Improving neighbourhoods, improving health?
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SUMMARY

Considerable evidence from several countries, including The Netherlands, indicates that mortality, morbidity, other health outcomes and related behaviors differ between deprived and non-deprived areas. These inequalities have increased in the last decades. They can for a large part be explained by socio-demographic differences between populations. Other possible processes may include selective migration and exposure to adverse environmental conditions in deprived areas. Evidence on the latter mechanisms is growing but yet fragmentary. Moreover, there is scarce evidence on the extent to which policies and interventions aimed at improving the living environment are effective in improving the health of residents of deprived areas.

This thesis aimed to contribute to filling these knowledge gaps by addressing three objectives. The first objective was to assess to what extent inequalities in health between deprived and non-deprived areas can be explained by selective migration. The second objective was to identify if changes in specific characteristics of the living environment influence health outcomes of neighbourhood residents. In this thesis we studied changes in physical activity and mental health in relation to eight environmental characteristics: green space, social cohesion, parking facilities, traffic safety, general safety, physical disorder, social disorder, and criminal victimisation. The third objective was to examine whether a Dutch large-scale area-based initiative (ABI; hereafter called the Dutch District Approach) had a demonstrable effect on health outcomes in the 40 most deprived districts of the Netherlands.

The following specific research questions were examined in parts 1, 2 and 3 of the thesis:

1. Are inequalities in health between deprived and non-deprived neighbourhoods influenced by migration flows, and does this effect vary by age?

2. Are changes over time in environmental characteristics related to physical activity and mental health among adults?

3. What is the short-term impact of the District Approach on trends in leisure-time physical activity, mental health, and general health in deprived neighbourhoods?

In this thesis, national data collected via interview surveys were used to address these research questions. Chapters 1 and 2 examine whether and how migration flows influenced area inequalities in health problems in the general population (chapter 1), and in specific age groups
Summary (chapter 2). Chapters 3 to 5 examine the various associations between changes in neighbourhood characteristics and health outcomes. The health outcomes we studied were physical activity (chapter 3 and 4) and mental health (chapter 5). Chapters 6 to 8 evaluate the short-term impact of the Dutch District Approach on trends in leisure-time physical activity (walking, cycling, and sports), mental health, and general health.

Chapter 1 assessed the effects of migration on area differences in three measures of health (perceived general health, longstanding health problems, and long-term disabilities). Area inequalities in health were smaller among migrants who moved between deprived and non-deprived postal code areas than in total population. Health inequalities were small among migrants because out-migrants from deprived areas and in-migrants into deprived areas had similar levels of health. Additionally, we found health differences between migrants and those who remained in the areas of origin; these differences were mostly attributable to individual socio-demographic characteristics. Thus, even though health is related to migration between deprived and non-deprived postal code areas, this is mostly through socio-demographic selection. Despite this relationship with health, migration does not enlarge inequalities in health between deprived and non-deprived postal code areas in the Netherlands. Migration may even attenuate these health inequalities.

Chapter 2 examined potential differences between age groups with regard to the effect of migration on inequalities in health between deprived and non-deprived areas in the Netherlands. For most age groups, we observed about equally large area inequalities in health among migrants as among non-migrants. Only for the age group 35-44 years, area inequalities in health among migrants were slightly larger than among non-migrants. Thus, only for this specific age group we found empirical support to the expectation that migration would enlarge inequalities in health between deprived and non-deprived postal code areas. For all other age groups, migration consolidates or attenuates these inequalities.

In chapter 3 we explored whether changes over time in levels of traffic safety were related to physical activity among neighborhoods in the Netherlands. We found that favourable changes in traffic safety levels between 2006 and 2009 were related to increased odds of being active in 2009, but not to the mean hours of physical activity (among those who were physically active). Positive relationships with the odds of being active tended to be stronger among women, people aged 35 to 59 years, and those who were gainfully employed. By focusing on changes over time in level of traffic safety, our results provided new evidence for a causal relationship between neighborhood traffic safety and physical activity.
In chapter 4 we assessed whether changes over time in a number of other environmental factors were related to odds of being active among neighbourhoods across the Netherlands. We observed that improvements in green spaces, social cohesion, and physical and social order between 2006 and 2009 were related to higher odds of being active in 2009. These positive associations tended to be stronger among women, but not among older people or among residents who have lived longer in the neighbourhood. No associations were observed with general safety or with parking facilities. As in chapter 3, our results provide new evidence for a causal relationship for some environmental characteristics (green spaces, social cohesion, and physical and social order) with physical activity.

In chapter 5 we used more recent data to investigate whether changes over time in different aspects of neighbourhood safety (general safety, physical disorder, social disorder, and criminal victimisation) were related to mental health. We found that average improvements in physical order (i.e. no graffiti, litter, dog waste, vandalism) in the neighbourhood between 2004-2007 and 2008-2011 were positively related to higher odds of having good mental health in the latter period. Changes in general safety had also a positive relationship with mental health. However, no such relationships were found for social order and criminal victimisation. By focusing on changes over time in different types of safety, we could provide new evidence for a causal relationship of mental health with one of the measures in particular, i.e. physical disorder.

Chapter 6 assessed the short-term impact of the District Approach on trends in self-reported leisure-time physical activity (walking, cycling, and sports). We observed that the districts that were subject to the District Approach since 2008 show more favourable trends in leisure-time walking when compared to previous years. Moreover, these trend changes were more marked in the target districts than in control districts. No such evidence for a positive impact was observed for cycling and sports. Trend changes in either walking, cycling, or sports were not associated with the intensity of environmental interventions in the target districts. In conclusion, the result suggest that the District Approach had a positive impact on the development of perceived leisure-time walking though not in cycling or sports.

In chapter 7 we examined the short-term impact of the Dutch District Approach on trends in perceived mental health. Among the general population, the trend in mental health in the 40 target districts did not differ from the trend in the control areas. Among women, however, we found evidence for more positive trends in target districts as compared to control districts. Such a positive effect was not observed among males. In addition, evidence for a positive effect was observed especially for target districts with more intensive ABI efforts, and not for target districts.
with a less intensive ABI. These results suggest that the District Approach may positively affect
the development of perceived mental health in targeted deprived districts, but only if ABI efforts
were implemented with some intensity.

In chapter 8 we investigated the short-term impact of the District Approach on perceived general
health. We compared target districts that invested in the improvement of the living environment
to target districts that mainly invested in the socio-economic position of some of its residents.
The trend in general health among the 40 target districts together did not differ from the trend in
the control districts. However, a positive change in trend in general health was observed in target
districts that invested especially in the living environment. In conclusion, the results suggest that
the District Approach may have had a positive impact on perceived general health of residents of
target districts, but only if investments focussed on improving the living environment.

The general discussion addresses the main findings of this thesis, including the most important
methodological limitations. By evaluating ‘natural experiments’ this thesis contributes to the
evidence base for one possible strategy to tackle health inequalities, namely through ABI's in
deprived neighbourhoods. Still, such an evaluation may have important limitations and challenges
to be addressed in subsequent work.

The evidence generated by the studies described in this thesis supports the following main
conclusions:

Firstly, taking into account the evidence generated by our own studies as well as previous studies,
it appears that selective-migration has a modest influence on health inequalities between
deprived and non-deprived areas. Moreover, there is little evidence to suggest selective-
migration processes are responsible for the effect of the District Approach on the changes in
health outcomes that we found in this thesis.

Secondly, the evidence generated in this thesis provides new support for assuming a causal
relationship between physical activity and a number of environmental factors (i.e. traffic safety,
green spaces, social cohesion, and physical and social order). The new evidence that we derived
from trend studies is in agreement with existing literature, most of which is based on cross-
sectional studies. In addition, we found support for assuming a causal relationship of mental
health with area-level physical order and possibly with general safety. However, more research is
needed to assess the impact of different types of safety on mental health.
Thirdly, there is evidence, in particular for walking and mental health, to support ABI’s and to link up with ABI’s as an integral health policy approach to improve the health of people in deprived neighbourhoods. More generally, our studies have yielded evidence for expecting a positive impact of ABI’s that reach a large number of residents and target different policy fields, including living environment. Future studies on ‘natural experiments’ should aim to strengthen the methodological design using longitudinal data or extending the long follow-up time.