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Prevalence and Factors Associated with Chronic Obstructive Pulmonary Disease (COPD) among Farmers in Anuradhapura, Sri Lanka: An Analytical Cross-Sectional Study

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Background: Chronic Obstructive Pulmonary Disease (COPD) is the seventh predominant cause of impaired health globally. However, its epidemiology in rural farming communities is unknown.

Objective: To determine the prevalence, GOLD classification, and risk factors of COPD among farmers over 40 years of age.

Methods: An analytical cross-sectional study was conducted among farmers from Anuradhapura, Sri Lanka, using cluster sampling to achieve a minimal sample size of 350 farmers. All participants completed an interviewer-administered questionnaire on demographics, hygienic practices, smoking, agrochemical spraying, and International Primary Care Airway Guidelines (IPAG) questionnaires. Spirometry was performed in a subsample of 50 IPAG-positive participants according to American Thoracic Society and European Respiratory Society guidelines. All IPAG-positive participants underwent the COPD assessment test (CAT[®]) and modified Medical Research Council (mMRC) Dyspnoea Scale. Factors associated with a $p < 0.2$ in χ^2 test and $p < 0.05$ in one-way ANOVA were included in a backward conditional logistic regression. A chi-square test (3×2 contingency table) was conducted to assess whether agrochemical spraying, lifetime cigarette use, and lifetime beedi use differed across GOLD classification groups.

Results: The IPAG positive prevalence was 33.14% (n=116, 95%CI=7.55–38.34). The prevalence of GOLD A, B, and E groups was 10.6% (n=37; 95%CI=7.55-14.28), 16.3% (n=57; 95% CI=12.57-20.58), and 5.1% (n=18; 95%CI=3.08 to 8.01), respectively. Spirometry results confirmed 15(30%) participants with irreversible airflow obstruction (prevalence=9.94%, 95%CI:5.73-14.15). Independently associated factors with COPD were smoking more than 100 cigarettes in life (adjusted-OR 2.373, 95%CI: 1.102-5.113), smoking more than 100 beedis in life (adjusted-OR 2.390, 95%CI: 0.926-6.168), spraying agrochemicals (adjusted-OR 2.202, 95%CI: 1.178-4.117), and frequency of changing bedsheets less than once a week (adjusted-OR 1.985, 95%CI: 1.195-3.298). A statistically significant association was not observed between GOLD groups and agrochemical spraying status, lifetime cigarette use or lifetime beedi use ($p > 0.05$).

Conclusion: The prevalence of spirometry-confirmed COPD in farmers over 40 years was 9.94% associated with smoking, agrochemical exposure, and poor hygiene.

Keywords: COPD, Farmers, spirometry