

Pattern of diseases in sudden natural deaths subjected to forensic autopsy before, during and after the Covid-19 pandemic

Gravensteen I.K.^{1*}, Stray-Pedersen A.²

*Ida Kathrine Gravensteen

1 idagra@ous-hf.no, Department of Forensic Sciences, Oslo University Hospital and the University of Oslo, Norway

2 Department of Forensic Sciences, Oslo University Hospital and the University of Oslo, Norway

Background: Following a rapid decline in the 1990s, there has been an increase forensic autopsies for cases of sudden unexpected deaths in Norway, during recent years. Simultaneously, the Covid-19 pandemic has had an impact on national cause of death statistics, with excess mortality for all causes, including Covid-19, cardiovascular diseases, and malignant tumors. The combination of increased autopsy rates and the influence of the pandemic may have affected the recorded pattern of diseases in cases of sudden unexpected deaths.

Aims: To examine sudden unexpected deaths from natural causes, and assess variations before, during, and after the Covid-19 pandemic.

Methods: Aggregated coding data from all autopsies conducted at the Department of Forensic Pathology, Oslo University Hospital between 2017 and 2022 were used. A total of 2727 cases of sudden unexpected deaths from natural causes were identified and classified according to disease specific cause of death.

Results: Between 2017 and 2022, the overall frequency of deaths due to coronary heart disease was 44.7%, which is lower than earlier estimates. CNS diseases (including stroke/intracranial bleeding) accounted for 7.3% of deaths, gastrointestinal diseases for 11.3%, and diabetes for 3.7%. Suspected natural deaths from unknown causes constituted 6.3% of the cases. The frequency of deaths attributed to pneumonia was lower during the pandemic years compared to the pre- and post-pandemic periods (4.6% vs 7% and 9%, $p = 0.002$). However, there was no significant change in sudden deaths due to ischemic heart disease (46% vs 42.9% and 46.2%, $p = 0.247$). Variations in coding practices were observed, particularly concerning heart disease and unknown cause of suspected natural deaths.

Conclusion: The decreased frequency of deaths from ischemic heart disease in recent years may be partly attributed to improved care, although variations in forensic autopsy rates could also play a role. The decrease in pneumonia-related deaths during the pandemic years likely reflects preventive measures. Variations in disease patterns may also arise from differences in coding practices, indicating a need for improvement in this area.