SEASONAL VARIATION IN MORTALITY AMONG DIALYSIS PATIENTS: A COHORT STUDY

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Background:

Dialysis patients are at excess risk of mortality. Mortality varies seasonally in the general population, but little is known about this phenomenon in dialysis patients. Recently, an association between mortality and season was demonstrated in a large cohort of dialysis patients in the USA (1). Aim of our study was to investigate if mortality also shows seasonal variations in a large European cohort of dialysis patients.

Methods:

This was a retrospective cohort study. All data were obtained from the Austrian Dialysis and Transplant Registry. All deaths recorded between 01/01/2007 and 31/12/2009 were included in the analysis. Patients aged <18 years (yrs) or with documented survival time <90 days were excluded. Each month, incident cases entering the registry were counted, and so were the losses of patients due to death (censoring variable = 1) and all other causes (censoring variable = 0). Monthly mortality rate per 100 patient months was computed as number of deaths in a specified month, divided by number of patients at risk at start of the respective month and multiplied by 100. Seasonality in mortality was tested with cosinor analysis.

Results:

At study start, there were 3659 subjects at risk of dying (1449 women, 2210 men, mean age (+/- standard deviation) 61.4 +/- 14.5 yrs). During study period 2438 incident dialysis patients (902 women, 1536 men, mean age 63.9 +/- 14.2 yrs) entered the study. Overall, 1836 dialysis patients died, 889 patients were censored. All cause mortality was highest in winter (1.60 [95% confidence interval (CI) 1.51 - 1.69] deaths/ 100 patient months) and lowest in summer (1.06 [95% CI 0.97 - 1.15] deaths/ 100 patient months) (Figure 1). Dampening of the random variations by computing moving averages of order 3 strongly enhances the oscillatory nature of mortality rate by time of the year.

Conclusions:

Our analyses revealed a significant seasonal variation of mortality in a European dialysis cohort with higher death rates during winter. The results are strikingly similar to those obtained in the USA. Data suggest that this seasonal phenomenon is present for different causes of mortality, e.g. cardiovascular causes or infections. Therefore, physicians should possibly pay more attention on preventive measures like seasonal vaccinations or intensive control of cardiovascular risk factors (e.g. blood pressure) especially in winter. The findings could also be important for interpreting or designing studies in dialysis patients.

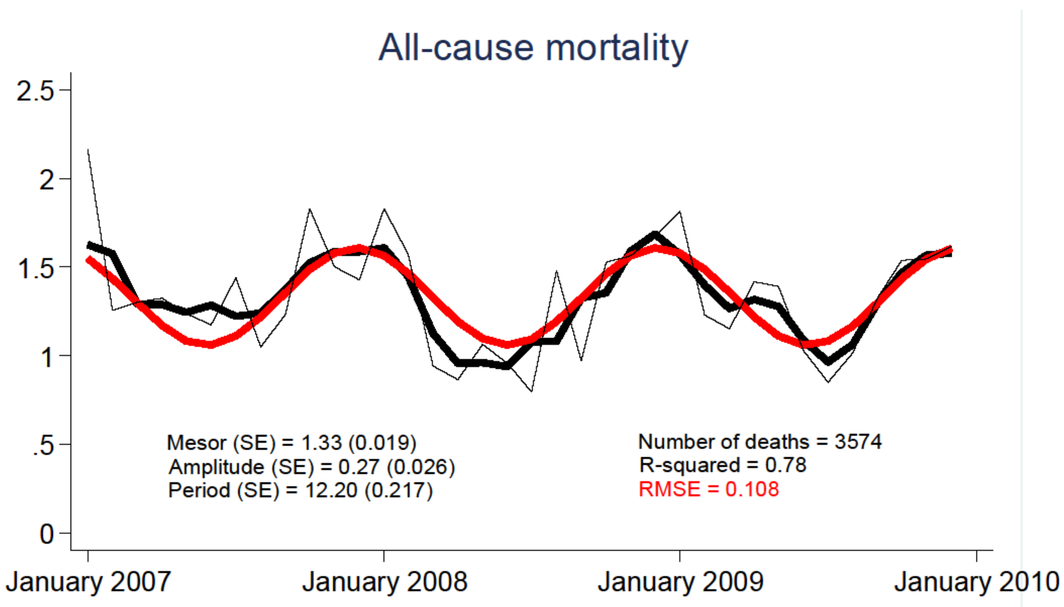

Fig. 1

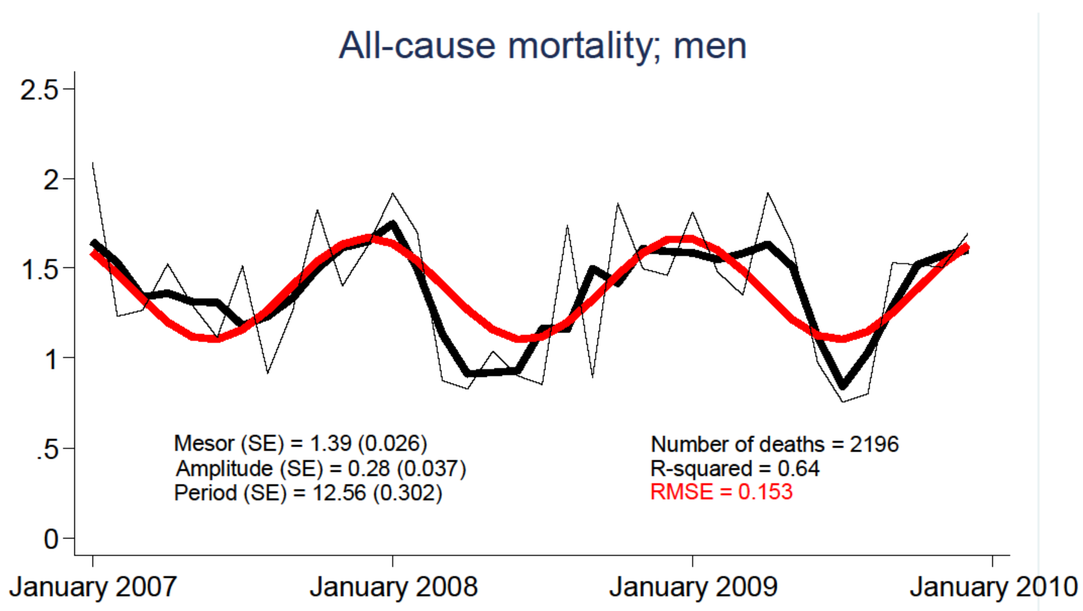

Fig. 1a

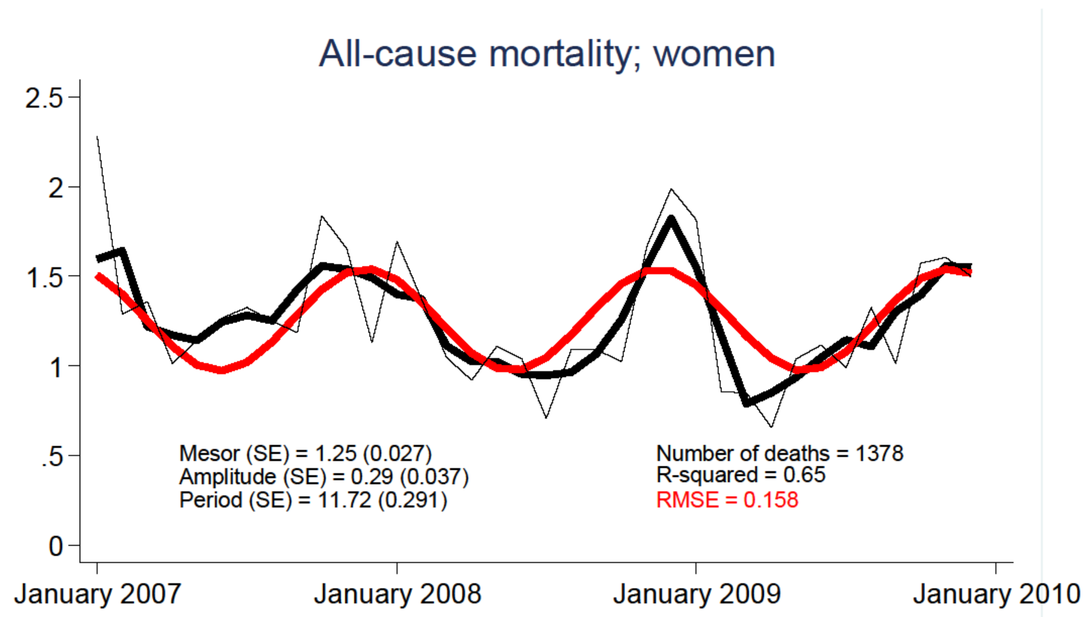

Fig. 1b

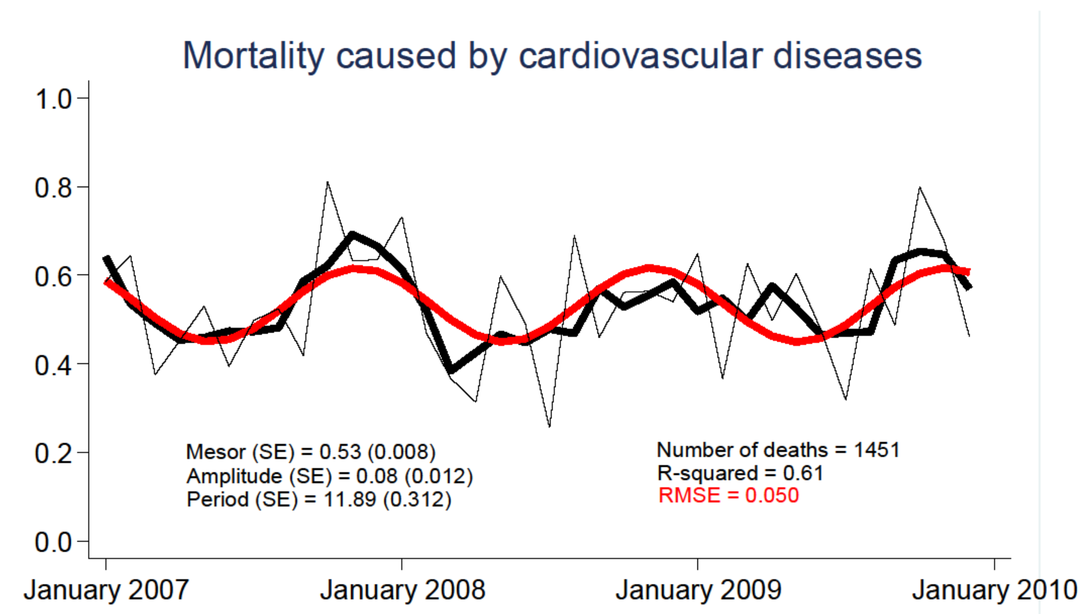

Fig. 2

Pattern of mortality (Fig. 1: all-cause mortality; Fig. 1a: all-cause mortality men; Fig. 1b: all-cause mortality women; Fig. 2 cardiovascular mortality) **of Austrian dialysis patients during a 3 year interval. The thin line represents monthly mortality rates, the thick line shows the moving averages of order 3, the red line shows the cosinor analysis.**

References: Usvyat LA. cJASN 2012;7: 108-115

Topic: Clinical Epidemiology

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