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Dr.sc.hum

**Mortality from cancers and external causes of death among Aussiedler in Germany 1990-2002 – an epidemiological cohort study.**

Born on 07.01.1972 in Gulu, Uganda

Undergraduate study from August 1990 to June 1995

Undergraduate graduation on 19.01.1996

Master of science exam on 06.09.2002 at the University of Heidelberg

Doctorate subject area: Hygiene

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International migration has grown over the last decades and is set to grow even more in the coming years. The break up of the former Soviet Union (FSU) in the early 1990s contributed to this growth since it was followed by large migratory movements within Europe and a resurgence of Diaspora migration such as that of the *Aussiedler* immigrating to Germany. These new dynamics of Diaspora migration provide a unique opportunity to study the effects of large, organised population movements.

About two million *Aussiedler* have resettled in Germany from the FSU since 1990. The *Aussiedler* are in a unique situation of receiving substantial support for integration in the destination country unlike other immigrant groups. Despite this support, the integration of *Aussiedler* who came after 1989 has been difficult. Their post-migration experience has been extensively studied in most aspects but little health research has been done on this large group. This study is the first to investigate their mortality. We compared their mortality compared to the native German population for two cause-of-death categories which are largely influenced by factors in the country of origin. The aims of the study were to compare their mortality from cancers and from external causes of death with that of the native German population. We postulated that they would have higher mortality from external causes, lung cancer, stomach

cancer, but lower mortality from breast and prostate cancers based on what has been observed from other migrant studies.

We conducted a retrospective cohort study of 34,393 adult *Aussiedler* from the FSU who settled in North Rhine Westphalia (NRW) between 1990 and 2001. Vital status was ascertained through the local registry system. Causes of death were obtained for 95% of cases from the NRW State Statistical office which provides ICD9 and ICD10 codes through a record-linkage system that uses dates of birth and death, sex and last city of residence as identifiers. Additional causes of death were obtained from death certificates professionally coded at the Saarland Cancer registry. We calculated Standardised Mortality Ratios (SMR) using the mortality rates of the native German population for comparison. We assessed the effects of calendar year, sex, age, duration of stay, period of arrival, size of family on arrival and the size of the first city of residence, on the mortality rates and SMR of specific causes of death using Poisson regression models. The dose responses of continuous variables were assessed using fractional polynomials.

There were 1657 deaths (4.8% of participants), 469 from cancers and 88 from external causes. The main findings of our study were lower all-cause mortality among the *Aussiedler* compared to native Germans. They also had lower mortality from all cancers but higher mortality from all external causes. Among the specific causes, they had higher mortality from lung, stomach and liver cancers and from accidents and adverse effects. Mortality was significantly lower for cancers of the breast and reproductive system in females and for prostate cancer.

Males had higher mortality and higher SMR than females for most of the outcomes except lymphomas and cancer of the colon. Age had the expected effect on the mortality rates for different cancer sites and for suicide whereby the rates increased with age. Other covariates had different and inconsistent effects on the mortality rates which were mostly not significant. SMR for accidents were higher among younger *Aussiedler* compared to the older ones. The SMR for accidents and all external causes decreased with length of stay, increased with calendar year and with year of arrival.

Overall the results were surprising. Even for those outcomes where the SMR was significantly greater than one, the magnitude of the mortality disadvantage was smaller than one would expect if the *Aussiedler* were representative of the general populations of FSU countries. The study

design, however did not allow the assessment of individual risk profiles and the identification of causal risk factors. The absence of information on their pre-migration health status also makes interpretation difficult.

In conclusion, *Aussiedler* from FSU countries had lower mortality compared to the native Germans contrary to expectations. Their mortality advantage is however not constant over time and they seem not to have benefited from the secular trends of decreasing mortality observed among native Germans during the 1990s.

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