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Title: Low oxygen saturation and mortality in an adult population

Mrs. Monica Linea 18734 Vold monica.linea.vold@unn.no MD ^{1,2}, Prof. Ulf 18735 Aasebø ulf.aasebø@unn.no MD ^{1,2}, Prof. Tom 18736 Wilsgaard tom.wilsgaard@uit.no ³ and Prof. Hasse 18737 Melbye hasse.melbye@uit.no MD ³. ¹ Department of Respiratory Medicine, University Hospital of North Norway, Tromsø, Norway ; ² Department of Clinical Medicine, University of Tromsø, Tromsø, Norway and ³ Department of Community Medicine, University of Tromsø, Tromsø, Norway .

Body: Background: Low oxygen saturation measured by pulse oximetry(SpO₂) has been shown to predict mortality in emergency care, and in patients with lung diseases. Aims and objectives: We wanted to see whether low SpO₂ values are associated with mortality in a general adult population. Methods: Pulse oximetry was carried out in 5152 participants in a cross-sectional survey in Tromsø, Norway, in 2001/2002. Follow-up for all-cause mortality until 31.12.2010 were linked to the National Population Register. The SpO₂ categories ≤92% and 93-95% were assessed as predictors of mortality in Cox Proportional Hazard regression models correcting for age, sex, smoking and self-reported cardiovascular disease(CVD). Further analysis also included body mass index(BMI), C-reactive protein(CRP) and forced expiratory volume in 1 s(FEV₁)% predicted. Results: Mean age was 65.8 years, 56% were women, SpO₂≤92% and 93-95% were recorded in 53(1.0%) and 537(10.4%) individuals, respectively. During follow-up, 910(17.7%) died. The adjusted Hazard Ratio(HR) was 1.31(p<0.005) for SpO₂ 93-95% and 2.16(p<0.001) for ≤92% compared to the reference group(>95%). By adding BMI, CRP and FEV₁% predicted as covariates in the model HR for 93-95% was 1.14(p=0.17) and for ≤92% 1.56(p<0.05). Conclusion: We found that low oxygen saturation is associated with mortality. When including FEV₁% predicted in the analysis the strength of the association weakens and is only statistically significant for SpO₂≤92%.