

Socio-economic health differences (SEHD) in chronic diseases are persistent. Various mechanisms are described that link socioeconomic status (SES) to health outcomes, but this has resulted in relatively few effective interventions to reduce SEHD.

A transgenerational and life course perspective can provide evidence to specifically address the potential benefits and the optimal design of interventions to improve the poorer health outcomes of low SES groups. Given that the relative importance of parental SES and children's own SES varies by life stage, it is of major importance to assess the relationship during childhood and youth (with a focus on parental SES) and in adulthood (with a focus on own SES). In both life stages, effects have been hypothesized of critical and sensitive periods (e.g. neonatal period, transition to adulthood) and effects of a potential accumulation of disadvantages across the life course, i.e. cumulative risk.

The overall aim of the TRANSSES project is to increase our insight into the causal pathways that link parental and own SES to health, taking into account the work, family, and lifestyle related risk and protective factors over the life course. This will be translated into cues for intervening in collaboration with professionals and citizens. TRANSSES will focus on three research questions, each of which will be the basis of a Work Package (WP):

-To what extent and by what pathways does parents' SES influence levels of adverse cardiometabolic health and (precursors

of) depression of their children during childhood and youth? (WP1)

-To what extent and by what pathways do parents' and individuals' own SES influence levels of an adverse cardiometabolic

health and (precursors of) depression during adulthood? (WP2)

-Which type of preventions and interventions hold most promise with regard to their potential health gains? (WP3)

TRANSSES employs the Lifelines Cohort which provides comprehensive prospective data on 167,000 participants covering three generations with a parallel data collection consisting of interviews, questionnaires and physical examinations. Moreover, Lifelines includes a wealth of biological, social and family factors which play a role in potential pathways linking low SES to poor health outcomes. The cohort covers the North of the Netherlands, which has a wide variation in SES levels, including regions with a strong transgenerational history of deprivation, such as Oost-Groningen. TRANSSES uses a prospective design with multiple measurements of key variables and appropriate statistical methods (like structural equation modelling) to disentangle selection and causation effects. This allows a much stronger assessment of the causal pathways linking SES and health than simpler, cross-sectional designs.

In all WPs, we will focus on two outcomes with a high burden of disease: adverse cardiometabolic health (metabolic syndrome, high BMI) and (precursors of) depression, which are exemplary of the transgenerational and life course mechanisms linking low SES to poor health outcomes. We will focus on potentially modifiable factors, especially on health literacy and self-management.

In WP1, we will investigate to what extent the effect of parental SES on their offspring's health is mediated by (a) events and experiences in the family, like divorce; (b) parental health literacy and self-management affecting parents' health behaviour; (c) factors related to the child's individual growth and development; and (d) children's own health behaviours.

In WP2, we will investigate how an adults' own SES influences health in adulthood. We will assess as pathways (a) events and experiences in the family, (b) idem in 'societal participation', like unemployment and job stress; (c) health literacy and self-management; and (d) health behaviours.

In WP3, we will assess the potential effects of targeting major factors during opportune time windows for those in highest need, using microsimulation. Next, focus groups of citizens, health professionals and policy makers will address the malleability of each of the pathways, and the promise of various candidate intervention and prevention measures derived from the literature.

This will yield an inventory of possible measures, with an estimation of their costs, their level of acceptance and their effectiveness.

The TRANSES consortium connects professionals with expertise in research, in public health and clinical practice, and in policy-making. It builds upon existing collaborative centres in these domains, and on various disciplinary backgrounds such as public health, sociology, medicine, epidemiology, psychology, and economy. The various partners have a long experience in connecting these varying perspectives and backgrounds. They have been very successful in doing so, and in translating scientific findings to interventions aiming at communities via health promotion and various types of health and social care.