

The effect of nationwide lockdown and societal restrictions due to COVID-19 on emergency and urgent surgeries

Editor

Due to COVID-19 pandemic, surgical societies have recommended to postpone elective and non-urgent surgeries¹⁻³. Pandemic potentially prevents patients from seeking medical care also due to acute illnesses. To date, no studies have been conducted on how the pandemic, the resultant social restrictions, and the cancelling of elective operations in hospitals has affected the rate of emergency surgeries.

The data for this retrospective study was collected from three Finnish

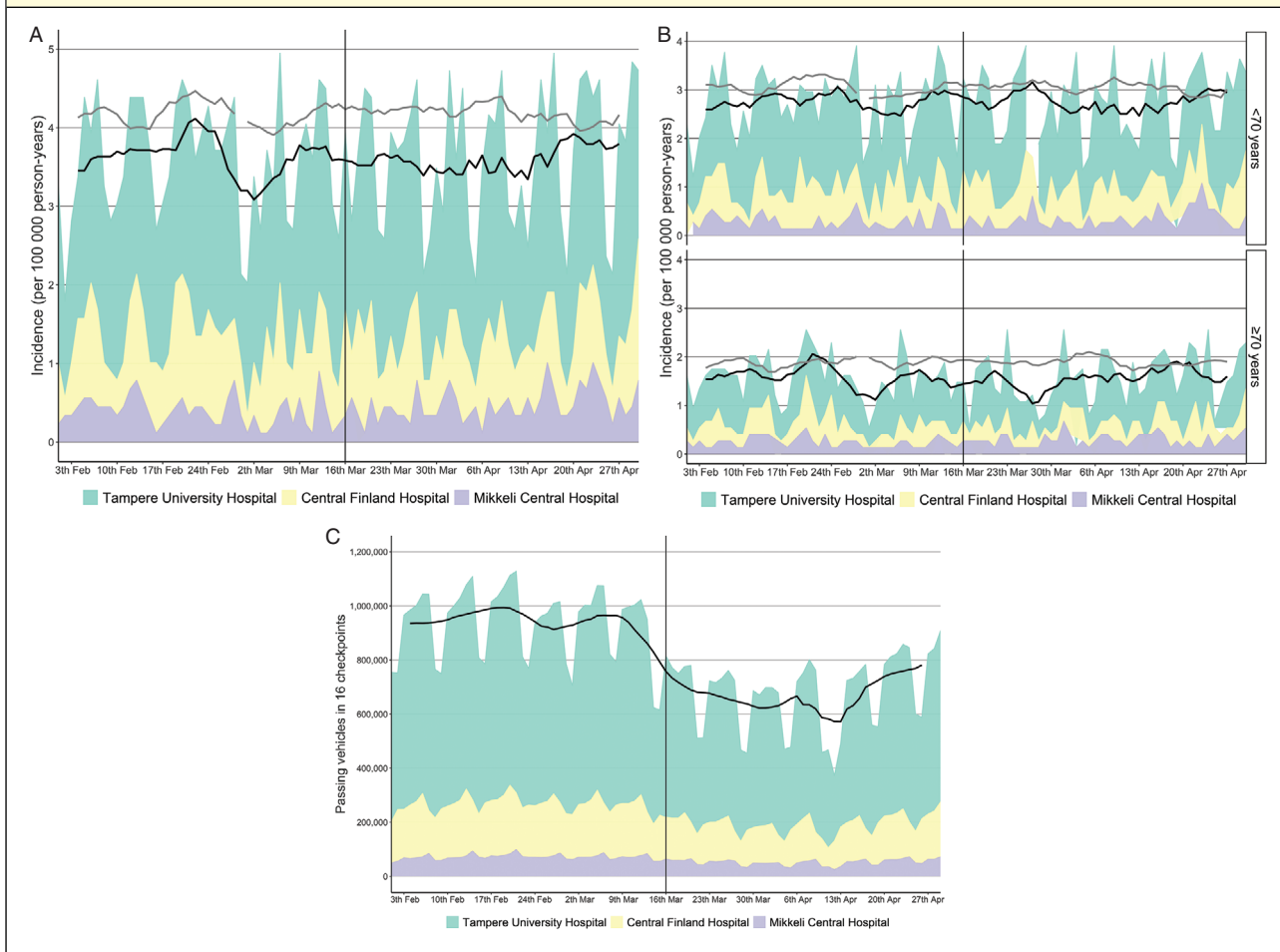
hospitals: Tampere University Hospital (TAUH), Central Finland Hospital (CFH), and Mikkeli Central Hospital (MCH), covering a total catchment area of 900 000 residents, which accounts for 1/6th of the Finnish population. All emergency and urgent surgeries during a period of six weeks prior to and six weeks after the beginning of the lockdown on March 16, 2020, (*i.e.*, February 1 –April 30) were included. Data from the corresponding dates during the previous four years (2016–2019) were used as a reference. General activity during the study period was evaluated using open data from Finnish Transport Infrastructure Agency. Changes in the number of operations between two consecutive time periods were tested

using chi-squared test (χ^2) without Yates's correction for continuity. Statistical analyses were performed using R version 3.6.2.

The weekly mean incidence of emergency and urgent surgery remained stable after the announcement of the national lockdown (*Fig. 1A*). However, the weekly mean average was 16 per cent (5 operations per day) less than the average during the previous four years. The incidence of patients aged less than and over 70 years followed a similar trend (*Fig. 1B*).

The number of the most common operation, laparoscopic appendectomy, decreased by 32 per cent (from 75 to 51, $p = 0.03$) three weeks before the lockdown. However, between three

Fig. 1 A-C. A: The incidence of all emergency and urgency surgeries six weeks before and after the declaration of the state of emergency. B: Emergency and urgency surgeries divided in risk group (patients aged ≥ 70 years). C: General activity, illustrated by volume of traffic on the main roads of the catchment areas. Black line presents weekly mean in 2020 and grey line represents the average weekly mean of years 2016–2019 during the corresponding time period




to six weeks after the lockdown, the number rebounded 23 per cent (57 to 70, $p = 0.25$) towards its previous level. The number of hip fracture operations decreased slightly in both the hemi endoprosthesis group (37 per cent, $p = 0.12$, 0-3 weeks after) and the intramedullary nail group (35 per cent, $p = 0.17$, 3-0 weeks before). However, the decrease was followed by a notable rebound (64 per cent, $p = 0.01$) from 37 to 61 operations per three weeks.

General mobility in the catchment areas of the participating hospitals decreased notably one week before the declaration of national lockdown.

The total incidence of emergency and urgent surgeries was already lower before the lockdown than during the previous four years, and it remained stable during the lockdown. A notable rebound in the rate of appendicectomies and hip fracture operations was seen three weeks after the lockdown started. The decreasing appendicectomy rate may be the result of citizens avoiding unnecessary healthcare visits, and have

therefore delayed their first contact with the ED. Conversely, a decreasing trend among hip surgery may be due to senior citizens obeying the general recommendations to stay at home and to avoid falling on slippery roads outside. The general mobility of the population measured by the amount of traffic on the main roads did not result in a decreased rate in emergency or urgent surgery.

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