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Daylight Saving Time, circadian rhythms and cardiovascular diseases.

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Statement of the Problem: A few months ago, Finland called for the abolition of the Daytime Saving Time (DST) across the European Union, due to a series of concerns for human health. The European Parliament did not accept this request, but asked the scientific community to provide more evidence. Ten years ago, researchers from the Karolinska Institute reported a higher incidence of acute myocardial infarction (AMI) for the first week after the spring DST shift, and more evident in women. Methodology: We have recently reviewed the further available studies on the possible evaluation between DST and acute myocardial infarction (AMI), and found other six studies including 87,994 cases. Although with some methodological differences, a higher occurrence of AMI –estimated between 4 to 29%- was confirmed after the spring DST shift. Five studies provided analysis by gender, but data were not conclusive. Finally, three out of the five studies with indication of the day of highest frequency of AMI onset identified Monday or the first days of the week as crucial time. Conclusion & Significance: Biological rhythms exist at any level of living organisms, and circadian (~24h) are the most widely studied. The central circadian clock is located within the suprachiasmatic nucleus of the hypothalamus, but peripheral clocks have been identified in most cells and tissues. Circadian clocks regulate the majority of biological functions of the organism, and are regulated by the light/dark cycle. It is possible that, after the spring DST shift, even modest sleep deprivation and circadian misalignment may affect cardiovascular health, since it has been associated with increases in sympathetic tone and catecholamine levels. Moreover, our organism adjusts more readily to delays than to advances, and jetlag syndrome is well tolerated after westward than eastward flights. Moreover, environmental conditions, such as exposure to outdoor colder temperatures, could play a role. Finally, there is consolidated evidence that Monday, may be secondary to a stressful condition of starting weekly activities, represents critical day for onset of cardiovascular and cerebrovascular accidents. Prior to drastically moving to abolition, an easy information strategy to inform the population on possible strategies of prevention could be suggested.

Biography

Roberto Manfredini, MD, is full professor of Internal Medicine, Director of the Department of Medical Sciences at the University of Ferrara, Italy, and Head of the Clinica Medica Unit, General Hospital of Ferrara, Italy. He has expertise in clinical chronobiology, and he contributed in the identification of rhythmic occurrence of acute cardiovascular diseases along time, eg, hour of the day, day of the week, and month/season of the year. This innovative temporal approach to cardiovascular diseases, i.e., myocardial infarction, acute aortic diseases, pulmonary embolism, stroke, has opened up the potential for improving healthcare via a temporized drug administration (chronotherapy). He has built this innovative knowledge after years of experience in research and teaching both in hospital and education institutions.

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