

The impact of age and ASA physical status on all-cause postoperative 30-days mortality

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Introduction: American Society of Anesthesiologists physical-status (ASA-PS) scale has been used since decades to describe the physical status prior anesthesia. The scale range between ASA 1-6, where 1 represent a healthy patient and 5 is a moribund patient. As the scale does not take age into account, the age-related risk is not assessed.

Aims: The aim was to assess the interaction of ASA-PS and age on postoperative all-cause 30-day mortality as a primary outcome.

Material and Methods: The cohort comprised patients >15 years of age, who had a surgery between 2010-2020 at Danderyd hospital **registered in SPOR**. The interaction between ASA-PS and age on 30-days mortality was assessed when four age groups and the five ASA-PS scores were combined and analyzed with Chi-2 test and logistic regression.

Results: The all-cause 30-day mortality among the 98 543 patients included was 1.5%. There was a step-wise increase combining age interval and ASA-PS. A mortality less than 1 % were observed for all age intervals/ASA 1, adult, middle-aged, elderly/ASA 2 and adult/ASA 3 combinations. Aged/ASA2, middle-age, elderly, aged/ASA3 had mortality rates between 1 and 10%. All age intervals/ASA 4 had mortality rates between 12 and 20%, and all age intervals/ASA 5 showed mortality rates above 30%. There was a thousandfold increase in odds-ratio for 30-days mortality between ASA 1 and 5, and almost 14 times increased odds-ratio between the youngest age class compared to the oldest.

Conclusions: The age and ASA in combination improve the possibility to predict the all-cause 30-days mortality. Further studies are warranted taking additional patient and surgical factors into account.

Keywords: ASA-physical status, anesthesia, risk factors, mortality, morbidity, post-operative complications, reliability, age.