

# Less myocardial infarctions during summer vacation—more on Mondays and winter holidays

July 6 2017

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Time periods by calendar related to perceived stress are associated with the incidence rate of myocardial infarction (MI), says a new nationwide registry study of 156 000 people of the Swedish population, in the database SWEDEHEART. Compared to control days, the daily incidence rate of MI was higher during the winter holidays, and on Mondays, whereas rates were lower during weekends and during the summer vacation in July. These periods coincide well with perceived high and low stress in society, respectively.

In the study recently published in the *American Heart Journal*, researchers from Uppsala University and Umeå University investigated whether specific time periods characterized by particularly high and low subjective stress in western societies could explain the variation over time in the daily incidence rate of MI. The researchers used novel high-quality data from all Swedish hospitals on over 156,000 MIs registered during eight years (2006-2013) in the national quality registry SWEDEHEART.

"This is the first study that investigates these culturally defined time-periods in the Swedish population with unselected, high-quality data. Data allowed us to separately investigate both symptom start and hospital admission dates with predefined hypotheses. Previous studies have often lacked symptom start and discussed their results in terms of a delay in seeking appropriate care or delay of registration as explanatory for the

MI rate variation over time. We found that such factors seem to explain only a part of the variation," says John Wallert, PhD-student and first author of the article.

Other factors, such as temperature, also seem to have a limited influence on the MI rate changes.

"Our study seem to suggest that psychosocial demands on behaviour influences basal biological systems, even to such an extent that they may be potential triggers for MI. When controlling for national data on temperature, air pollution, and abroad travelling by air, the associations of calendar periods with MI rates are surprisingly robust. We have to remember that this is an observational study and be cautious with our conclusions. The systematic variation in MI rates is likely multifactorial. With that said, it is now more probable that stress explains a substantial portion of the fluctuation over time in population MI rates than it was before our study," says John Wallert.

Previous studies have suggested that highly stressful events, such as earthquakes and World Cup soccer games, may trigger [myocardial infarction](#). Stress triggering of MI might also be related to working life, for instance MI rates peak on Mondays and in the morning.

"To scrap the work-week routine would probably be way too drastic, says Wallert. How we in society have agreed on periods of work and rest is actually quite well aligned with our predisposed, internal biological clock, the circadian rhythm. However, the alignment is not perfect. For instance, our internal clock is highly unlikely to be aware if today is a Monday or a Sunday. An interesting sub finding was that out of eight subgroups, the group that was still employed had the greatest increase in MI rates of all, about 20% compared to control days. This and other findings might have a bearing on future public health and clinical policy," says John Wallert.

**More information:** John Wallert et al, Temporal changes in myocardial infarction incidence rates are associated with periods of perceived psychosocial stress: A SWEDHEART national registry study, *American Heart Journal* (2017). [DOI: 10.1016/j.ahj.2017.05.015](https://doi.org/10.1016/j.ahj.2017.05.015)

Provided by Uppsala University

Citation: Less myocardial infarctions during summer vacation—more on Mondays and winter holidays (2017, July 6) retrieved 27 April 2024 from <https://medicalxpress.com/news/2017-07-myocardial-infarctions-summer-vacationmore-mondays.html>

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