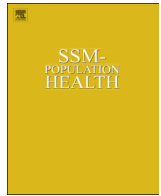




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Commentary

## Invited commentary: The long term impact of forced migration during childhood on adult health

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### A B S T R A C T

Saarela and Elo (SSM-Population Health; Volume 2, December 2016, Pages 813–823) provide new evidence of early life forced displacement not being adversely associated with adult health. Their study highlights some of the challenges to identifying a causal effect of childhood exposure on adult health in the context of complex emergencies. Importantly, it opens up for future research that can address commonly recognized sources of bias and identify intervening pathways linking forced migration with adult health outcomes.

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### Introduction

The abrupt uprooting and displacement of people due to complex emergencies is today more prevalent than it has been since the aftermath of World War II. The record of 42.5 million forcibly displaced individuals globally set in 2011 has been surpassed annually reaching 65.3 million individuals by the end of 2015 (UNHCR, 2015). In the midst of what in Europe is called the migrant crisis (the countries hosting the largest displaced refugee populations are outside the borders of the EU), more research is needed on the long term public health consequences of forced migration. Apart from the obvious populations at risk in today's situation it is important to identify particularly exposed groups among the already resettled migrant populations in order to design policy responses that follow up on the urgent humanitarian ones. Intellectually, the long term consequences for chronic disease risk of adverse experiences during childhood has become one of the main concerns of a large relatively recent body of research on early life development involving multiple disciplines (Cicchetti, 1984; Ben-Shlomo & Kuh, 2002; Heckman, 2007), of which perhaps life course epidemiology is the most relevant to this study. The types of adversities in childhood that have been associated with health risks include socioeconomic disadvantage (Danese et al., 2009; Korkeila et al., 2010), parental death (Appel et al., 2013; Maier & Lachman, 2000), parental divorce (Hemminki &

Chen, 2006), nutrient intake (Maccini & Yang, 2009). Saarela and Elo (2016) contribute to this literature by reporting the results of a study on mortality and morbidity among a representative sample of 46,988 Finnish adults born in 1927–1944, 4146 of whom were forcibly displaced during World War II (at ages 0–17).

Distinguishing between the long term health consequences of the stressful experience of the forced migration itself and other factors pertinent to complex emergencies, e.g., the psychiatric harms of separation from the left-behind families, financial distress and difficulties related to cultural adaptation, is a methodological challenge. Saarela and Elo examine the long term health consequences of forced migration in childhood in a context where the forced migrants shared the same culture with, spoke the same language as, and were in many respects sociodemographically similar to the host population. In addition to these similarities, the wealth and financial disparities between the two groups were levelled out upfront through an unusually efficient and generous resettlement policy (De Gadolin, 1952; JHJ, 1953). Four decades later, the adult men who as children were forcibly displaced had a higher mortality rate due to all-cause mortality and ischemic heart diseases (IHD) than their counterparts in the general population who as children did not experience forced migration. This association goes to null when the comparison group is narrowed down to the adult men who were born in what the authors call Eastern Finland, the regions of Finland bordering to the lost territory of Karelia. As to females, a similar pattern is found. As gender does not seem to have modified the effects, pooling the gender subgroups might have made sense. The authors further found that displaced men and women had slightly lowered incidence of take-up of sickness benefit and disability pension as compared to their

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non-displaced counterparts. These results are reassuring, suggesting that children are resilient to life changes as dramatic as urgent forced displacement holding factors such as material conditions, culture and language relatively constant.

Saarela and Elo suggest that by virtue of being a natural experiment their study design eliminates many sources of potential confounding. As usually with asserted natural experiments, the study by Saarela and Elo raises questions related to the internal validity of the study, i.e., related to whether the forced displacement of the Karelians can be exploited as a way of generating exogenous variation in the exposure in order to study the impact on adult health outcomes. To the extent that exposure is uncorrelated with factors that might reasonably be considered as confounders the displacement program can be considered a natural experiment in the relevant context.

### Causal inference and counterfactual questions

The counterfactual contrast of the study by Saarela and Elo is defined by the difference between adult health of individuals who as children were forcibly displaced and the health of the same adults had they remained in Karelia and avoided the experience of forced migration (Greenland, 2000). This difference corresponds to the causal effect of forced displacement on the displaced children. In the estimation of this effect a researcher is confined to the distribution of outcomes in the exposed group and a comparison group. As the displacement in the Finnish case involved the Karelian population across the board, a credible comparison group needs to be found elsewhere; adults born in the nearby regions are defined as comparisons (the relevant cohorts in the general population are also used as a secondary comparison group). The region of birth thus defines exposure status. This way of defining exposed and comparisons considerably steepens the ascent to the causal summit; the balancing of a number of potential confounders between the exposed and comparison groups would need to be shown in order to convince the reader that exposure was “as good as randomly assigned”. For example, the literature documenting large regional differences in mortality (in particular from IHD) between individuals born in East and West Finland, which the authors creditably mention, has hypothesized a number of underlying factors that may produce the East-West gradient in IHD mortality (Koskinen, Valkonen, Kulokari, Sauli, & Niemi, 1983; Valkonen, 1987). One among many candidates postulated in these studies is dietary habits. Unless the underlying factors to this gradient balance between the exposed group and the comparison group the causal effect of resettlement cannot possibly be isolated from them. The requirements of documentation of the institutional setting and empirical tests of internal validity for studies that claim to exploit conditions approximating a randomized experiment are becoming ever more stringent in many disciplines. Despite this trend, researchers continue to use the term natural experiment in a somewhat sloppy fashion.

### Model specification

Another issue complicating the causal inference in this study is the model specification. The authors use contemporary population-based register data to define exposure status, i.e., region of birth. The limitation that the use of such data creates for the study design at hand is that these data lack background characteristics as measured before exposure. In a sense, this limitation is related to the earlier discussion of balancing since a balancing test should only involve characteristics that are determined before exposure. More problematic is however the adjustment for variables on the

causal pathway between exposure and disease in the regressions. This “bad” way of controlling for potential confounding should be avoided since these variables might themselves be dependent variables (Angrist & Pischke, 2009).

### Forced displacement and health

The observation of elevated risk of IHD among the displaced individuals as compared to the general population, both men and women, is strikingly similar to the results of another forthcoming (in press) study examining the impact of the forced migration of the Karelians by Haukka, Sarvimäki, Suvisaari, and Martikainen (In press) (this time exposure is defined as displacement at any age). Contrary though to what Saarela and Elo find, the elevated risk of IHD among the exposed remains when restricting the comparison group to individuals living in Eastern Finland in the study by Haukka et al. (In press). Hence, their conclusion is that resettlement was adversely associated with IHD. This difference in results between the two studies may depend on model specification, definitions of base population, follow-up time, comparison group (it is unclear whether both studies use the same regional definition of Eastern Finland). Another plausible explanation is that the ability to adjust for socioeconomic status as determined before exposure (in 1939) by Haukka et al. (In press) makes a difference.

The study by Saarela and Elo reminds us how challenging it is to find research designs that isolate effects of exposure in complex emergencies. Saarela and Elo are able to isolate the effect of displacement from many sociodemographic confounders such as culture, native language and material conditions. However, more studies identifying the causal channels linking childhood displacement to health outcomes across the lifespan are needed in order to convince us of the resilience among displaced children found in this study.

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