% females), 799 reported a COPD diagnosis (mean age 64.1 years). The high-risk COPD group (n=6569), and the low-risk group (n=1411) were younger with mean ages of 58.4 and 54.6 years, respectively (p<0.0001). Self-reported COPD was associated with a lower proportion of never smokers (7.1% vs 15.0% and 22.0%; p<0.0001) and greater breathlessness and impairment of HRQoL (Figure). The high risk for COPD group had a profile close to the self-reported COPD cohort.

Discussion

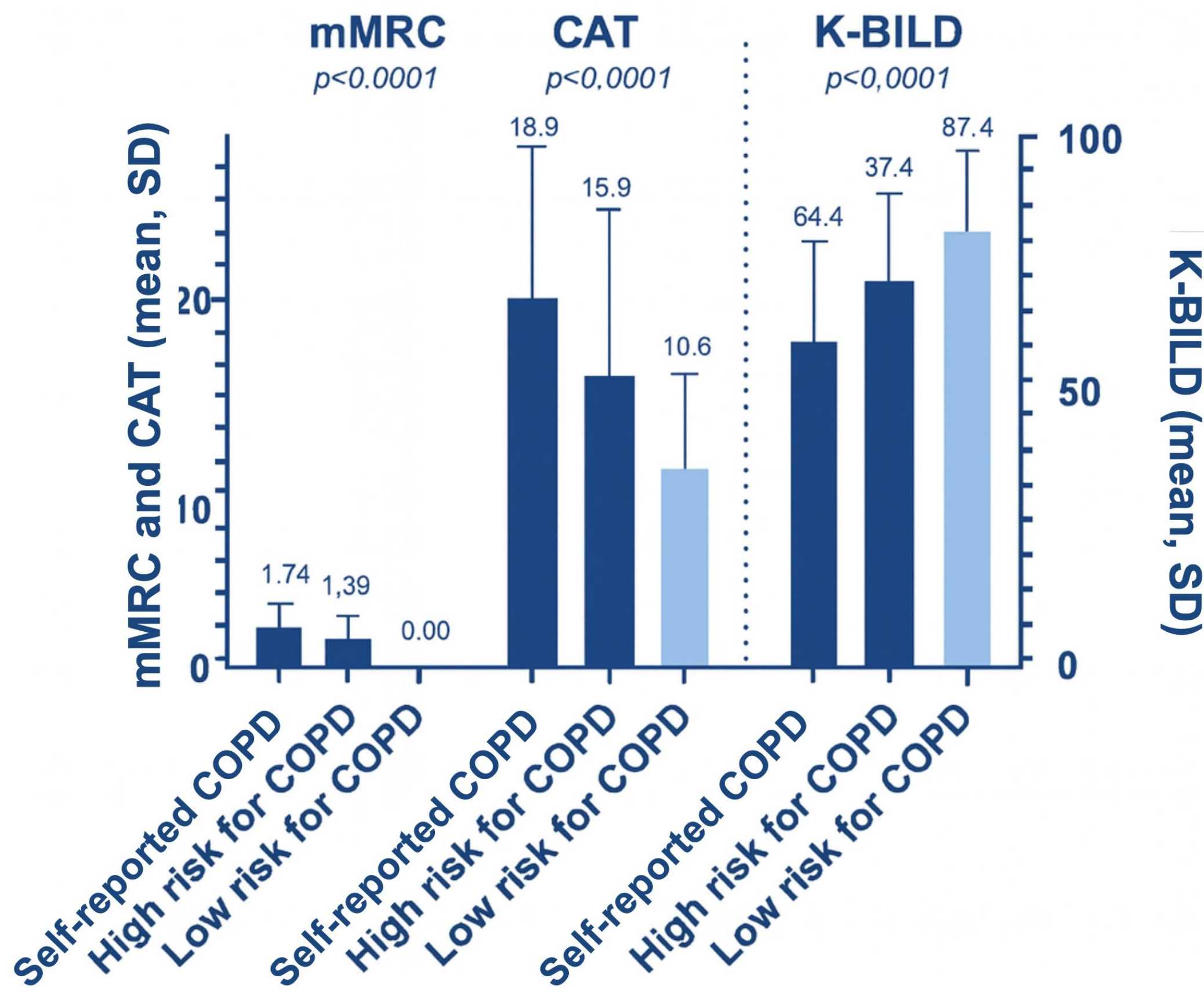


Figure: Responses (mean, SD) to the modified Medical Research Council dyspnea scale (mMRC), the COPD assessment tool (CAT), and the King’s Brief Interstitial Lung Disease questionnaire (K-BILD) according to self-reported (n=799), or high (n=6569), or low (n=1411) risk for COPD, p-value from ANOVA test across groups.

Breathlessness and respiratory HRQoL differed only slightly between the algorithmically identified high-risk group and the self-reported COPD group. This supports the webtool’s potential for identifying undiagnosed COPD and implementation of appropriate measures. Further validation is needed.

References

1. Jones PW, Harding G, Berry P, Wiklund I, Chen WH, Kline Leidy N. Development and first validation of the COPD Assessment Test. Eur Respir J. 2009;34(3):648-54.
2. Patel AS, Siegert RJ, Brignall K, Gordon P, Steer S, Desai SR, et al. The development and validation of the King’s Brief Interstitial Lung Disease (K-BILD) health status questionnaire. Thorax. 2012;67(9):804-10.
3. Fletcher CM. Standardised questionnaire on respiratory symptoms: a statement prepared and approved by the MRC Committee on the Aetiology of Chronic Bronchitis (MRC breathlessness score). BMJ. 1960;2.

Conclusions

Breathlessness and HRQoL were similar in the high-risk and self-reported COPD groups, suggesting the webtool may be a usefull screening instrument to detect undiagnosed COPD, though further validation is required.



Main Finding

