Turning the tide: countering syndemic vulnerability in a Dutch fishermen community

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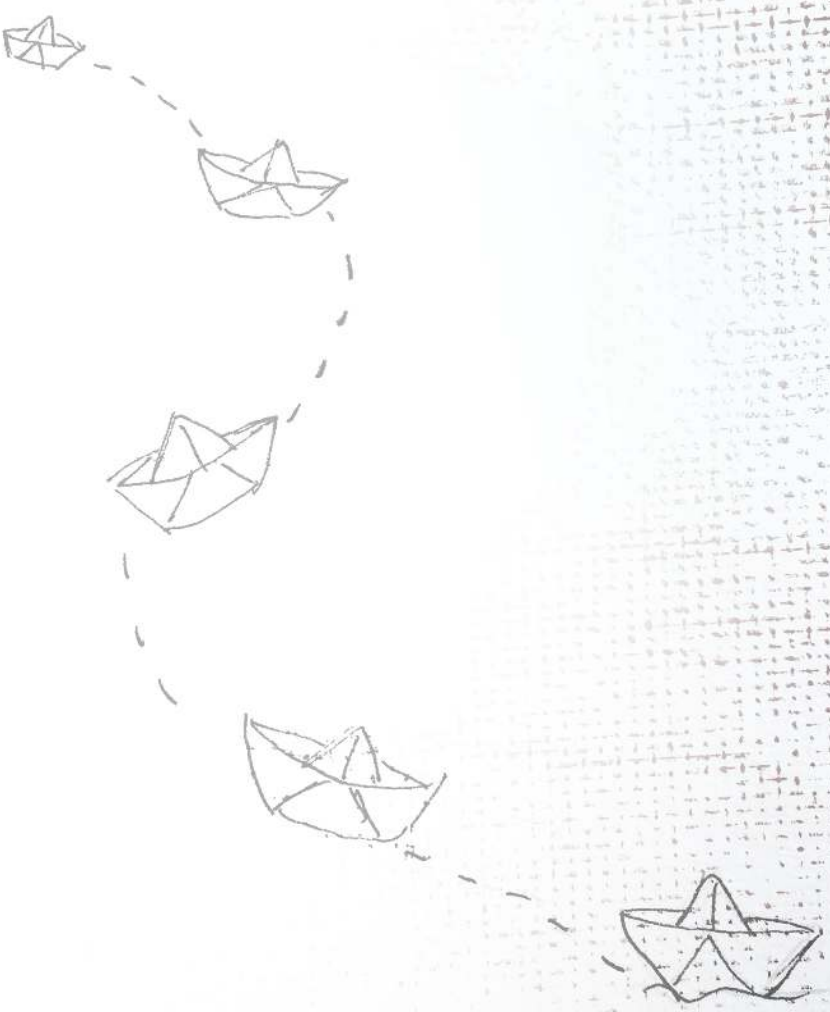

Chapter 6

General discussion

The introduction of this dissertation indicated that progress in closing the health disparity gap has been limited (Gilson et al., 2007; Mackenbach, 2012). Even in a welfare state such as the Netherlands, children continue to grow up in adverse social circumstances, which puts them at a greater risk of suffering from multimorbidity later in life. To date, efforts to address health disparities have predominantly focused on individual factors, while upstream factors such as living and working conditions are also known to affect the health of populations and local (World Health Organization, 2008). Understanding health disparities *in context* could contribute to retooling public health efforts to address persistent health inequalities and improve the outcomes of interventions (Gonzalez-Guarda, 2013; Singer, 1996).

Throughout this dissertation, we sought to holistically examine poor health outcomes across generations in Katwijk, a Dutch population that faced rapid industrial restructuring. For this analysis, we drew on syndemics theory. This framework, with roots in epidemiology as well as medical anthropology, was introduced to examine the co-occurrence and synergistic interaction of multiple diseases, while paying particular attention to mid- and upstream factors that contribute to disease clustering (Singer & Clair, 2003). The syndemic framework studies how disease clustering, interaction and dissemination are shaped by human social environments by looking at the 'prevailing structures of social relationships […] as well as socio-genetic environmental conditions' (Singer & Erickson, 2015:161)

Syndemic theory incorporates three guiding principles: the clustering of two or more epidemics, interactions among these two or more conditions and interactions between those conditions and the contextual factors that drive them. In order to gain a holistic understanding of persistent poor health in the population of Katwijk, we explored 1) indicators for syndemics and 2) conditions that drive vulnerability for clustering and adverse disease interaction over the life course and across generations. Furthermore, within the fields' ongoing search for an actionable framework to break the cycle of poor health, we examined 3) possibilities for early public health interventions.

As a whole, this dissertation explored the contribution of the syndemics framework to understanding and addressing persistent health disparities.

Since we started our studies in Katwijk in 2016, syndemics scholarship has grown immensely (Hossain et al., 2021; Mendenhall, Newfield, et al., 2022; Singer et al., 2020). For example, in the recent Covid-19 pandemic, many scholars have drawn on the syndemics framework to make sense of the amplified disease burden of the co-occurrence of Covid-19 with pre-existing health conditions (Logie et al., 2022; Mendenhall, Newfield, et al., 2022; Singer et al., 2021). The rapid uptake of syndemics theory in public health and global health scholarship gave rise to debates about the varied interpretations of the framework (Mendenhall, Newfield, et al., 2022; Mendenhall & Singer, 2019; Singer et al., 2022; Singer et al., 2020; Singer et al., 2021; Tsai, 2018) as well as discussions about the possibilities and pitfalls of integrating new theories into the framework (Sangaramoorthy & Benton, 2022). In this chapter, which discusses the main findings of the studies in relation to each other and to the literature to date, we limit ourselves to describing how a syndemics perspective contributed to discussions on persistent health disparities.

DISEASE CLUSTERING: SPECIFICITY, SEQUENCE AND EARLY SYNDEMICS

In the literature on the healthy life expectancy gap, the focus is mostly on specific diseases rather than on distinctive population-level disease clusters. The literature on multimorbidity, which investigates co-occurring diseases, on the other hand, is largely focused on the general population and predominantly based on data from the elderly (Afshar et al., 2015; Agborsangaya et al., 2012; Barnett et al., 2012; Mercer et al., 2016). In this dissertation, we looked for ways to systematically explore highly prevalent disease clusters at the population level, across age groups.

In **Chapter 2**, drawing on the syndemics framework, we analysed survey data from the adult population of Katwijk (> 19 years old). We found three disease clusters to be most prevalent, each involving combinations of psychological distress, cardiometabolic diseases and musculoskeletal pain. A syndemics approach contributes to identifying the health conditions that matter most in addressing multigenerational poor health in a specific population.

The co-occurrence of depression and pain is well established in the literature (De Heer et al., 2018; Demyttenaere et al., 2007; Lépine & Briley, 2004; Stubbs et al., 2016; Stubbs et al., 2017). The co-occurrence of pain, psychological distress, and cardiometabolic diseases led to many discussions about future research directions among our research team. For example, in our qualitative life-course study among families suffering from combinations of psychological distress, cardiometabolic diseases and musculoskeletal pain (**Chapter 3**), pain was often the first presenting symptom for both men and women. This observation is consistent with findings from a recent population-based cohort study from the UK, which identified a pattern in which chronic pain or osteoarthritis was followed by anxiety or depression (Bisquera et al., 2022). However, the same Lancet study also reported a pattern where chronic pain was preceded by obesity, diabetes and hypertension. While pain and obesity share common pathways, insights into the first presenting disease might have different implications for early intervention. Because we relied on cross-sectional data and sources, investigating disease sequence was not attainable in our study.

Furthermore, in both the quantitative and qualitative data, we found anecdotal evidence for the clustering of health conditions among adolescents. For example, in our life-course study **(Chapter 3)**, adolescents suffered from pain and/or obesity, school absence and psychological distress. This led to questions such as 'what are the possibilities for identifying early manifestations of syndemics'?, and 'how do biological, behavioural and psychosocial processes operate across the life course' (Larson et al., 2018)? Because the

quantitative youth data did not measure pain and because of the small sample in the qualitative study, we could not pursue these questions further. In sum, drawing on the syndemics framework inspired new research directions for effectively addressing persistent health disparities, highlighting that for early intervention, more (mixed-methods) life-course epidemiological research is needed.

DISEASE INTERACTION: SHOULD THIS BE ESTABLISHED IN EACH NEW POPULATION?

Psychosocial and environmental stressors can lead to a variety of physical and mental disorders, raising the question of which disease groups are a true indication of syndemics. Through assessing disease interaction, a distinguishing feature of syndemics, we explored which combinations of health conditions led to an exacerbated disease burden. In our case, this meant that we examined which combinations of frequently occurring diseases led to much lower self-rated health than would be expected based on their independent contributions to self-rated health. Using this approach, we found that psychological distress, cardiometabolic diseases and musculoskeletal pain interacted in mutually exacerbating ways, indicating a strong impairing effect when experienced together.

Our finding of disease interaction on an additive scale, argued to best mirror biological interactions (Tsai, 2018; Tsai & Venkataramani, 2016; VanderWeele & Knol, 2014), added unique empirical support for the adverse disease interaction between cardiometabolic conditions and psychological distress (Singer et al., 2022). Interaction effects on an additive scale (rather than the multiplicative scale) imply that individuals with cardiovascular diseases or pain are likely to benefit from additional screening/treatment for psychological distress. Unfortunately, we could not compare our findings with other syndemics studies of non-communicable diseases; therefore, more research is needed, and our findings need to be interpreted with caution.

Our findings prompted questions about establishing synergistic disease interactions in different populations. First, the findings provoked discussion about the generalisability of our findings. In this respect, Stall asked 'is one study that reports a positive finding enough to support syndemics theory?' (Stall et al., 2015). Relatedly, Mendenhall posed the question 'should each syndemic study start with a new slate' (Mendenhall, 2016)? We wondered if, once a disease interaction between psychological distress and cardiometabolic conditions is established, should one establish this disease interaction in each new population with similar disease clustering? Then, touching upon the theoretical underpinnings of syndemics theory: Is the disease interaction criterion built on the assumption that on the biological level, psychological distress and cardiometabolic conditions are linked differently in different contexts?

The implications of being able to build on existing evidence of disease interaction would be enormous – for example, we could use data from general practitioners (GPs), data that is less prone to the limitations of relying on self-reported cross-sectional survey data. In our study setting, it was common to express ill health in local vernacular rather than biomedical language. Therefore, the local validity of the measures for health conditions in the survey might have been limited (Weaver & Kaiser, 2020). At the time of assessing disease interaction, we did not have access to GP data containing a proxy for burden of disease—key to establishing disease interaction—which meant that we could not use these data for our syndemics studies. However, now that data on national, regional and local care use have become available, there might be more possibilities of working with GP data. Additional mixed-methods research in populations with similar disease clusters will prove critical for moving forward in understanding the importance of establishing synergistic disease interactions in each population separately.

PATHWAYS TO SYNDEMICS: HISTORICAL AND CONTEMPORARY CONTEXTUAL FACTORS

Syndemic theory is built on the idea that downstream as well as mid- and upstream factors drive disease concentration and disease interaction. Downstream factors refer to factors at the individual or family level, such as behavioural risk factors or parental ill-health. Midstream factors, such as health behavioural norms and health care organisations, are intermediate factors that affect neighbourhoods and local communities. Upstream factors refer to broader political, economic and social conditions that drive poor health outcomes. Therefore, the second research question in this dissertation concerned the (contextual) conditions that underpin vulnerability for syndemic ill health in the population of Katwijk.

To assess the processes that drive diseases to cluster in Katwijk, we used an explanatory sequential approach, which consisted of a quantitative and qualitative arm. In quantitative arm, the cross-sectional epidemiolocal study (discussed in **Chapter 2**), we examined explanatory factors for the presence of the three disease clusters. We found that clustering of psychological distress, cardiometabolic diseases and musculoskeletal pain was not only associated with age, but that clustering of these diseases was also more likely to occur among people, particularly women, whose health was impacted by not being engaged in paid work, financial stress, loneliness, limited physical activity and a BMI > 25.

In our case study in **Chapter 3**, the qualitative arm of the study, we turned our lens to shared experiences and exposures that might predispose the population of Katwijk to clustering and adverse interaction of psychological distress, cardiometabolic diseases and musculoskeletal pain. First, by adding oral histories as a syndemics research tool, we examined contextual factors that have affected family life, health and wellbeing since the 1940s. From these interviews with elderly key informants, we learned that historically,

many fishing families were exposed to seasonal food insecurity, unsafety, early losses of family members, parental absence, poor living and working circumstances, limited access to health care and a steep decline of the fishing industry due to fishing bans, quotas and outsourcing. Next, from the life-course interviews with families who suffered from the co-occurrence of psychological distress, cardiometabolic conditions and musculoskeletal pain across generations, we learned that these families commonly shared a life history of exposure to adverse social conditions and adverse childhood experiences from their early years onwards. Our findings are consistent with syndemics and life-course studies showing that (early) adverse social conditions and chronic distress play important roles in shaping poor health outcomes in adults and that social disadvantages cluster in families across generations (Melchior et al., 2007; Mendenhall, 2016; Mendenhall et al., 2017; Poulton et al., 2002; Wadsworth, 1997).

Taken together, **Chapters 2** and **3** demonstrated that both current and historical trends are key in understanding drivers of poor health on a population level. In future research, our methodology could be replicated for studying persistent poor health in populations with comparable histories of social suffering/hardship and similar social characteristics, for example, former mining and farming communities.

ASSESSING DISEASE-CONTEXT INTERACTION: METHODOLOGICAL CONSIDERATIONS

The qualitative findings contextualised the results from the quantitative study, confirming the importance of grounding quantitative epidemiological work in a detailed ethnographic study (Mendenhall, Kim, et al., 2022). Through the triangulation of qualitative data (oral histories, interviews and participative observation), we gained insights into local phenomena that may

affect disease interactions, disease experiences and possibilities for interventions in this particular context.

The value of this triangulation was evident when assessing the impact of factors such as unemployment on individuals' and families' wellbeing. If the study only relied on the variables 'financial distress' and 'not involved in paid work', as reported in the quantitative study, we would have missed key insights. One such example was that adult men who suffered from psychological distress, cardiometabolic conditions and musculoskeletal pain often had a history of working accidents and working under poor conditions. These men, who worked in blue-collar occupations that do not require a college degree, attributed their co-occurring health conditions to work accidents or poor working conditions, which negatively affected their health, for example, causing pain. In an environment that highly values hard work, perseverance and 'handling things by yourself', being unemployed or living off social benefits resulted in a great deal of psychological distress. Becoming unemployed thus emerged as a major, adverse life event in this population.

In Katwijk, the insights described above can be translated into existing interventions by, for example, screening for psychological distress when men are on sick leave due to cardiometabolic conditions or pain. Furthermore, these observations confirm that to prevent or mitigate poorer health in specific populations, solutions should not solely focus on the individual but also on the social and physical environments that might shape ill health. Our findings indicated that despite national policies for employment, occupational hazards and limited rights of blue-collar workers can be important factors in the complex pathway to syndemic ill health. Therefore, our findings supports the need for a syndemic lens to examine poor health outcomes among other populations that are vulnerable to occupational hazards, exploitation and job insecurity, such as elderly care workers (Duijs et al., 2021) or (migrant) farmer workers (Willen et al., 2017). In extension, as measures meant to mitigate occupational risks seemed to fail, research among the abovementioned populations should also include an analysis of the policy domain.

Our assessment of the disease-context interaction criterion also revealed a number of methodological challenges that need to be taken into consideration in future research. First, because we worked with data from surveys meant to monitor health across Dutch municipalities, we struggled when working with measurements that were not developed or adapted for syndemics research, a well-documented challenge (Weaver & Kaiser, 2020). For example, the surveys did not contain terminology that our study population used to refer to their health conditions, which raised questions about the local validity of the measures used. As described in **Chapter 3**, our study population commonly used local vernacular rather than biomedical language to refer to their health conditions. When queried about health conditions using biomedical terms, respondents would often answer negatively: 'no, I don't have this health condition'. However, when we used vernacular terms for those same conditions, such as 'having it in your back' or 'having to lay flat', they answered affirmatively.

Second, in examining disease-context interaction, we had to work with the contextual variables measured in the existing dataset, and we could not test other potentially important contextual factors. For example, we could not test associations with locally relevant variables such as working history, working conditions, occupation or working hours.

Third, in a community with a history of a strongly gendered division of social roles for labour and housework, one might hypothesise that there are gender-specific differences in pathways to disease clustering and adverse disease. However, because of the limited number of contextual variables available, we were not able to test this idea. In addition, as syndemics researchers—concerned with the complex interaction of environments and disease—we faced the well-described struggle of relying on datasets that mainly measure individual-level variables, leaving us unable to consider variables on other system levels (Penkler, 2022). To circumvent the abovementioned struggles, future studies can build on a recently published roadmap to adapt existing

tools to include locally relevant measures of a potential syndemic (Weaver & Kaiser, 2020).

Fourth, while our systematic study of life-course processes that are likely to create the conditions for syndemic ill health is a strength, weaving in this approach also posed a challenge. In our study, we could not validate the patterns from the qualitative data in the (much larger) sample of the pre-existing epidemiological study, a strength in other life-course-based syndemics studies that measured adverse life events in the quantitative arm of their studies (Herrick et al., 2013; Mendenhall, Kim, et al., 2022; Stall et al., 2008).

Last, while the use of a sequential explanatory design allowed us to use findings from the qualitative study in the subsequent interpretation and clarification of findings from the quantitative study, we also encountered pitfalls in working with this mixed-methods approach. In relation to generalisability, we struggled with the question 'how well does the sample for the qualitative arm represent the population in the quantitative arm' (Wilkinson & Staley, 2019; Zhou & Wu, 2022)? In our case, Katwijk has grown immensely in the past few decades, partly due to merging with surrounding municipalities. Therefore, the sample for the epidemiological study also consisted of adults from neighbouring communities, who might not share the same history or social characteristics as the former fishing families in our qualitative study, for whom we purposively sampled in a low-income neighbourhood of Katwijk. Taking into consideration that we based our analysis of **Chapter 3** on a small sample of families, it is possible there is more diversity in histories and disease experiences behind the clustering and intergenerational nature of psychological distress, cardiometabolic conditions and pain in Katwijk than the ones documented in this thesis.

SYNDEMIC VULNERABILITY ACROSS GENERATIONS: FUTURE DIRECTIONS

The third research theme in this thesis concerns the contextual conditions that drive vulnerability for disease clustering and adverse disease interaction *across generations*, which we examined through ethnographic work comprising oral histories, life-course interviews and participative observation. In **Chapter 3**, we traced salient themes and processes leading to or from persistent poor health outcomes in the life histories of seven families. To explore the intergenerational nature of syndemics, we introduced the concept of syndemic vulnerability, which we defined as 'a predisposition to the development of clustering and interacting diseases or health conditions that result from shared exposure to a set of adverse social conditions'.

This exploratory case study indicated that syndemic vulnerability is potentially intergenerational and that syndemic processes can be countered. We found four interacting themes on the pathway to poor health outcomes across generations: poor social conditions, adverse life events, learned health behaviours and sociocultural normative processes—well-documented hurdles on the path to persistent population-wide poor health outcomes (Mackenbach, 2012; Mackenbach et al., 2008). Conversely, educational attainment, continued social support and aspirational capabilities emerged as themes on the pathway to better health outcomes. Because our case study was the first to examine the intergenerational nature of syndemics, we have no comparison for the methods or the outcomes of our study; we therefore emphasise the exploratory nature of this study. With syndemics being a relatively novel framework, our findings provide directions for future research and interventions, which are described below.

SOCIALISATION: EXAMINING THE TRANSMISSION OF LIFE LESSONS AND HABITS

The findings from **Chapter 3** confirm that sociocultural processes and learned health behaviours need to be taken into consideration in future studies on the complex pathway to persistent health disparities. As our study participants frequently referred to life lessons and habits that had been passed on from one generation to the other, we indicate that socialisation as a useful focus in syndemics studies in populations with a history of social suffering.

Socialisation refers to the process, beginning in childhood, by which individuals learn and acquire the values, social norms and customs of a group or society. As described in **Chapter 3**, our interlocutors frequently spoke about life lessons that influenced how they dealt with suffering or first manifestations of ill health. For example, delayed or no help seeking for psychological distress or pain was influenced by lessons to persevere, to always be strong and to handle things by yourself, as well as the lesson to distrust health institutions. The abovementioned life lessons, passed on from one generation to the other, are likely a heritage from fishing life, which was often harsh. In those days, the ability to work hard and push through adversity worked as a safeguard, families feared the power of health institutions, and health care was too expensive for most families to access (**Chapters 3** and **5**). As untreated illness is associated with worse health outcomes (Wang et al., 2007; Wang et al., 2005), one might speculate that the life lessons to persevere and distrust health care might also be an explanatory factor for the persistence of poor health outcomes, despite the widespread availability of health care in the current welfare state.

Next, particularly in examining complex pathways to persistent non-communicable disease syndemics, our findings indicate that future studies could draw on scholarship on the relationship between people's (historical) social

conditions, social structures, feeding patterns and food practices (Delormier et al., 2009; Hoeeg, Christensen, Lundby-Christensen, et al., 2020; Visser, 2016; Visser & Haisma). As described in Chapters 3 and 5, we observed that health behaviours known to increase the risk of developing cardiometabolic conditions, pain and psychological distress—early uptake of smoking and drinking, frequently eating large volumes of foods high in fat and/sugar—were passed down from one generation to the other, often as part of rituals during family gatherings. During these gatherings with the wider family, the ability to eat a lot ('load up') was highly valued, likely a legacy from a time in which fishing life was physically strenuous and food often scarce. These observations of local food practices confirm that sociohistorical circumstances go a long way in explaining collective food and eating patterns (Delormier et al., 2009; Hoeeg, Christensen, Lundby-Christensen, et al., 2020) and add to recent literature suggesting a syndemic interaction between food insecurity and diet-related chronic diseases (Himmelgreen et al., 2022).

Taken together, our findings imply that socialisation might be a mechanism that contributes to the persistence of health disparities, thereby confirming the need to integrate theory that incorporates sociocultural norms, habits, preferences and practices in particular groups in future research (Visser, 2016; Wilderink et al., 2022). Future studies of non-communicable syndemics could weave in Bourdieu's theories of capital and habitus. Habitus, which includes acquired dispositions of behaviour and taste, is one of the sociological concepts used to study how food practices are shaped by cultural context. By integrating insights from sociological inquiry, researchers could more closely analyse people's health-related behaviours in light of intergenerational relations and prevailing sociocultural norms (Delormier et al., 2009; Huppatz, 2015; Yates-Doerr, 2020) through which vulnerability to metabolic conditions could emerge and re-emerge.

For interventions, our observations on the intergenerational transmission of local food rituals and food practices confirm the need to 'transcend the known in public health practice' (Frohlich & Potvin, 2008). We recommend

concepts that direct the conversation away from individual food choices (Hoeeg, Christensen, Lundby-Christensen, et al., 2020; Visser & Haisma; Wilderink et al., 2022; Yates-Doerr, 2020). For example, Frohlich and colleagues' "collective lifestyles" (Frohlich & Potvin, 1999) might be a more productive lens than (individual) lifestyle, as this concept encompasses shared ways of relating and acting in a given environment. Research on collective lifestyles can contribute to the understanding of local barriers and facilitators for changing food intake, knowledge needed to tailor interventions to fit into the everyday life of a specific rather than the general population. Insights into prevailing life lessons and collective lifestyles can also be used in co-designing community-based health promotion campaigns. Below, in Box 6.1 we provide an example of an arts-based health promotion campaign in Katwijk that aimed to raise awareness of habits and life lessons contributing to wellbeing and good health.

Together with families from Katwijk we co-designed the arts-based health promotion campaign 'Pass it On' (Geef het Door). Learning that in this setting it was important to focus on sources of community resilience, we focused our efforts on family habits and life lessons that contribute to wellbeing and a good health. A photographer and community artist created family portraits depicting habits or life lessons being passed on across generations. Each month, one family portrait was exhibited throughout the village, as large posters at bus stops and in places that families frequently visited, such as community centers and schools. In addition, the local newspaper printed one of the portraits every month, accompanied by an interview in which the family explained what they passed on from one generation to another. For another activity of the 'Pass it On' campaign, school children, supported by a community artist, wrote poems on habits and life lessons in their family. A selection of these poems were also printed in the local newspaper and made available as free postcards, which were also distributed in places that families frequently visited. Two family portraits and six postcards from poems by school children from the Arts Based Health Promotion Campaign 'Pass it On' are shown in this dissertation – these are exhibited in the appendix of this dissertation.

Box 6.1. Arts-based health promotion campaign 'Pass It On'

RESILIENCE: INVESTIGATING MECHANISMS THAT CAN TURN THE TIDE

Syndemics research has roots in critical medical anthropology, a branch of anthropology that seeks to understand and address the ways in which conditions of social inequality and injustice promote and enhance poor health outcomes (Singer et al., 2017). Within this scholarly tradition, a large body of literature describes how deprived and marginalised populations disproportionally suffer from poor health.

As with any other theoretical concept, we noticed that focusing on one aspect came with the risk of side-lining other aspects. In our case, we found that working within syndemics scholarship implicitly prompted an analytical focus on suffering, while similarly side-lining how populations survive. The abovementioned implicit focus on suffering occasionally led to struggles in analysis, as the stories of families in our studies also testified to a population that survived, despite duress. Focusing on the community's history of social disadvantage came with the risk of leaving other important aspects of the population untold, such as the warmth, humour, strong social support and resilience that we frequently observed during fieldwork.

In this dissertation, a comparative case study design **(Chapter 3)** contributed to exploring the life histories of families in which the pattern of poor health was discontinued. Our findings indicate that educational attainment, social support and aspirational capabilities may lead to decreasing syndemic vulnerability. While the abovementioned findings reflected those of a handful of other syndemics studies focusing on resilience, there is still a great deal to learn about the factors that can turn the tide and improve the wellbeing and health of vulnerable individuals and communities.

Taken together, incorporating resiliencies is not only important for how populations are represented in studies, but even more so because recent work underscores the importance of acknowledging communities' abilities to use available resources to respond to, withstand and recover from adverse situations (Ellis, 2019; Ellis & Dietz, 2017; Herrick, 2011; Panter-Brick, 2014; Reed & Miller, 2016; Ungar, 2012). Therefore, it would be interesting if future research aimed at breaking the cycle of poor health would synthesise the findings on resilience in syndemics studies.

More research is also needed to understand how mechanisms of resilience, such as education and aspirational capability, can be effectively strengthened in populations with a history of social deprivation. Future research could draw on the work of anthropologist Arjun Appadurai (Appadurai, 2004),

who emphasised the link between poverty and people's navigational capacity. Building on Amartya Sen's work (Sen, 1999), he cautions that capacity to aspire should not be treated as an individual trait, nor a trait that is evenly distributed in society. Rather, he argued that: "*[a]spirations are never simply individual (as the language of wants and choices includes us to think).They are always formed in interaction and the thick of social life (Appadurai, 2004:p.68). The relatively rich and powerful invariably have a more fully developed capacity to aspire, the better of you are (in terms of power, dignity and material resources), the more likely you are to […] link material goods and immediate opportunities to more general and generic possibilities and options' (Appadurai, 2004:68).*

Related to our interest in opportunities to break the cycle of persistent poor health outcomes, Appadurai's work served as a reminder that investing only in educational attainment, a commonly proposed measure to combat health disparities, will not suffice. In Katwijk, a setting where earning money was historically prioritised over earning degrees, resilience mechanisms such as aspiration and education would need to be strengthened by a mix of upstream, mid and downstream measures. In our study sample, young adults were often on their way to becoming first-generation learners—young adults who often proudly spoke of their educational dreams. For this group of first-generation learners, measures meant to make vocational and higher education more accessible did not always realise their potential. Families' fear of debt formed a barrier to applying for financial aid for higher education, or financial aid to travel to educational facilities outside the village. Prevailing age and gender expectations represented another hurdle on the way to pursuing a degree.

The abovementioned hurdles might become insurmountable obstacles for youth struggling to concentrate at school, or who are frequently absent from school due to psychological distress and/or pain or due to parental poor health—in our fieldwork, these groups often ended their education prematurely. Therefore, in order to strengthen resilience mechanisms, activities such as early mentoring by role models in schools or providing early and regular information on financial aid—common downstream

measures to support first-generation learners—need to be supplemented with policy incentives that support activities known to broaden children's horizons (reading early, school trips, spending time with families from other backgrounds), timely intersectoral collaboration for school absenteeism or children acting out at school and 'second chances' to engage in vocational or higher education, such as financial aid for continuing adult education.

TRANSLATING INSIGHTS INTO EARLY INTERVENTIONS: LESSONS LEARNED

Although the conceptual framework underlying syndemic approaches is gaining traction in studies of health disparities, applied syndemic research in public health is still in its infancy (Singer et al., 2012, 2020; Singer et al., 2021). Therefore, following the examination of indicators for syndemics, we were interested in the possibilities of translating insights into early health care interventions. In light of our aim to understand and address persistent poor health outcomes in specific populations, this meant adapting existing interventions with knowledge gained from our studies on the intergenerational nature of syndemics (**Chapter 3**). Because our findings discussed in **Chapter 3** indicated that adverse social conditions and cumulative adverse life events are important junctions on the complex pathway that leads to persistent patterns of poor health outcomes in Katwijk, we adopted a life-course approach to early intervention (64). This meant that we tailored existing health promotion interventions for children in Katwijk to start with a broad assessment of care needs and to involve both parents and children in health promotion activities.

As described in **Chapter 4**, we integrated an intergenerational approach into the GIZ, a frequently used shared tool for assessing children's care needs in the Netherlands. The family-engagement tool was piloted in health promotion programmes that traditionally directed their activities at either parents or children separately. Our mixed-methods evaluation

study showed that the family-engagement approach elicited positive effects on some families' health and wellbeing. Overall, after a consultation using the family-engagement tool, the children's physical activity improved and mothers felt more energetic. Other outcomes did not change. In addition, while goal-setting and action-planning by professionals was effective, the family-engagement tool often was used without setting specific or family goals, particularly in consultations related to being overweight.

Throughout our applied work, we observed that adopting a life-course approach to health promotion was challenging. The complexities associated with translating our findings into early interventions have not been described in the literature of non-communicable disease syndemics, but are well described in scholarship regarding (multicomponent) childhood weight management programmes, particularly when implemented in community settings (Kelleher et al., 2017; Schalkwijk et al., 2016; Steele et al., 2011). For example, while the rationale of a broad assessment of the care needs of families and family-focused health promotion was fully embraced by local professionals, meeting the various needs of both parents and children proved to be difficult. The triangulation of diary and interview data showed that health behavioural change in families was often hindered by more urgent care needs, psychosocial problems in the family, competing health beliefs, low levels of family support and low involvement of fathers (due to long working hours). For everyday practice, this meant that professionals needed to be able to take factors from different life domains into account in setting goals and plans, which is a significant challenge. In addition, we learned that professionals trained to address children's mental health were not necessarily trained to assess or discuss health behaviours with adults (and the other way around).

Further, also in line with earlier studies that focused on weight-related health promotion (Gerards et al., 2012), we observed that getting families to participate, and continue participating, in health promotion was often immensely difficult. In fact, over time, we learned that once the issue of

a child's weight was on the table, interactions between professionals and families quickly became tense. Therefore, we sought to gain a contextualised understanding of weight as a sensitive issue, which resulted in the study reported in **Chapter 5.**

Building on the notion of subversion, the ethnographic study reported in **Chapter 5** examined patterns in weight-related interactions and examined whom and what is protested against when health promotion is contested. Joking, anger, mocking and polite nodding emerged as commonplace expressions of subversion. Against the sociohistorical background of Katwijk, the study showed that subversive responses in weight-related interactions are likely underpinned by a protest against institutional indifference towards adverse social circumstances and a protest against the power of health institutions to interfere with family life. At a fundamental level, a worldview represented in health promotion interventions—individualism and self-determination—clashed with the worldview of a society that holds social cohesion, continuity and group conformity at its core.

ROADMAP FOR FUTURE RESEARCH AND INTERVENTIONS

Taken together, the studies reported in **Chapters 4 and 5** provided some important lessons for future early interventions and future research into persistent health disparities. The observations of social problems hindering families' capabilities to work on health behavioural change, as well as the observation of widespread protests against weight-related health promotions, served as a reminder of the lifestyle drift trap for applied research targeting health inequalities. Lifestyle drift refers to the tendency of institutions to focus on individual lifestyle factors rather than taking action to address fundamental, upstream causes of poor health (Popay et al., 2010). The studies in this dissertation confirm that in order to effectively address persistent poor health outcomes, clinicians, public health officials, policymakers,

civil society actors, and other key stakeholders both within and beyond the health and social domain need to synchronise their efforts (Willen et al., 2017). In addition, our findings highlight that interventions and local policies need to be based on a thorough understanding of local pathways to poor health outcomes, and tailored or developed in close collaboration with the recipient community.

The abovementioned studies, however, also showed that protective mechanisms, triggered by institutional distrust and clashes of worldviews can severely challenge collaborative approaches. To circumvent a sense of fatalism, researchers, policymakers and professionals are recommended to seek to understand the roots of and motivations for communities' protests rather than simply labelling them as non-compliance, resistance or avoidance. We also suggest that funding and research proposals for applied projects must budget extended time for community building processes to provide adequate time for the activities necessary for developing this in-depth understanding of a community.

Our observations from early interventions highlighted that multicomponent, integrated care interventions—often proposed as one of the solutions for health disparities—require complex skills. In the tailored interventions described above, professionals were required to simultaneously deal with the contents of two kinds of plates: what is served on peoples' literal plates (food), and what people had on their figurative plate (social suffering). We learned that being able to take these multiple plates into consideration required skills from multiple domains, and that professionals were often not trained in this wide variety of skills. For future interventions, this means that relying solely on professionals' previous training cannot suffice. Rather, our findings imply that the knowledge, attitudes and skills required to successfully integrate a life-course approach to health promotion need to be integrated into the curricula for both professionals working in health promotion for children, such as dieticians, sports coaches and school nurses, and those who work with adults.

Lastly, our findings confirmed that to break the cycle of disadvantage, the influence of the whole family environment needs to be taken into consideration. Specifically, our findings serve as a reminder that grandparents and fathers are important gatekeepers in the process of changing health behaviour in families (Hoeeg, Christensen, & Grabowski, 2020; Hoeeg, Christensen, Lundby-Christensen, et al., 2020). In the intervention we carried out, professionals primarily worked with mothers, who are often implicitly regarded as change agents. Our findings in **Chapter 4**, however, indicated that paternal support played also played an important role in children's behavioural change.

In hindsight, in the participative action-based research study that ultimately led to tailoring existing health promotion programmes, grandparents and fathers were not sufficiently represented, a limitation in our work **(Chapter 4).** Our findings, therefore, support recommendations that in order to involve fathers in tailoring or designing (culturally sensitive) interventions, recruitment strategies need to be adapted, for example, by considering the working hours of men. In addition, seeing that health promotion measures instigated tension between families and professionals, and within families, our findings confirm that in order to successfully circumvent immediate resistance, future family-focused early interventions could benefit from weaving in family systems theories.

CONCLUSION

This dissertation provides further insights into the contributions a syndemics framework can make toward understanding and addressing persistent health disparities based on the case of poor health outcomes across generations in Katwijk, a former fishing village in the Netherlands. We conclude that this framework adds to understandings of the phenomenon of poorer health expectancy and, when integrated with life-course theory, provides tools to identify past and present factors on the complex pathways to intergenera-

tional poor health. This in turn indicates potential directions for improving early interventions. Integrating concepts that incorporate socialisation and mechanisms for resilience would enable further actionability of the syndemics framework.

To effectively break the cycle of poor health outcomes, families, clinicians, public health officials, policymakers, civil society actors and other key stakeholders both within and beyond the health domain need to synchronise their efforts. Within such a multisystem approach, stakeholders need to develop an in-depth understanding of communities' history and past legacies with institutions, and professionals working in the medical and social domains need to be equipped with the necessary knowledge, attitudes and skills to successfully undertake complex community-based and family-focused interventions.