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Cardiovascular mortality among ethnic German immigrants from the Former Soviet Union to Germany: a retrospective cohort study

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Introduction

Migration is a phenomenon of particular Public Health importance. Since 1990, almost two million ethnic Germans (*Aussiedler*) have migrated from the former Soviet Union (FSU) to Germany. This study assesses their cardiovascular disease (CVD) mortality and compares it to that of the autochthonous German population. The health status of migrants is potentially influenced by three factors. These are factors in the country of origin, factors in the country of destination, and factors related to migration itself. In the *Aussiedler*'s countries of origin, the FSU, CVD mortality is the highest worldwide, probably due to a high prevalence of many risk factors. This might lead to high CVD mortality in the *Aussiedler* after migration, because of prevailing high risk factor prevalence and time-lag effects. Studies have shown that *Aussiedler* in Germany are socio-economically disadvantaged. There are several models linking low socio-economic status (SES) with poor and deteriorating health status. Thus, it can be assumed that due to a comparatively low SES, CVD mortality of *Aussiedler* increases longitudinally compared to that of their autochthonous Germans peers. Several migration-related factors potentially influence the CVD mortality of the *Aussiedler*. Those coming to Germany might be healthier or unhealthier than the ones staying behind. Besides, there might be migrant-specific resources, such as strong family networks, which have an effect on CVD mortality. Thus, it is hypothesised that *Aussiedler* from the FSU upon arrival in Germany have a higher CVD mortality than autochthonous Germans of the same age and sex. In addition, a comparatively low SES might cause a faster secular increase in their CVD

mortality. Selection effects and migrant-specific resources are further factors potentially influencing their CVD mortality.

Methods

To test these hypotheses, we conducted a retrospective cohort study for the period 1990-2002 with 34,393 *Aussiedler* who had come to North-Rhine Westphalia, Germany's most populous state. We ascertained vital status at municipal population registries and causes of death at the state statistical office and local health authorities. CVD mortality in the cohort was compared to that of the autochthonous German population, both through direct standardisation and SMR calculation, using publicly available rates of the total German population as a comparison. SMRs were calculated for the whole cohort as well as for substrata. To assess multivariate effects, different Poisson regression models were used.

Results

A comparison showed that the cohort is representative for all *Aussiedler* from the FSU with regard to age, sex and year of arrival. We were able to ascertain vital status at the end of follow-up for 31,169 cohort members (90.6%). 1,657 cohort members deceased during follow-up. For 1,628 (98.3% of all deaths), we were able to establish the cause of death, which was CVD in 680 cases (41.0% of all deaths). The internal comparison of CVD mortality revealed that a longer duration of stay in Germany was associated with higher CVD mortality, but the effect disappeared after adjustment for age. After multivariate adjustment, CVD mortality was significantly higher in older age groups, in men, after 1993, in *Aussiedler* who arrived after 1997, and in people with a family size of less than five persons as compared to the respective reference categories. The comparison of directly standardised rates revealed that CVD mortality was significantly lower among *Aussiedler* than autochthonous Germans in the early 1990s. However, there was a secular converging trend with German rates falling and rates in the cohort rising. At the end of the observation period, rates were almost equal in the two populations. The CVD SMR in the whole cohort was 0.79 (95%-CI: 0.73-0.85). With the exception of the age group 15-39, SMRs were smaller than one in all substrata, and significantly so in most of them. The comparison of SMRs in the different strata revealed noteworthy differences. The SMR was higher in the stratum with the longest as compared to a shorter duration of stay, but adjustment for calendar period attenuated this effect almost completely. After multivariate adjustment, SMRs were significantly higher in the age group 15-39 as compared to 65+, after 1993 as compared to 1990-1993, and in families with more than five members than in smaller families.

Discussion

The postulated hypotheses can not be confirmed. CVD mortality among *Aussiedler* from the FSU is lower than in autochthonous Germans and there is no clear indication for a rise in CVD mortality with increasing duration of stay in Germany after adjustment for age and calendar period. Possible explanations for the findings are a substantially better health status of *Aussiedler* in the FSU as compared to the local average, a higher perceived SES of *Aussiedler* in Germany, or selection effects. Over time, and independently from duration of stay, CVD mortality rates of the two populations converge. Whereas German rates decline, a well-known phenomenon partly explained by improving preventive and therapeutic measures for CVD, rates among the *Aussiedler* remain unchanged. This suggests that the latter do not benefit from these measures. The comparison of mortality in substrata shows important differences. Younger *Aussiedler* do not have a mortality advantage. Possible explanations are a worse risk factor profile or age-dependent selection. *Aussiedler* from the FSU who migrate within a large family to Germany have a significantly lower CVD mortality than those coming with few family members. This might be an expression of the special importance of traditional family values in the *Aussiedler's* culture.

Conclusions

The results do not justify an urgent need for specific health interventions targeting the totality of *Aussiedler* from the FSU in Germany. However, younger *Aussiedler* seem to have an equal or higher CVD mortality than their German peers. Although the absolute number of CVD deaths is still low in this group, a Public Health problem might arise as these people grow older. Therefore, additional studies should be conducted in this population to assess risk factors prevalences and other health-relevant characteristics. The apparent beneficial effect of large family networks on CVD mortality among *Aussiedler* warrants further exploration. From the data available, it can not be inferred if the association between large family size and low CVD mortality is merely due to confounding, or if it is an expression of a culture-specific resource of this particular migrant population.