

Development plans

Division for Mental and Physical Health



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Norwegian Institute of Public Health

Mental Health and Prevention among Children and Youth



Norwegian Institute of Public Health

The goal of the development plan is to prioritize mental health and prevention in children and youth as a focus area in the strategic work of the Norwegian Institute of Public Health. The objective is to specify research and knowledge gaps and outline how the institute will take a leadership role in this effort, thereby contributing to improving conditions for development, learning, and quality of life for children and youth in Norway and globally.

The development plan outlines the Norwegian Institute of Public Health's activities and initiatives to increase knowledge and strengthen mental health and quality of life among children and youth in Norway. Increased knowledge involves enhancing the knowledge base regarding the prevalence and development of mental health problems and disorders in the population, both on an individual and population-wide scale, while considering risk and protective factors over time. Strengthening mental health primarily involves identifying preventable risk factors and implementing measures to reduce them, as well as measures to strengthen protective factors and quality of life. Evaluating interventions and assessing their effectiveness are crucial for gaining knowledge about how to prevent mental health issues and disorders and enhance quality of life. The institute also aims at increasing the knowledge base regarding children with complex needs, children from vulnerable families and social inequality.

The development plan places a significant focus on new initiatives targeting children and youth. This aligns with the fact that the Norwegian Institute of Public Health has been given a national coordination responsibility for mental health knowledge, with a central emphasis on prevention and public health. The institute is also collaborating with the Norwegian Directorate for Children, Youth and Family Affairs (BufDir) on several projects concerning family communication and vulnerable families and contributes to the Directorate Collaboration for Vulnerable Children and Youth [Etatssamarbeidet].

Introduction

Everyone possesses mental health, and good mental health is essential for coping with life's challenges and demands. Mental health is affected by genetics, by biochemical environmental factors encountered during fetal development and childhood through nutrition, water, air, and the products we are exposed to. Psychosocial environmental factors related to family, friends, school, and the workplace are also essential factors. The environmental influences during early life play a significant role in shaping an individual's developmental trajectory. The interplay between genetic predispositions and environmental factors significantly determines how individuals handle life challenges. While genetic traits remain relatively stable across generations, health-affecting environmental factors can exhibit substantial variations, both in individuals and across different population groups.

In recent years, there has been a growing focus on the mental health and overall quality of life of children and young people. Despite improved living standards and the fact that most young individuals report high levels of coping and well-being, there has been a significant increase in self-reported mental health problems, as well as diagnosed mental disorders among young individuals. The extent of this increase and its underlying causes remain subject to uncertainty. Given that mental health challenges emerging early in life are associated with elevated risk of mental health problems and impaired functioning later in life, this trend is a source of concern. The increase has also implications for the assessment of treatment requirements and preventive interventions. Identifying and modifying environmental factors that negatively affect health are at the core of preventative efforts. Additionally, it is important to strengthen protective factors and those aspects of life that enhance overall well-being.

In this context, 'children and young people' encompass individuals within the age range of 0-24 years. This same definition is adopted in the Government's Action Plan for Enhancing the Mental Health of Children and Adolescents (2019-2024) and for the collaborative initiatives among welfare directorates. Children and young people aged 0-24 also comprises the target group for expanded interventions within the child welfare services.

Mental Health and Prevention in Children and Youth – A Key Focus Area

A thriving population that balances family and work life while actively contributing to society is of importance to Norway. In order to realize this vision, the government has, through a series of official documents, underscored the significance of strengthening the mental well-being of children and young people. This commitment is notably articulated in the 2019 Public Health Report titled 'Enhancing Quality of Life in a Secure Environment'¹, in which they state, "The government prioritizes early intervention among children and youth to ensure a nurturing and secure upbringing." Additionally, in the 2019 Action Plan for the Mental Health of Children and Adolescents: "The government has determined that mental health should be an equally important component of national and local public health efforts as physical health. For children and young people, this means that knowledge about mental health should be as significant as knowledge about physical health in all the contexts where they experience their lives: within the family, daycare, school, recreational spaces, and local communities" (Prop 121 S, p. 11)².

In Chapter 6 of the action plan, the goal of enhancing knowledge to bolster the mental health and quality of life of children and young people is emphasized. These objectives align with the United Nations sustainable development goals aimed at promoting good health and quality of life for all.

1 <https://www.regjeringen.no/no/aktuelt/ny-folkehelsemelding-gode-liv-i-eit-trygt-samfunn/id2640543/>

2 <https://www.regjeringen.no/no/dokumenter/prop.-121-s-20182019/id2652917/>

In recent years there has also been an increased focus on children with complex needs and children in vulnerable families. Several government initiatives (e.g., [Children and Youth21-Strategy](#)), The Child Welfare Reform of 2022³, and the new escalation plan for mental health (2023-2033)⁴ have emphasized the need to improve the service provision for these children. There is a particular need for better coordination and collaboration among relevant service providers. The Norwegian Institute of Public Health contributes to the Directorate Collaboration for Vulnerable Children and Youth [Etatssamarbeidet]. This collaboration involves 13 directorates responsible for various sectors, including child/family, health, and education, as well as several institutions, among which the Norwegian Institute of Public Health holds a prominent position. The overall aim of this collaboration is to improve the lives of children with complex needs.

Knowledge gaps in the field

Mental Health Problems and Disorders Among Children and Youth

In addition to the observed increase in self-reported mental health problems among adolescents in Norway over the past decade (a trend also noted in several other Western countries), there has been a documented rise in diagnosed mental disorders among young individuals aged 13-19. This increase is primarily driven by conditions such as anxiety, depression, eating disorders, and adjustment disorders (stress reactions), particularly among girls. While the causes of this surge remain unknown, various hypotheses have been put forward to explain it. The most common hypotheses include the introduction of social media on mobile phones, heightened academic pressure and stress in schools and youth environments, and increased societal openness about mental health issues. Other potential factors include changes in family and relationship patterns, an increased sense of segregation and social exclusion, a more individualized society, and heightened feelings of loneliness. Changes in the population may also play a role, with an increasing proportion of children and young people having immigrant or refugee backgrounds. Their unique challenges in the broader context are not well understood. Moreover, there are more children surviving premature birth, congenital conditions, and serious illnesses today than in the past, and we lack comprehensive knowledge regarding their experiences as adolescents and adults.

To reverse this trend and align with the national objectives described above, there is a pressing need for more knowledge in this field. Several assessments and reports have identified areas within child and youth mental health and prevention where research is lacking, both in primary studies and synthesized knowledge. A report from the Nordic Institute for Studies in Innovation, Research, and Education (NIFU) on mental health research highlights several areas of research need, including the mental health of children and youth in general,

3 <https://www.regjeringen.no/no/dokumenter/prop.-73-l-20162017/id2546056/>.

4 <https://www.regjeringen.no/no/dokumenter/meld.-st.-23-20222023/id2983623/>

substance abuse and mental disorders among the young, the effectiveness of interventions, the quality of public health efforts, and a more comprehensive understanding of mental health and quality of life⁵, to name a few.

In the Government's Children and Youth21-Strategy, vulnerable children and youth are a primary focus. The definition of vulnerable children is drawn from a collaboration initiative for better coordination for these children [The "0-24 cooperation"]. This includes youth with complex needs who do not complete high school, children in low-income families with immigrant parents or those receiving social assistance, children with parents suffering from mental health issues or substance abuse problems, children receiving help and care services from child welfare services, and children with mental health diagnoses, disabilities, or chronic illnesses. Some of these groups are growing in numbers, such as children in low-income families. The Children and Youth 2021 Strategy underscores the scarcity of studies on the well-being of vulnerable children and youth, even though significant societal economic gains are expected from strengthening efforts for these groups. The focus on vulnerable children with complex needs is carried forward through the Directorate Collaboration for Vulnerable Children and Youth [Etatssamarbeidet]. The Norwegian Institute for Public Health participates and contributes to this collaboration together with 12 other directorates.

Mental health and prevention among children and youth

The Norwegian Institute of Public Health's 2018 report titled "Prevention Among Children and Youth" (FHI, 2018), highlights that many of the preventive measures currently in use for children and young people lack documented effect. The report states that the documentation is either insufficient or that the measures do not show discernible effect. The effectiveness of various interventions within the domains of mental health, weight-related issues, and bullying remains unknown. Furthermore, numerous preventive measures have not been evaluated or included in consolidated knowledge. Therefore, we lack a comprehensive overview of the preventive measures employed for youth in Norway. Our understanding of how significant societal changes impact the prevalence of mental health problems and disorders, such as the introduction of social media, alterations in the education sector, changes in family structures, increased instances of online violence and abuse, growing socio-economic disparities, migration, and the rising proportion of the population with non-Western backgrounds, is limited. Furthermore, there is no consensus on suitable indicators for assessing the quality of life among children and young people. Consequently, there is an urgent need to develop such metrics to effectively evaluate whether various interventions genuinely contribute to enhanced quality of life. It is worth noting that we also lack sufficient knowledge about the types of interventions targeted at children and youth that can help reduce socio-economic health disparities. This development plan addresses these challenges.

5 NIFU 2019: Mapping of research on psychologically health in Norway: <http://hdl.handle.net/11250/2601685>

The Norwegian Institute of Public Health – well positioned for investment in child and youth mental health and prevention.

In the Norwegian Institute of Public Health's 2019-2024 strategy, measures for improved public health is one of ten focal areas, and extends its focus to encompass mental health and the living conditions of children and youth. Within the Institute, the mandate involves assessing which measures and programs that yield better health outcomes, represent sound investments for the community, and contribute to a more equitable distribution of health and living standards in society. The development plan serves as a specific elaboration of this strategic focus.

The development plan also contributes to concretizing the initiative "Across Sectors" within the strategy, highlighting opportunities for promoting health and quality of life through cross-sectoral collaboration. It is essential to recognize that health primarily originates outside the healthcare sector. As such, the preventive efforts concerning mental health of children and young people must take place within sectors other than the health sector. The Norwegian Institute of Public Health already maintains close collaborations with numerous organizations and authorities within the welfare and education sectors, which are central to the endeavors outlined in this development plan.

The Institute of Public Health is well equipped to enhance knowledge regarding child and youth mental health and prevention. We have access to robust data sources and employ professionals with substantial thematic and methodological expertise. The national coordination responsibility for knowledge pertaining to child and youth mental health, given by the Ministry of Health and Care Services (as detailed below), positions us as a national leader in this area.

Our institute has also made a sustained commitment to preventive public health work more broadly. We have established an evaluation center for public health measures that actively collaborates with various sectors and municipalities. Additionally, the Norwegian Institute of Public Health is represented in the national steering group for Public Health Work Programs and plays an active role in the advisory collaborative body (Public Health Forum) for Vestland County.

The program represents a national 10-year initiative (2017-2027) aimed at strengthening efforts related to substance abuse prevention and the mental health of children and youth at the municipal level. Central to the program's approach is the development of locally anchored initiatives, funded through regional channels. The program's ambition is that these initiatives should ideally undergo evaluation, preferably in collaboration with research and development communities. As of today, the field of mental and physical health is engaged in a selected number of activities within the program. The Norwegian Institute of Public Health is also engaged in a

collaborative effort with the municipality of Bergen, exploring the relationship between the use of social media and the mental health of adolescents. In the years to come, the program will present opportunities for the Norwegian Institute of Public Health to participate in specific project collaborations with municipalities, focusing on the evaluation of preventive measures targeting children and youth, where the funding for these interventions is secured through the program⁶.

Within the domain of mental and physical health, development plans have been formulated on various themes that intersect and hold significance for this development plan. The commitment to enhance **quality of life** is particularly pertinent, especially in the context of developing robust metrics for assessing the quality of life among children and youth. The development plan on **structural mechanisms** is especially relevant, as many preventive measures for children and youth encompass structural mechanisms (such as the facilitation and organization of childcare and school environments, financial support for families with children, and more). The development plan outlines a project focused on school meals and their impact on learning, which is relevant for comprehending the connection between diet and the mental health of children and youth. Additionally, the development plan addressing **comorbidity and shared risk factors** provides a foundation for collaboration to gain a deeper understanding of comorbidity between physical and mental illnesses in children and youth.

National coordination responsibility for knowledge on child and youth mental health

In March 2020, the Norwegian Institute of Public Health was given a national responsibility for coordinating data sources and networks related to mental health, with a primary focus on prevention and public health⁷. This initiative is anchored within the division of mental and physical health, with specific efforts directed towards children and youth led by the Department of Child Health and Development. On July 1, 2020, we submitted a memorandum to the Ministry of Health and Care Services outlining the data collection efforts and knowledge resources pertaining to the mental health and quality of life among children and youth in Norway. This coordination role empowers us to play a prominent role in identifying research needs, leveraging existing data for pertinent research and statistical presentations, and identifying requirements for enhancing data resources. It also naturally positions us to engage relevant national research communities and initiate collaborative research and development endeavors.

As part of our national coordination responsibility, the Norwegian Institute of Public Health has been invited to represent Norway in a network focusing on mental health issues among young people appointed by the Nordic

⁶ <https://www.helsedirektoratet.no/tema/folkehelsearbeid-i-kommunen>

⁷ The state budget 2020 chap. 745 The Institute of Public Health – award letter - addition no. 1

Council. This network includes the five Nordic countries and two autonomous regions (Greenland and the Faroe Islands), with Denmark assuming leadership. The network is set to conduct two literature reviews during the period 2020-2022.

This national coordination responsibility facilitates collaboration with pertinent national knowledge communities. Everyone we have engaged with in the course of our investigative work related to this mandate has expressed a positive willingness to collaborate on research and analysis within this thematic area.

Cross-Sector Collaboration

Several units within the Norwegian Institute of Public Health are already engaged in collaborations with sectors beyond those directly falling under the purview of the Ministry of Health and Care Services, focusing on themes pertinent to this development plan. The Health Services domain collaborates with multiple welfare directorates on literature reviews, including initiatives aimed at strengthening the mental health of children and youth. Various departments within the Mental and Physical Health domain have assignments and partnerships with various directorates. The Department of Childhood and Families has established long-standing collaborations with the Norwegian Directorate for Children, Youth, and Family Affairs (Bufdir) in various projects concerning children in families undergoing conflict and separation. These collaborations have also extended to the evaluation of interventions aimed at enhancing parenting skills to promote healthy relationships and secure and positive living conditions for children. We intend to continue these collaborations within relevant projects and maintain an ongoing dialogue regarding new projects and topics concerning vulnerable children and youth.

The Department of Child Health and Development has also maintained a longstanding collaboration with the Ministry of Education and Research (KD) concerning the significance of childcare facilities and schools for children's learning, development, and mental health. KD has contributed to critical data collection efforts in The Norwegian Mother, Father and Child Cohort Study (MoBa) during the children's early years. Following up these children into adolescence can provide valuable insight into the impact of factors related to childcare facilities, primary schools, family factors, and other early-life environmental factors on learning and the mental health of adolescents.

Selected Focus Areas for the Period 2019-2024

Many of the activities conducted at the Norwegian Institute of Public Health align thematically with this development plan. Below, we highlight certain activities that will receive heightened attention during the plan period. Completed activities in 2019 and 2020 that are relevant to the development plan are exemplified in Appendix 1.

- Initiate/participate in collaboration with national and international knowledge environments to investigate possible analyzes to answer issues under national coordination responsibility. For example: Can we, through various time-series studies, identify changes in structural or social factors that can help to understand changes in mental health among youth? Can we, across different longitudinal studies covering different groups of children and young people, identify new mechanisms involved in increased mental health issues?
- In 2020, the institute submitted a proposal for a center for analysis and knowledge of children's and young people's mental health to "Store Satsinger for statsbudsjettet" for the national budget in 2022 (appendix 1). Regardless of this process, we will consider the possibility of applying for the creation of such a center at the Norwegian Institute of Public Health.
- The Norwegian Institute of Public Health recommended, in a memorandum to the Ministry of Health and Care Services in July 2020, the conduct of population-based prevalence surveys on mental disorders among children and young people, following the model of PsyKHUNT10⁸. We will initiate efforts to achieve this, including evaluating suitable instruments and methods for assessing mental disorders among children.
- Strengthen the focus on how social inequality contributes to the development of mental health issues among children and young people, both through projects with social inequality as the main theme and through projects where social inequality is one of several factors. For instance, in the NeuroTox project (which investigates environmental toxin exposure during pregnancy and its potential impact on neurodevelopmental disorders in children), we will examine whether socio-economic factors influence the extent of pregnant women's exposure to environmental toxins, thereby increasing the risk of neurodevelopmental disorders in children. This project is conducted in partnership with a larger Research Council of Norway-funded initiative at NTNU focusing on social inequality in health, known as CHAIN (Centre for global health inequalities research)⁹. Additionally, within the MoBaKunder project, (explores the impact of daycare quality on children's mental health and learning based on the Mother, Father, and Child Study - MoBa), we will investigate how socio-

⁸ <https://www.ntnu.no/hunt/trondelag/psykisk>

⁹ <https://www.ntnu.edu/chain>

- economic factors mediate the relationship between daycare quality and later outcomes in children.
- Continue existing research on the mental health of adolescents in relation to factors such as substance abuse and social media. The Norwegian Institute of Public Health is involved in several ongoing projects that collect data to generate relevant insights. These include:
 - MittLiv-studien, a longitudinal study tracking multiple cohorts of adolescents throughout secondary and high school.
 - MoBaUng, following youth in the Norwegian Mother, Father and Child Cohort Study (MoBa) when they are 16-17 years of age. The Health-Promoting Environment on Social Media (SoMe) study, investigating how various aspects of social media use are related to the mental health and well-being of adolescents.
 - The Student Health and Well-being Survey (SHoT), an anonymous time-series study conducted among university students in Norway.
 - A study on the mental health and quality of life among Norwegian university students, measuring participants' outcomes weekly from January 2020 to February 2021.
 - We will collaborate with the Norwegian Directorate of Health and other welfare directorates in the annual presentation of "Oppvekstprofilen" [Childhood Profiles] and develop statistics related to the mental health and quality of life of children and young people.
 - Initiate or participate in the evaluation of interventions. Strengthening the evaluation of interventions aimed at improving the mental health of children and young people is desirable. This collaboration takes place in partnership with the Center for Evaluation of Public Health Measures and the Program dedicated to Public Health Initiatives at the Municipal level. In the Department of Childhood and Families, a universal, commonly used parent-focused program (International Child Development Program - ICDP) has been evaluated through a randomized controlled study. Results from the project is published in a report for the commissioning entity Bufdir and in scientific articles.
 - Secure sustainable funding for the work outlined in the development plan. This involves seeking funding from various research and innovation sources, collaborating with different ministries and directorates, and allocating internal resources.
 - Work to highlight the Norwegian Institute of Public Health's efforts on mental health of children and youth through various outward-facing activities, such as organizing/participating in webinars and seminars, and developing websites in line with the national coordination responsibility, where new research findings and relevant knowledge are presented.

Actions for the Period 2021-2024

- **Raise awareness of the development plan and extend invitations for collaboration.** The development plan will be presented in suitable forums within the institute, and relevant projects will be invited to collaborate and/or be incorporated into activity lists. A significant portion of the institute's research activities can be categorized under the umbrella of child and youth mental health and prevention. Familiarity with and active utilization of the development plan can enhance project proposals and foster cross-disciplinary collaboration.
- **Establish working groups for the implementation of the development plan.** Employees from the Department of Child Health and Development, the Department of Childhood and Families, as well as other departments within the Mental and Physical Health Division and the Center for Fertility and Health, along with the Director of Research for the Mental and Physical Health Division, have participated in various phases of the development plan and its associated activities (Appendix 1). Given that we now have a new researcher on board at the beginning of 2021 to contribute to this work, and with the national coordination responsibilities being defined, we can establish strategic working groups comprising experts from relevant departments and areas.
 - In the follow-up to the national coordination task and activities within the Nordic network, we will establish an operational working group to conduct literature searches on evaluations of cross-sectoral initiatives aimed at enhancing youth mental health in Norway in 2021 and 2022 (see the next bullet point). This work will be carried out in collaboration with the Center for the Evaluation of Public Health Measures.
- **Covid-19 activities.** We will utilize data from national time series (Ungdata, Elevundersøkelsen), existing population studies, and ongoing data collections (MoBa, MittLiv, FamilieForSK, student- and youth surveys in Bergen) to analyze the consequences of the pandemic on children and young people. The preparedness registry, Beredt C19, established during the pandemic, will also be a crucial source of data.
- **Develop a Mandate for National Coordination of Knowledge on the Mental Health of Children and Youth.** There is a need for a plan/mandate on how we can organize cooperation between the Norwegian Institute of Public Health and external stakeholders to deliver research and health analysis that sheds light on important questions regarding the prevalence and changes in mental health among children and young people, and to communicate results to authorities, decision-makers, and the public.
- **Apply for research and innovation funding.** Several research applications have been submitted to the Research Council since 2021, with relevance to the development plan. Other sources of funding are continuously evaluated, for example was one application

submitted to NordForsk in 2021.

- **Provide Research Results to Bufdir and the Ministry of Education and Research.** The Department of Childhood and Families and the Department of Child Health and Development has several assignments from Bufdir and the Ministry of Education and Research for which reports will be submitted in the following years.

Attachment 1: Activities to Strengthen Efforts in Child and Youth Mental Health and Prevention.

Completed Activities in Period 2020-2022

- **Strategic Appointments.** The Department of Child Health and Development and the Department of Childhood and Families enhanced its research capacity through strategic appointments. In the fall of 2019, a senior researcher, Idunn Brekke, with expertise in the evaluation of public health measures was hired. Since she commenced her position, she has finalized a large randomized controlled effectiveness trial of a universal parenting intervention (ICDP) on behalf of the Norwegian Directorate for Children, Youth, and Family Affairs (Bufdir). In the fall of 2020, we hired a researcher, Lasse Bang, with a focus on research and health analysis of common mental health problems and disorders among children and young people (anxiety, depression, behavioral problems). He started on January 1, 2021, and will also be responsible for following up on the national coordination responsibility.
- **Collaboration meetings.** We have organized several collaboration meetings with experts within the field in relation to the national coordination responsibility for mental health knowledge- Together with external partners, such as NUBU, UiO. RBUP. OsloMet, Frish Centre, and the Norwegian Directorate of Health we have discussed challenges in the field of children and youth and potential new collaborative projects. Collaboration meetings with various stakeholders and research environments will continue.
- **Contributions to Reports Developed through a Nordic Network on Youth Mental Health.** The Nordic Council initiated a cross-Nordic collaboration aiming at mapping research from all the Nordic countries and autonomous territories on risk- and protective factors for youth mental health. In addition, each country / autonomous territory should provide national best practice examples of cross-sectoral interventions with demonstrated (by research) effects in preventing mental health problems or promoting good mental health. These efforts resulted in two reports ([A cross-Nordic Mapping of Associative Factors to the increase of Mental Distress Among Youth \(sbst.dk\)](#), [Cross-Nordic collaboration and practice examples \(sbst.dk\)](#)). We participated in the collaboration, providing a comprehensive review of Norwegian research and practice examples.
- **Research funding.** Our application for the evaluation of special educational support and pharmacological treatment and their effects on the academic achievements of students with ADHD received funding from the Research Council of Norway. The project commenced in 2020 with preparatory activities such as applications and registry linkage. Furthermore, the FamilieForSK-project received funding from the Research Council in 2020; the CovClusion-project will provide new knowledge about children's and families' exclusion and inclusion from health and school.
- **Commissioned Work for the Ministry of Health and Care Services.** In January 2020, we submitted a report to the Ministry of Health and Care Services in which we assessed the status and trends of mental health problems and disorders, as well as the use of health services. We also made a quick evaluation of

various data sources and outlined the need for investigations and follow-up in the short and somewhat longer term.

- **Delivery for National Coordination Responsibility.** In line with the mandate of national coordination responsibility, we submitted a report to the Ministry of Health and Care Services on July 1, 2020, providing an overview of relevant data sources, knowledge resources, and research environments related to children and youth's mental health. In this report, we highlighted the need for new population-based prevalence studies of mental disorders among children and young people, in addition to the opportunities for utilizing existing data. We also proposed two initiatives to strengthen the efforts on knowledge about mental health and quality of life among children and young people. These proposals were elaborated further in submissions for Large Initiatives for 2022.
- **Submissions for Large Initiatives (Store Satsninger) for 2022.** In December 2020, we submitted two proposals to the Ministry of Health and Care Services for major initiatives for the 2022 budget year. One was a proposal for the establishment of a center for analysis and knowledge about the mental health of children and young people at the Norwegian Institute of Public Health, which would follow up and further develop the national coordination of data, knowledge resources, and research environments, as well as contribute to population-based prevalence studies of mental disorders among children and young people. The other proposal suggested increased research funding for the Research Council of Norway earmarked for research on the mental health of children and young people.
- **Implementation of relevant research projects.** The Department of Child Health and Development has several ongoing projects that align with the development plan. During the COVID-19 pandemic, two data collections were initiated, enabling analyses of how the country's lockdown, homeschooling, and remote work have affected vulnerable families (FamilieForSK) and the mental health and quality of life of young people (MoBaUng). Both projects had ongoing data collection efforts prior to the pandemic's outbreak and continued throughout the year.
- **National Coordination Responsibility:** In 2022, the institute received a NOK 5M budget for increasing knowledge on children and youth mental health in Norway. This has contributed significantly to the work on gaining new insights from analyses of national time series, knowledge reviews, and planning for new data collection in order to gain knowledge of why mental health problems are increasing in Norway. We will continue to deliver new findings in this task.

Co- and multimorbidity and shared risk factors



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Introduction

What is multimorbidity, comorbidity and shared risk factors?

Illnesses rarely occur in isolation. Combinations of several mental illnesses and/or somatic disorders in the patient are common. Different diseases may share common risk factors, and in some instances, one disease may entail increased risk for another disease. The classic risk factors for non-communicable diseases related to diet, physical inactivity, smoking, and harmful alcohol consumption often coexist, reinforce each other, and are linked to social inequalities.

In this context, *multimorbidity* refers to the occurrence of several diseases or disorders occurring within the same individual. This may be combinations of psychiatric disorders and somatic diseases, different mental disorders, or different somatic illnesses. For example, many patients with schizophrenia also have a substance use disorder or cardiovascular disease, and patients with diabetes commonly have atherosclerosis. *Shared risk factors* indicate that different diseases can have common underlying risk factors. For example, smoking is a risk factor for both lung cancer and myocardial infarctions. Comorbidity is not confined to specific age groups and can be present already in childhood. Children with chronic somatic diseases such as diabetes or asthma have a higher incidence of psychological problems, and children with ADHD have an elevated risk of asthma. Established associations exist between socioeconomic status, risk factor burden, and comorbidity, while less is known about comorbidity patterns in minority groups.

Knowledge gaps

The classic evidence-based approach relies on randomized controlled trials proving the effectiveness of one type of treatment compared to standard or no treatment, and that single risk factors in isolation affect disease risk when controlling for all other relevant factors. This paradigm is tailored to detect effects for well-defined disease groups or specific risk factors, while it is less suitable for exploring the interactions between different risk factors, or treatment effects in the presence of additional illnesses.

In general practice, where the cause of contact is often symptom-based, it will often not be possible to set a specific diagnosis, and it is challenging for GPs to offer evidence-based treatment. The nursing home physician or the internist who needs to revise the complex drug list in an older multimorbid patient also needs evidence-based knowledge about the advantages and disadvantages of drug combinations.

The clustering of different diseases in individuals is not random and is likely due to common causal

mechanisms. Increased understanding of the causes and consequences of multimorbidity within disease clusters will be crucial for personalized prevention and treatment, e.g., through the development of drugs to treat groups of disorders.

The health authorities recommend a greater emphasis on co- and multimorbidity

The Ministry of Health and Welfare will emphasize the links between different non-communicable diseases in the upcoming NCD strategy, where mental disorders and substance abuse disorders as well as musculoskeletal disorders are also included. In the [National Health and Hospital Plan 2020-2023](#), *health community* (Norwegian: helsefellesskap) is introduced as an organizational measure to foster closer collaboration between the primary and specialist healthcare. In the health communities, special priority must be given to services for children and youth, patients with several chronic diseases, older people with frailty and patients with serious mental illnesses and drug addiction.

Why emphasize co- and multimorbidity at The Norwegian Institute of Public Health?

Traditionally, key publications from the Norwegian Institute of Public Health (NIPH) such as the [Public health Report](#) and [Mental Health in Norway](#), along with healthcare statistics from Statistics Norway and the Directorate of Health, have been structured along diagnostic lines. They have paid less attention to exploring the occurrence and consequences of concurrent illnesses or common risk factors. This trend extends to the organization of the health services, and, to some extent, the central health administration, where separate units have been established for mental health disorders. There is a need for increased knowledge about co- and multimorbidity both in terms of causes and treatments for the central health administration and the healthcare services. This necessity became particularly apparent during the SARS-CoV-2 pandemic, where chronic diseases and advanced age emerged as strong predictors of a more severe course of COVID-19.

The division of Mental and Physical Health in NIPH has a range of ongoing and planned research projects that center on co- and multimorbidity and shared risk factors. Through enhanced collaboration, leveraging specialist expertise, pooling resources and utilizing available data sources across departments, the division and the Institute will be positioned to generate new insights in the field.

Strategic focus area aligned with NIPH's strategy

The Norwegian Institute of Public Health has three primary tasks; knowledge, preparedness, and infrastructure. To realize the institute's overarching vision of "Better health for all", ten strategic focus areas have been identified until 2024. Of these, three focus areas directly pertain to this development plan: "*Future healthcare services*", "*Big data and advanced analytics*", and "*Improved access to health data*". In addition, the focus areas "*Initiatives for improved public health*" and "*Across sectors*" are relevant.

The themes in this development plan are interconnected with other development plans within the division, including [the Development Plan for work and health](#) and the [Development Plan for quality of life](#).

Purpose

The purpose of this development plan is two-fold:

Aim 1 - Create new knowledge about the occurrence and development of co- and multimorbidity and uncover shared risk factors that can form the basis for preventive measures.

- Sub-aim 1a: To illuminate **trends and patterns** of comorbidity and shared risk factors to identify possible underlying causes.
- Sub-aim 1b: To enhance the understanding of how co- and multimorbidity and shared risk factors may contribute to **social inequalities in health**.

Aim 2 - Develop competence and infrastructure for research on co- and multimorbidity at the NIPH.

- Sub-aim 2a: Establish a comprehensive **project portfolio** to study co- and multimorbidity and shared risk factors across departments in the Division of Mental and Physical Health, and establish collaboration with the other divisions at the institute.
- Sub-aim 2b: Develop and strengthen expertise by **strategic recruitment and collaboration** with national and international research environments.
- Sub-aim 2c: Strategic positioning for **applications to calls in EU Horizon Europe** (Arrows 1 (ERC) and Pillar 2 (Health)), where multimorbidity is recognized as a strategically important area.

Ongoing projects about comorbidity and shared risk factors at the NIPH: Some examples

1. NCDNOR

This research project originates from the national indicator group for non-communicable diseases (NCD) and includes a large registry linkage (Statistics Norway, the Norwegian Cause of Death Registry (DÅR), The Norwegian Prescribed Drug Registry, the national reimbursement database (KUHR), the Norwegian Patient Registry (NPR), Statistics Norway's events database (FD-Trygd)), along with data from the Trøndelag Health Study (HUNT) and the Tromsø study. The main objective is to investigate prevalence and incidence of non-communicable diseases and multimorbidity. The project was awarded funding by the Research Council of Norway in 2020. While based in the Department of Chronic Diseases, it involves researchers from several parts of the institute.

2. PsykLink

The aim of this research project is to investigate excess mortality in severe mental illness and the association with cardiovascular disease and diabetes. Data sources are health surveys, public and housing censuses, as well as registry data (including FD-Trygd, KUHR, NPR and DÅR). By using information about family relations from the Population and Housing Censuses and the National Population Register, the contributions from genetic and environmental factors for the associations between cardiovascular disease, diabetes and serious mental disorders can be studied. The project is based in the Department of Mental Health and Suicide and involves researchers from several parts of the institute.

3. PsykHUNT

This is a diagnosis-based population survey on mental disorders and substance abuse disorders based on HUNT4 in Trøndelag. Approximately 4000 adult participants in HUNT-4 were interviewed using CIDI (Composite International Diagnostic Interview for mental disorders). Data can be linked to other HUNT data as well as national registries. The data set can be used to investigate comorbidity of mental disorders, comorbidity between mental disorders and substance use disorders, and between mental and somatic disorders. HUNT data can also be used to examine the effects of various risk factors for the individual disease. The project is based in the Department for Mental Health and Suicide and involves researchers from several parts of the institute.

4. Psychopharm

In a collaboration between NIPH and the Directorate of Health, the prevalence and consequences of concurrent use of different antipsychotic drugs for patients with serious mental illness will be investigated. The project applies linked registry data from NPR, KUHR, The Norwegian Prescribed Drug Registry, DÅR and Statistics Norway. The information can be used to investigate multimorbidity and polypharmacy. A corresponding registry-based project has been established to investigate the use of psychotropic drugs among children. Both projects have the opportunity to explore the co-occurrence of mental and somatic disorders in primary and specialist healthcare. The projects are anchored in the Department of Chronic Diseases but also involves researchers from other departments.

5. Links between NCD and COVID-19

(CoronaReg, EpiCorona, COVIDMENT and CoronaRegVAX)

EpiCorona is one of the thematic focus areas in the national knowledge program for COVID-19 anchored at the NIPH and led by the Division for Health Services. EpiCorona aims to define and investigate the importance of underlying diseases as risk factors for severe outcomes of COVID-19, to monitor health outcomes related to covid-19 and vaccines and to investigate any changes in healthcare utilization for chronic diseases during the pandemic. COVIDMENT is a Nordic collaborative project that seeks to explore how the pandemic affects the mental health of the population and whether mental disorders are risk factors for COVID-19. CoronaRegVAX is part of the COVID-19 vaccination program, anchored in the Division of Infection Control. Data sources for EpiCorona and CoronaRegVAX include the emergency preparedness register *Beredt C19* and the research linkage *CoronaReg*.

6. Treatment of chronic pain with opioids (POINT)

This is a research project aimed at investigating opioid treatment in patients with chronic non-cancer-related pain, exploring the health issues and diagnoses of these patients. Concomitant use of other addictive drugs will also be investigated. The project uses linked registry data from NPR, KUHR, The Norwegian Prescribed Drug Registry, The Cancer Registry, DÅR and Statistics Norway. This linkage enables the researchers to investigate psychological and somatic comorbidity and polypharmacy. It is a collaborative project with the University of Oslo, which has received external funding from the RCN, and is anchored in the Department of Chronic Diseases.

7. Molecular mechanisms associating chronic pain with fatigue, affective disorders, cardiovascular disease and total comorbidity (PainFACT)

The main aim of the project is to uncover causal mechanisms for comorbidity between chronic pain and affective disorders, fatigue and cardiovascular disease. However, parts of the project are aimed at multimorbidity in the broadest sense, i.e., identifying clusters of diseases that are biologically related and uncovering common causes at the molecular level. The project includes animal research and human epidemiology with extensive use of molecular genetics and brain imaging techniques. The project is financed through the EU's Horizon 2020 program and is coordinated by the NIPH.

8. Development, validation and implementation of multimorbidity indices in European Registries and Cohorts (DEVIM-ERC)

The purpose of the project is to develop different scoring methods for multimorbidity and to generalize these through application in studies outside Norway. The project builds on data from the Norwegian Patient Registry, as well as several population-based surveys conducted abroad.

Objective

We are uniquely positioned in our interdisciplinary institute to integrate knowledge about mental and physical health, established risk factors and polypharmacy, with highly specialized expertise in the effects of interventions and a strong competence in the use of "real world data" from health surveys and registers. Patients with complex disease patterns, polypharmacy, and vulnerable subgroups such as children and pregnant women are commonly excluded from RCTs. We have the opportunity to contribute with unique studies and establish interdisciplinary projects.

Tasks

The table below lists the specific tasks for the development plan.

Task	Sub-aim*
Contribute to coordinating and specifying tasks related to the new NCD strategy from Ministry of Health and Care Services (2021), including the development of indicators for mental health, substance use disorders, and musculoskeletal health	1a, 1b
Establish independent projects and contribute in existing projects to uphold the comorbidity perspective in the work related to the COVID-19 pandemic	1a, 1b
Initiate and contribute to research on the consequences of the COVID-19 pandemic for patients with known or underlying vulnerability to non-communicable diseases, including mental disorders, substance use disorders, and musculoskeletal disorders	1a, 2a
Startup of NCDNOR	1a, 1b
Compile an overview of planned and established registry linkages/data sets that could potentially be expanded to address issues related to co- and multimorbidity and shared risk factors	2a
Establish a forum for use of registry data in research	2a
Establish a working group for registry-based research in the NIPH	2a
Establish and maintain existing registry linkages as a basis for new applications for research funding	2a
Organize seminar and meeting series on co- and multimorbidity and shared risk factors, internally and externally	2b
Facilitate visits for external visiting researchers to expand national and international network	2b

Ensure sustainable funding for the work outlined in the development plan (applications for external funding, use of stimulus funds to support EU applications)	2c
Recruitment of co-workers with necessary cutting-edge expertise to develop the field	2b

* Refers to the sub-aims listed on page 19

Work and Health



Norwegian Institute of Public Health

Contact person: Øystein Vedaa, Department for health promotion work

Introduction

It is a goal for society that adults who are able and willing, should be included in the workforce. For some, work can be a source of income, identity, and social connections, while for others, it can lead to health problems. Health issues, whether stemming from the workplace or not, can make it difficult for individuals to find, continue, or participate in work until retirement age. The relationship between work and health affects a large portion of the population, with the workplace considered one of the significant health determinants for public health.

The pandemic in spring 2020 demonstrated the interplay between work and health in several ways. Significant changes in the workplace were central to the COVID-19 response measures. Health consequences arising from unemployment triggered by these measures are among the potential unintended effects. Healthcare workers, as an exposed group, faced higher risks of infection and significant workloads.

Health and work environments vary over time and across countries and regions. Therefore, knowledge about work and health must be current and locally relevant to promote healthy developments in the workplace. Improved understanding is needed about health selection into work, factors affecting occupational health, absenteeism, presenteeism, and prevention of health issues through the workplace. This knowledge should be integrated with comprehensive insights into the overall population's health. Hence, understanding the relationship between work and health is crucial for a public health institute's societal mission.

Through the initiatives outlined in this document, the Norwegian Institute of Public Health aims to develop a clearer academic profile on work and health issues. The primary goal is to explore the relationship between work and health from a population perspective. The focus will be on enhancing the public health relevance of ongoing and new projects within this theme and addressing knowledge gaps. In the first 3-5 years, the focus will be on five thematic areas:

1. **Life course:** Investigating early risk factors, later workforce participation, transitions between education and employment, and absenteeism in working age.
2. **Disease burden:** Analyzing the burden of disease during working age across countries and over time, including projection analyses and how various health issues result in loss of active working years.
3. **Risk factors:** Studying the relationship between working hours and absenteeism, mapping alcohol use in work settings, and its associations with absenteeism and presenteeism.
4. **Interventions:** Testing the effects of e-health interventions to prevent alcohol use, absenteeism, and presenteeism.
5. **Structure and frameworks:** Examining social, demographic, and health-related aspects of changes in the workplace, such as technological advances, changing job content, and the disappearance of job

tasks.

Why should the NIPH strengthen its competence in work and health?

The Norwegian Institute of Public Health's focus on work and health aligns with international and national strategic directives, shaping resource utilization in this area. It also corresponds with several key objectives in the Institute's own strategy for the current period, demonstrating a concerted effort to integrate work and health considerations into broader public health goals.

NIPH's focus on the work-health area is aligned with the UN's Sustainable Development Goal 8, "Decent Work and Economic Growth." This goal includes specific objectives, such as achieving full and productive employment and decent work for all, including youth and persons with disabilities, and equal pay for equal work by 2030. Additionally, it emphasizes the inclusion of young people in the workforce, with a target to significantly reduce the proportion of youth not engaged in work, education, or training by 2020.

Nationally, the Norwegian Labour and Welfare Administration (NAV) provides services to about 2.8 million users annually and manages approximately one-third of the national budget. A significant portion of NAV's users are people with health issues. According to NAV statistics, around 16 percent of the population aged 18 to 66 received health-related benefits in 2017.

The Norwegian Directorate of Health (HDIR) and the NAV have developed a joint strategy for work and health, emphasizing the need for increased efforts to strengthen the knowledge base in this field (as outlined in the report "Arbeid og helse – et tettere samvirke"). Collaboration between health and work-related services is highlighted as key in the public health report, "Gode liv i eit trygt samfunn" (Meld. St. 19, 2019), particularly in addressing mental health issues that keep many out of the workforce. The government aims to continue this inclusive effort, necessitating enhanced knowledge in the field.

The NIPH's strategy for the current period prioritizes cross-sector collaboration and innovative data combinations. The broader strategy for 2019-2024, "Bedre helse for alle," seeks new ways to protect lives and improve health and quality of life for the entire population. A key aspect of public health work is to engage in context where people are present, such as workplaces. As per Statistics Norway's 2018 data, 69% of men and 65% of women aged 15 to 74 were employed, with employment rates among immigrants in the same age group slightly lower.

Measures for development in a 3-5 year perspective

A working group has been established at the Norwegian Institute of Public Health, initially comprising researchers from the Centre for Disease Burden, the Department of Health Promotion, the Department of Substance Use and Tobacco, and the Centre for Fertility and Health. The group will expand as needed and will play a central role in implementing various measures.

Overview: The working group at the NIPH will expand as needed and maintain an overview of activities related to work and health. To strengthen this function, the group plans to:

- Convene in fall 2020 and spring 2021.
- Publish an internal blog post on "Opus" inviting contact and sharing information about relevant projects and plans.
- Establish connections with the Health Services Area team, which conducts literature reviews on work, health, and welfare topics.

Research and Analysis: The group will consolidate expertise and update knowledge in related areas to strengthen information sharing across projects at the institute. To enhance this function:

- Update the chapter on work and health in the Public Health Report in collaboration with the editorial committee.
- Create a larger environment for project discussion and concrete research collaboration.

Financing: The group will seek external funding for projects, preferably related to identified initiatives. To boost financing:

- Coordinate discussions with Department for Research Administrative Support (FAS) regarding calls for proposals and funding strategy.
- Establish contact with relevant directorates.
- Work towards prioritizing positions in the area to support the institute's initiatives.

Data: The initiative will support efforts to establish datasets for research and development, including:

- Establishing a system for recording data on shift work (Project collaboration with Haukeland University Hospital and the University of Bergen).
- Conducting annual surveys on alcohol and the workplace among 1500-2000 Norwegian workers from 2015-2021.
- The group will review existing datasets with connections to FD-trygd (Norwegian social security data), focusing on the thematic orientation of data processing bases, and identify the need for new data sources.

Potential for external financing

Several of the projects described above already have funding from various sources. The most relevant thematic programs from the Research Council of Norway (NFR) are VAM-2, HelseVel, and BedreHelse. Through established collaborations in the field, we are well-positioned to pursue international partnerships and applications for funding from NordForsk, EU, and other international research programs. The topic is highly relevant to practice in a resource-intensive area, making it promising to explore funding opportunities through publicly announced research grants and assignments from directorates.

Presentation of some ongoing and planned project within the five thematic subgroups

In the following, we will present some ongoing projects that can be classified under the five thematic groups: Life Course, Disease Burden, Risk Factors, Interventions, and Structure and frameworks. Many of the projects mentioned will have elements that cross these five thematic areas. However, each project will not be described in detail under each theme since this overview is not exhaustive, but rather intended to provide examples of ongoing/planned activities within the five thematic areas.

1. Life Course: Mental Health in Youth and Subsequent Occupational Functioning Relevance

Weak career engagement during youth is linked with lower employment rates and income later in life, both reflecting and contributing to social inequality. Individuals with health issues in their youth often face challenges entering the workforce, resulting in a generally healthier employed population compared to the unemployed. Despite some research focus on the adverse effects of youth unemployment and policy responses, in-depth studies on the underlying drivers are scarce. The NIPH is involved in several projects exploring the relationship between early mental health and later occupational performance, including:

- Neurodevelopmental disorders and comorbidity (Kari Klungsøyr).
- Student Health and Wellbeing Study (SHoT) (Børge Sivertsen).
- Mental health and quality of life in Norwegian university students (Robert Smith).
- Social inequality in youth and mental health across the lifespan (Simon Øverland).

Status

Several of the aforementioned projects will link data to study risk factors for the need for social security benefits and disability benefits in young people. The 'Neurodevelopmental Disorders and Comorbidity' project has funding to cover most data access and linkage expenses. Data availability is expected by fall 2020, with plans to apply for funding for 2-3 postdoctoral positions and 1-2 PhD scholarships from the University of Bergen, the Norwegian Research Council, and/or Helse Vest in 2020 and 2021. The first doctoral candidates

are scheduled to begin in January 2021.

The most recent data collection for the 'Student Health and Wellbeing Study' (SHoT) was conducted in 2018. These data have been linked to the National Education Database in 2019 and are planned to be linked to FD-trygd (Norwegian social security data) in 2021. The data collection for this project has been initially financed by Norwegian student welfare organizations. There are plans to apply for funding from the Research Council of Norway (NFR) on September 2, 2020, as part of a collaborative project.

In the project 'Mental Distress and Quality of Life in Norwegian University Students,' students completed weekly surveys regarding their mental health during the spring semester of 2020. This unique data collection captures the mental health and quality of life of the student population before, during, and after the COVID-19 pandemic. The data will be linked to FD-trygd (Norwegian social security data) in 2020/21. The project's data collection is initially funded by internal resources from the Norwegian Institute of Public Health, University of Bergen, and Modum Bad, with an application for external funding submitted to the Research Council of Norway in collaboration with the University of Oslo and Modum Bad.

The project "Social Inequality in Adolescent Mental Health in a Life Course Perspective" is funded by the Research Council of Norway (NFR). It is led by the University of Bergen (UiB) with the Norwegian Institute of Public Health (FHI) as a collaborating partner. The project is scheduled to start in the fall of 2021.

Ambition

In the 'Neurodevelopmental Disorders and Comorbidity' project, the goal is to study the connections between ADHD and/or ASD, comorbid somatic and psychiatric illnesses, and their impact on later life functionality, such as the need for social security benefits, disability benefits, and highest educational attainment. The project uses data from various registries, including FD-trygd, and the Norwegian Mother, Father and Child Cohort Study (MoBa). The 'SHoT' and 'Mental Distress and Quality of Life in Norwegian University Students' projects aim to study life quality and mental health in the student population. In 2021, SHoT data will be linked with FD-trygd to identify risk factors for incomplete education and early workforce dropout. The 'Mental Distress' project employs a longitudinal design to study the network structure of life quality and mental health among students, with plans to link data to FD-trygd to study early workforce dropout risks. The "Social Inequality in Adolescent Mental Health in a Life Course Perspective" project will utilize existing longitudinal data to explore transitions from adolescence to young adulthood.

2. Burden of disease: Disease Burden in Working Age

Relevance

To create effective welfare systems and prevent long-term sickness absence and workforce drop-outs, it's crucial to have comprehensive, accurate, and current data on health issues and mortality causes among working-age individuals. Understanding how these causes evolve is also important. Such information aids policymakers in developing targeted prevention strategies, identifying gaps in healthcare and service access, and setting priorities for research funding.

The working-age population is key to production, goods and services exchange, tax revenue, and welfare distribution. They are responsible for caring for children, young people, and the elderly, both directly and indirectly through resources generated by the workforce. Norway's population is projected to shift towards an inverted pyramid by 2040 due to declining fertility rates and increasing life expectancy. This shift will challenge the welfare and social security systems, as a smaller working-age population will need to support a larger elderly population. Increased sickness absence and disability pensions further reduce the active workforce, intensifying challenges for the welfare system.

There is a need for more information on current and future health challenges in the working-age population. Existing knowledge is based on data and analysis that vary across types of health problems. Many data sources represent only selected groups within the working-age population or only reflect mortality or morbidity. Comparative analyses between countries are often lacking, incomplete, or consist of incompatible fragments.

Status

The challenges mentioned will be addressed in the "Working-age Burden of Disease (WorkBoD)" project, led by Simon Øverland. A project protocol has been developed as the basis for a Research Council of Norway (NFR) application submitted on May 20, 2020. There are also plans to expand the project into a collaborative effort for the NFR deadline on September 2 2020.

Ambition

The main goal of this project is to produce the most comprehensive overview to date of health in the working-age population, including time trends, current status, and future scenarios for global regions and countries, for both men and women. It also aims to estimate lost working years due to both morbidity and mortality in the working-age population. The project will provide new knowledge and an analytical platform to address current societal challenges at the intersection of work, welfare, and health in the population.

3. Risk factors: Work Environment Exposure, Sick Leave, and Presenteeism

Relevance

Work Hours: Over 20% of the workforce has irregular work hours or shift work, and in the healthcare sector, a third work shifts. Sick leave in healthcare is three percentage points higher than in other sectors, and one in five nurses leaves the sector within their first ten years of work. Difficulties in dealing with shift work are believed to be a key reason for this attrition. Statistics Norway reports a current shortage of 5,600 nurses, which could rise to 28,000 by 2035. Shift work is associated with cardiovascular disease, cancer, diabetes, obesity, gastrointestinal issues, depression, work-related accidents, and increased sick leave. However, much research in this field remains unclear due to inadequate quality in measuring shift work exposure.

Alcohol and Work Life: Alcohol is the third leading cause of illness worldwide, with risky alcohol consumption contributing to over 200 different diseases and injuries. Studies suggest that between 10 and 30 percent of workers engage in high-risk alcohol consumption, and as much as 40 percent of short-term absences from work (one-day absences) may be alcohol-related.

Status

Work Hours: The Norwegian Institute of Public Health (NIPH) is involved in several projects focusing on the consequences of shift work. The 'Health Promoting Work Schedules' (HeWoS) project, an NFR-funded initiative at the University of Bergen (UiB) with NIPH as a partner, also collaborates with Helse-Bergen, STAMI, and occupational health institutes in Denmark and Finland. Starting in fall 2020, it will employ two PhD candidates and one postdoctoral researcher. The 'Survey on Shift Work, Sleep, and Health among Nurses' (SUSSH) began at UiB in 2008/2009, surveying around 5,000 nurses initially and then annually tracking the same individuals. NIPH collaborates on this project, which has been funded by various sources, most recently by NordForsk in cooperation with the Finnish occupational health institute.

Alcohol and Work Life: The 'Alcohol and Work Life' project consists of I) annual surveys among 1,500-2,000 Norwegian workers conducted from 2015 to 2021, II) a qualitative study carried out in 2015 and 2017 involving a total of 48 interviewees, and III) the evaluation of professional guidelines for substance abuse prevention in the public sector (RusOFF; assigned to the Norwegian Directorate of Health by the Ministry of Health and Care Services in 2016 for development and implementation) with a project period extending to 2021. The 'Alcohol and Work Life' project is financed by the Norwegian Directorate of Health.

Ambition

Work Hours: In the HeWoS project, the goal is to examine the relationship between various shift work schedules and chronic illness and sick leave by linking shift work exposure data with sick leave registry data. Another aim of the HeWoS project is to study the consequences of short rest periods between shifts in a randomized controlled trial (RCT). Many shift workers have schedules with less than 11 hours off between shifts. Several observational studies have found this is associated with disrupted sleep and increased risk of accidents and sick leave, but this has not been investigated in an RCT before.

Alcohol and Work Life: In the 'Alcohol and Work Life' project, the goal is to use surveys to assess the prevalence and attitudes towards alcohol use among workers in the workplace context, alcohol-related absenteeism, reduced productivity, and other consequences, both positive and negative, of work-related alcohol use (e.g., social exclusion, unwanted sexual attention), and alcohol practices (e.g., payday drinking). It also aims to explore alcohol's role in the gray area between work and leisure and to understand how alcohol-related workplace issues are experienced and managed. The project seeks to contextualize and deepen survey results with qualitative data and identify topics for future quantitative studies. Additionally, it evaluates the effects of RusOFF, examining knowledge and implementation of professional guidelines for alcohol use in the public sector compared to the private sector, changes in workplace alcohol practices, and reductions in work-related alcohol use in the public sector.

4. Measures: Alcohol and Work Life Relevance

Alcohol and Work Life: As previously noted, alcohol is a major cause of illness and injury, and many workers engage in high-risk alcohol consumption. The workplace can serve as a suitable setting for early intervention and prevention of health-damaging substance use.

Status

The WIRUS project at the University of Stavanger (NFR project 2017 to 2022), with NIPH as a partner, evaluates the effectiveness of two different preventive measures offered to employees at 25 Norwegian workplaces. The interventions being assessed are the eHealth program Balance and counseling using the Motivational Interviewing approach, compared to a control group. The primary outcome is changes in sick leave, alcohol use, and presenteeism. So far, around 250 employees are participating in the randomized controlled trial (RCT) study.

Ambition

The WIRUS project is organized into various subprojects:

1. Literature reviews on alcohol use and sick leave, alcohol use and presenteeism, and eHealth interventions in the workplace.
2. A screening study of approximately 30,000 employees in 25 Norwegian companies (with about 25% response rate) to examine aspects related to alcohol consumption, workplace participation, and work environment.
3. A randomized controlled trial (RCT) evaluating the effectiveness of two different preventive measures: the eHealth program Balance and counseling using the Motivational Interviewing approach, compared to a control group, focusing on reducing sick leave, alcohol use, and presenteeism.

4. Process evaluation within the RCT to understand risky alcohol use and factors affecting the efficacy of the interventions, as well as a cost-benefit and cost-effectiveness study to evaluate potential savings from the interventions.
5. Study on the scope and barriers of occupational health services in preventing risky alcohol use, with participation from nearly 300 occupational health service employees.
6. Study focusing on knowledge translation and implementation of research to equip frontline services for evidence-based practice in addressing this public health issue.

5. Structure and frames: Technological Work Changes, Family Relations, and Health Effects Relevance

Rapid technological advancements have the potential to significantly alter job content and replace numerous occupations. The social, demographic, and health-related dimensions of these changes have not yet received adequate attention in research, and their consequences remain unknown. A new Research Council of Norway (NFR) project (started in 2019 at NIPH, PI: Vegard Skirbekk) aims to investigate the social, demographic, and health-related aspects of technology-induced job loss using Norwegian population registries.

Status

The project's initial phase focused on identifying occupations particularly at risk of being replaced by robotics. A key aspect involved developing detailed descriptions of tasks within various jobs, as machines are relatively more suited to replace routine tasks. In 2020, work is expected to describe which occupational and demographic groups are most affected by robotics. From fall 2020, the project will explore health effects of unemployment, emphasizing heterogeneity and identifying subgroups particularly vulnerable to job loss. It will examine how this correlates with the risk of robotics and which family members in the population are most impacted by others' job loss.

Ambition

The project will analyze how these factors impact individuals in terms of social and health outcomes, including quality of life, likelihood of securing a new job, incidence of illness, exercise habits, and demographic outcomes (e.g., relationship stability, childbirth). A key goal is to conduct in-depth empirical analyses to identify groups particularly vulnerable to technological changes in the labor market. Additionally, this knowledge base will be used as a platform to participate in societal discussions about how economic policies should be structured to achieve goals in the areas of work and health.

Well-Being and Quality of Life



Contacts: *Ragnhild Bang Nes & Thomas Hansen*, Dep. of mental health and suicide

Introduction

Quality of life pertains to the experience of a good and dignified life, encompassing both subjective and objective dimensions. The subjective aspect of quality of life refers to an individual's personal experience of life, incorporating positive emotions such as tranquility and joy, as well as positive assessments like satisfaction with life and living conditions. These positive evaluations further include the perception of functioning well, which encompasses a sense of belonging, competence, and purpose. On the other hand, objective quality of life pertains to tangible life circumstances, such as actual health status, material living conditions, and opportunities for personal growth.

High quality of life is a core value across disciplinary and political boundaries, promoting overall health and serving as a natural target for preventive and health-promotion endeavors. Shared objectives and terminologies across various societal sectors and disciplinary divides might potentially foster cross-sectoral and interdisciplinary ownership and collaboration in public health initiatives.

Quality of life data now form part of the foundation for policy development and program evaluation in numerous countries. The Norwegian governmental strategy for mental health in public health endeavors, titled "Lifespan resilience" (*Mestre hele livet*) (2017), emphasizes that measuring quality of life could become a pivotal governance tool in Norway as well.

Historically, measurements, health analyses, and research on quality of life have not been coordinated in Norway.

The overarching aim of emphasizing quality of life at the Public Health Institute is to generate knowledge that can support and enhance good quality of life and ensure a more equitable distribution of resources related to quality of life amongst the populace. Over the next 3-5 years, this will be achieved by:

1. Facilitating national coordination in the domain of quality of life.
2. Advancing the data foundation and measurement system for quality of life.
3. Intensifying research on causal mechanisms, as well as social and geographical disparities, from a life-course perspective.
4. Expanding intervention research, focusing on initiatives that promote quality of life and preventive measures against illnesses.

Means for Development in a 3-5 Year Perspective

Network and Collaboration

The Norwegian Institute of Public Health (NIPH) is uniquely positioned to research quality of life, including its causes and consequences. The NIPH possesses high-quality data and an unparalleled combination of expertise, enabling leveraging expertise in substance abuse, physical and mental health. Collectively, this allows for the further development of a research environment that could serve as both a national and international resource in the field of quality of life. The placement of NIPH within the healthcare system also plays an essential role. We collaborate with most stakeholders in Norway's health and quality of life sector - including governance, practice field (e.g., municipalities), and research sector. Our previous and ongoing work on quality of life measurement and monitoring (see below) have fostered close cooperation in the quality of life field between NIPH, the Directorate of Health, the Statistics Norway, Oslo Metropolitan University, and universities in Oslo, Bergen, Trondheim (NTNU), and Tromsø. This collaboration has also led to further collaborations with municipalities and county councils and other stakeholders like the Norwegian Psychological Association, the Council for Mental Health, Norwegian Resource Center for Community Mental Health (Napha), and Sunne kommuner - the Norwegian part of the WHO's Healthy Cities network.

Data and Methodological Competence

Researchers in this focus area have extensive experience with relevant data sources on quality of life such as the Norwegian Mother, Father and Child Cohort Study (MoBa), the County Public Health Surveys (CPHS), and the Norwegian Twin Registry. Follow-up public health surveys will continue in specific counties to measure people's adaptation to and the influence of COVID-19. These surveys provide unique longitudinal data for studying the pandemic's effects on quality of life and health on an international scale. Similarly, MoBa and several other studies which have included questions about quality of life during this period are beneficial. NIPH has strong expertise in methods, statistics, and measurement-related issues. This expertise is invaluable in furthering the development of quality of life measurements and research. The Institute is also highly respected and trusted, which can help ensure data quality.

External Financing

The potential for funding from The Research Council of Norway (RCN) and other funding sources is considered significant. In the fall of 2018, the research center Promenta <https://www.sv.uio.no/promenta/english/>, a center for research on mental health, substance use, and quality of life at University of Oslo, received funding from RCN. NIPH is a key collaborative partner in

Promenta and, among other things, leads the research group on intervention at the center. Since August 2019, Ragnhild Bang Nes has had a 60% position at the center. In the fall of 2019, Maja Eilertsen and Ragnhild Bang Nes received funds from the Dam Foundation for the project "Improving Wellbeing, Health, and Work Adherence: Effects of the 5 Ways to Wellbeing course". In 2020, six other applications for external funding in the field were also submitted, including a center for excellent research where NIPH plays a central role. Moving forward, plans are in place to submit applications for every relevant NFR announcement and other similar calls.

Ongoing and Planned Work Within the Four Priority Areas

Here we will present some ongoing and planned projects and objectives within the four specific goals. There is, of course, a significant overlap between them.

1. Contribute to National Coordination in the Quality of Life Field

National coordination of knowledge in the quality of life sector falls under NIPH's coordination responsibility concerning knowledge about mental health, focusing on prevention and public health. This includes establishing a group with relevant professional environments (mandate from the Ministry of Health and Care Services, supplementary to the grant letter no. 1, 2020). Established networks and collaborations described above are central to this work. Quality of life is also an overarching goal for the institute going forward. Quality of life is also included in the three public health goals, especially the goal that "The population should experience more years of good health and well-being" and the goal of "creating a society that promotes health in the entire population and reduces social health differences".

There are numerous competent individual researchers and research groups in the field of quality of life in Norway. However, the expertise is scattered, and we are unaware of initiatives to coordinate the research field outside of NIPH. It would be beneficial for the field if a unit could be established that could both serve as a national resource and simultaneously connect and coordinate other activities.

The research group on quality of life expanded in the fall of 2020 with two individuals associated with the department of mental health and suicide: a permanent position related to quality of life measurement and a post-doc position related to intervention research at the Promenta research center. Additionally, a 25% position has been established for 4 years (extension of a PhD position).

Ambition

Until 2024, our objectives are as follows:

1. **National Coordination in Quality of Life Research:** Strengthen the national coordination in knowledge within the domain of quality of life, with an emphasis on prevention and public health. This includes the establishment of a committee comprising pertinent academic environments. This initiative falls under NIPH's coordination responsibility pertaining to knowledge on mental health, commissioned by the Ministry of Health, in addition to the allocation letter no. 1 of 2020.
2. **Internal Workgroup on Quality of Life:** Establish an internal task force dedicated to surveying activities related to quality of life. This encompasses areas like foundational data, health analytics, and research. The objective of this group is to synchronize efforts in this field for the foreseeable future.
3. **Incorporation of Quality of Life Goals:** Integrate objectives related to quality of life into future projects and project applications emanating from the institute. This is particularly pertinent to areas such as migration health, mental health in children and adolescents, and vulnerable groups like individuals with disabilities, those with chronic ailments, and severe diseases, and endpoint measures in interventional studies.
4. **Measurement Project on Quality of Life:** Continue the work on measurement and monitoring (including health analysis, tool development, and research). Additionally, assess the need for a project aimed at gauging quality of life measures and monitoring among children and adolescents, in collaboration with the Health Directorate and NOVA.
5. **Annual National Networking Events:** Organize annual national networking meetings centered on the topic of quality of life.
6. **Extended Collaboration Beyond the Healthcare System:** Forge an extended network and collaborations extending beyond the healthcare realm – involving stakeholders from sustainability, urban planning and architecture, social sciences, economics, philosophy, work-studies, administration, voluntary sectors, and pertinent private sectors.
7. **Establishment of a Quality of Life Web Portal:** Inaugurate a dedicated web portal focused on quality of life, which encompasses statistical data, news articles, and scholarly articles. Furthermore, it is imperative to incorporate a distinct chapter on quality of life within the public health report. This portal, centralizing quality of life information (both data and research outcomes), is pivotal in the ongoing evolution of national endeavors in quality of life, as underscored in the "Gode liv Norgge" (Good Lives in Norway) report of 2016.

2. Further Development of Data Foundation and Measuring System on Quality of Life

Background and Status

The "Good Lives in Norway»" report from 2016 identified significant deficiencies in the data foundation and methodology for collecting quality of life data. Based on the absence of specific targets and an intensified emphasis on quality of life as a steering tool in public health efforts, the Health Directorate and NIPH unveiled a follow-up report in 2018 that presented concrete suggestions for a measurement tool and system for assessing quality of life in Norway. Spearheaded by NIPH, this initiative notably proposed a comprehensive population survey and a truncated questionnaire module, termed the "minimum battery". The comprehensive quality of life survey was pilot tested in the six municipalities of Hallingdal in the spring of 2019. In the spring of 2020, a national pilot was conducted with a gross sample of 40,000 adults aged 18 and above. Furthermore, the "minimum battery" was incorporated into the county public health surveys in 2019, amassing a net sample of approximately 150,000 by November 2020.

These datasets enhance our understanding of diverse facets of the quality of life across municipalities and population segments, potentially facilitating more informed prioritization and adaptations in response to local and national challenges. Subsequent surveys will enable the study of temporal trends, such as in relation to demographic shifts, municipal restructuring, systemic modifications, and the ramifications of Covid-19.

Ambition

Moving forward, our intention is to make visible and analyze the available data on quality of life. Among other initiatives, we aim to continue our efforts in analyzing and publishing CPHS data, including the corona survey (as previously mentioned), as well as MoBa and the Twin Registry data. Moreover, we intend to accumulate new quality of life data (for instance from MoBa, Twin Registry, FHUS), including follow-up data within CPHS (e.g., Nordland and Agder). One objective is also to assess the feasibility of further expanding the data foundation, for instance, by merging data from CPHS with registry data and considering the potential for panel data on quality of life. A final objective is to refine and further develop the national monitoring system, expanding it to include recommended metrics for quality of life, specifically for children and young people.

3. Enhancing Research on Causative Mechanisms, as well as Social and Geographical Gradients in a Life-Course Perspective

Background and Status

While Norway generally scores high on measures of life satisfaction, trust, and social capital, there is a notable disparity in quality of life. In 2019, 16% reported poor quality of life. For certain groups, such as those not integrated into the workforce or those living with illness and functional impairment, this figure ranged between 40-60%. The accumulation of risk factors such as health issues, unemployment, and low social integration correlates with markedly reduced quality of life across all dimensions.

Nationally and internationally, the understanding of quality of life in a developmental and life-course perspective (pathways to "good life"), risk and protective mechanisms, especially underlying social and geographical gradients, is markedly scarce. There's a distinct need for greater knowledge on how certain groups with significant health challenges still maintain good quality of life, and how interventions can facilitate more individuals to lead fulfilling lives despite health issues and other adversities. There's also a pressing need for more refined knowledge about how various facets of quality of life (e.g., trust, belonging, loneliness, and social participation) correlate with mental and physical illnesses (such as depression and cardiovascular diseases).

Ambition

In the future, we will persist in our efforts to investigate and publish on causative mechanisms, including the interplay between genetics and environmental factors, associated with the development of quality of life resources (e.g., coping, significance, resilience, joy). We will place a particular emphasis on exploring associated social, health-related, and geographical gradients in a life-course perspective. We will also delve into the repercussions of the Covid-19 pandemic for various demographic groups. We aspire to refine the measurement system and data foundation for quality of life. Another objective is to disseminate our work at conferences and seminars.

4. Intervention Research with an Emphasis on Quality of Life Enhancement and Disease Prevention Measures

Background and Status

There exists a palpable demand for more knowledge about the effectiveness of disease-prevention

and quality of life-enhancing interventions, and how such measures can be precisely tailored to cater to vulnerable groups such as minorities, individuals with specific diseases, low-income families, and the youth who aren't integrated into work or education. In 2020, a doctoral project was initiated linked to the evaluation of the "Course in Everyday Joy" in the public health centers (NIPH). Testing and evaluation of a digital everyday joy intervention, oriented towards the general population, will commence in 2021. NIPH-Promenta will also participate in the evaluation of interventions, encompassing both structural and population-directed interventions like the implementation of life-skills subjects in schools.

Ambition

Over the subsequent 3-5 year span, we intend to prioritize, among other things, data collection, the execution of data linkages, research, and health analysis related to intervention evaluation, especially quality of life-enhancing interventions. Our focus will be on both population-directed and structural interventions, as well as targeted interventions that are being implemented in Norwegian municipalities.

Structural means in public health work



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Structural measures can influence health and health-related outcomes. Structural instruments are used in all policy areas, but the knowledge and documentation of the effects is often unclear and deficient. The purpose of this development plan is to strengthen research on effects of structural instruments related to the objectives of public health policy, and which can contribute to the reduction of social inequality in health. Knowledge of structural measures is important as a basis for decisions to be taken in municipalities, in welfare agencies and at ministry level. The focus of the Norwegian Institute of Public Health on intervention research is defined in the national public health policy and its own strategy. With a broad range of disciplines and expertise, the institute is well-positioned to build a strong academic environment on structural measures across departments, areas, and interdisciplinary centers for research and health analysis.

What are structural means?

Universal public health measures are usually sorted between educational and structural measures. Educational tools are aimed directly at individuals with information and appeal to individuals based on knowledge and conviction to make good choices. Structural measures influence behavior through contextual conditions as either promotes good choices or make it more difficult to make bad choices. Structural measures can be divided into *legal*, *financial*, and *physical* measures. Legal measures include measures such as prohibition (narcotics), access regulation (age limits, sales times, licensing) but also rights (right to education). Economic measures include price and tax policy, but also measures such as welfare schemes. Physical measures concern the design of the physical environment (cycle paths, local environment, parks etc.).

A third type of means are the behavioral economic ones. Behavior economic measures facilitate physical and contextual aspects in a health promoting way. One example is where certain groceries are places in a store. Behavioral economic measure may be combined with more pedagogical measures (dietary information combined with distribution of fruit at school), and through structural measures there is a good potential for a great influence on the physical context (protection against passive smoking through legislation). In our context, we therefore define the behavioral economic measures as a subcategory of structural measures.

Structural measures are initiated and implemented at different *administrative levels*. Cycle paths, local environment design and parks managed e.g. on municipal level, while legal prohibition is adopted on national level. Many structural measures are aimed at a specific context or group, e.g. the family policy, or measures implemented in schools or kindergartens. Structural measures can also be divided according to *policy areas*, e.g. as the Norwegian Directorate of Health's reporting system divides public health policy into the themes:

economic living conditions; social support, participation and involvement; safe and health-promoting environments; healthy choices; upbringing and working life.

It is often also necessary to see the use of different types of instruments in context. Pedagogical measures as information campaigns can e.g. prepared for use of structural means. In addition to effects on contextual factors structural measures (legislation, tax policy instruments) can also have a significant informational effect. Good health promotion programs depend on good "orchestration" of means of action. They must work together and produce synergistic effects.

Why do research on use of structural means in Norway – nationally and local?

Many of the structural means used within the different policy areas is often rooted in a deliberate policy, without necessarily being based on science. Research on structural measures will therefore contribute with knowledge of measures that have been carried out and have had the desired effect. At the same time, research must focus on the unintended effects of the means used. On national and local level there is a need for knowledge on the effects of both existing and new structural measures. It is relevant to examine whether existing and new measures aimed at other purposes have effects on (social inequality in) health, both according to socio-economic status and among residents with a minority background. It will also be important to investigate how context-dependent effects may be.

Examples of structural measures that require knowledge are the effects of national and municipal measures on the distribution between the sale and serving of alcohol, the effect of national price and tax policy on cross-border trade and duty-free sales, and the importance of regulatory measures in the tobacco field. Within nutrition, school meals, sugar tax, regulation of the content of food are examples of relevant measures. For physical activity measures such as the development of walking and cycle paths, green areas and hiking trails may be relevant measures. The potential effect of (possible health promoting) team sports is another area where more research is needed.

Different welfare policy means can have effects on (social difference in) health, both by being balancing and by improving general living conditions. Examples are support for families with children in the form of cash transfers and income compensation, supervision and education for children, services that can improve life quality of elderly, and support schemes aimed at children and families with special needs.

NIPH has evaluated the effect of structural measures on several occasions.¹⁰ Challenges represented by the Burden of Disease Project will be guiding which structural measures that will be prioritized for research. Health-related behavior such as diet, alcohol intake, tobacco and drug use and physical activity/inactivity are among the risk factors that contribute most to health and welfare loss in Norway. The assessment of the measure's relevance to equalizing social inequality in health will also be an important, unique, scope and possibly transfer value. Finally, there will be special situations, such as the corona pandemic, where it is relevant to study the effects of structural measures.

Good assumptions for research on structural means

Research on structural measures is anchored in NIPH's strategy by the focus on policy research, cooperation with municipalities and the goal of strengthening knowledge on connections between measures in various social sectors and health outcomes. For "Measures to improve public health" the institute's ambition is to show which measures are most cost efficient and best at equalizing social differences. In the strategy section, emphasis is placed on measures that are relevant in municipalities and topics of mental health and substance abuse, aging, social difference and growing up-conditions for children and youth. The research will be relevant for the strategy point as applies use of big data, dialogue, and user participation.

NIPH has good conditions for building a strongly professional environment on structural means across of the organization. We have both health and social science expertise. This provides a good basis to develop solid interdisciplinary projects on the field. The narcotics department has extensive expertise and knowledge of measures against harmful or potential harmful use of alcohol, tobacco, and drugs. Several areas and departments have expertise in quasi-experimental evaluation of welfare reforms, in addition to knowledge and experience with randomized controlled trials.

NIPH has established a Centre for evaluation of Public Health Initiatives with the goal of strength and further develop competence in evaluation research. The centre will contribute to strengthening measure-research in general, but will also contribute to the dialogue with ministries, directorates, and municipalities about specific evaluation tasks.

¹⁰ In recent years, NIPH has been responsible for following evaluations: identification of the most effective structural means of action in order to reduce alcohol consumption in the population, the effect of price- and fee development on alcohol and tobacco use, the point tax system and the municipalities' management of alcohol licenses, standardized tobacco packaging, increased child benefit for certain groups in Troms county, sugar tax, registration and supervision scheme for tobacco sale, the action plan on diet, the Food Industry's Professional Committee (MFU), free school fruit (implemented 2007-14), piloting a free school meal, EAT MOVE SLEEP and health promoting sports teams.

The institute carries out several regular population surveys and has access to various register data. There is a high level of competence in the use of large population surveys, national registers and linked files. Furthermore, development work is ongoing with other data. One example is the turnover figures from the grocery trade. Such data will become an important source to evaluation of structural instruments in the future, for example evaluation of standardized tobacco packaging and evaluation of the sugar tax.

Researchers at NIPH cooperate widely with others national and international researchers. These environments can be drawn into planned project activity.

Research on structural means as basis for cooperation across areas at NIPH

Research on structural means is relevant for investments and activities by several areas at NIPH.

One example is the many measures implemented during the covid-19 pandemic, mainly as extensive structural measures. There is a lack of research and a clear knowledge for the non-pharmaceutical measures during the pandemic. Use of legislation within the vaccine field is another related theme. As described under "Corona-related structural measures", a collaboration has been established between the Centre for evaluation of Public Health Initiatives and initiatives within the National Knowledge Program for Covid-19. Furthermore, the centre is involved in analysis activity based on the emergency register Prepared C19. The centre is also included in an application for the establishment of a centre for research excellence at NIPH sent to the Research Council in November 2020 (Centre for Research Preparedness (PREPARED)). In this application, one of four focus areas deals with structural measures related to Covid-19 in particular.

The institute's engagement on climate, environment, food and health is another example where the institute wants to strengthening research on the effect of structural measures. This topic is best raised across areas, and the Centre for Evaluation of Public Health Initiatives will take initiative to collaborate when a project director is employed, and the work has started. We plan to include specific activities in the development plan for structural measures in the next version.

Another example of opportunities to do research on structural measures is the centres, and several of the departments at Division of Mental and Physical Health involvement in Global Health's application to NORAD. Even if we will not receive grants in this round, a collaboration on research and analysis about structural means is created and can be further developed.

As part of the follow-up of the development plan for structural instruments, we will continuously work to establish collaborative projects with other parts of the institute on research and analysis on structural means. The development plan shall be a dynamic document, and the plans for cooperate and concrete activities will be elaborated on an ongoing basis.

Priorities for research and analysis on structural means of action forth to 2024

We have prioritized four (plus one) thematic areas within this strategic period. For each area there will be one scientist with coordination responsibility.

Municipal alcohol policy - Alcohol use and the consequences of alcohol use constitute a significant public health problem. The municipalities have a particular responsibility within alcohol policy both for policy formulation and the implementation of national policy. Availability, local decision-making processes, and local implementation vary between municipalities. NIPH can, on the basis of Chapter 7 of the Alcohol Regulations, require information from the municipalities on management of the Alcohol Act and has from 1989 annually collected such information from Norwegian municipalities. NIPH can demand sales data from tax-free at airports and can demand data from holders of sales or liquor licenses and businesses that hand out alcoholic drink in connection with private importation. NIPH have data for total sales on Norwegian liquor stores and Norwegian airports, and data for alcohol sales in over 95% of Norwegian grocery retailers. Such data gives a unique basis for studies of effect of structural instruments in the alcohol field, also internationally.

Food schemes aimed at children and young people – All children spend a significant part of their upbringing in nurseries, schools, and after-school/after-school care. In addition, many children participate in various leisure activities. In these places children are often served food. This food is varying in quality. Children usually bring meals from home in primary school, but in secondary school many pupils change their eating habits. Some students at the junior high school do not bring lunch from home at all, others buy food. School meals are on the political agenda in several counties and cities, but the reasons for introduction are probably based as much on assumptions as evidence. This is a good opportunity to carry out studies on the effect of free school meals both on dietary habits, learning environment and learning outcomes. We want to carry out mapping surveys in order to be ready to evaluate a possible future implementation of an organized school meal in a good way. Furthermore, we have defined after-school/after-school care as well as organized leisure activities (such as sports tournaments) as important arenas with great potential for improving children's and young people's diets.

Welfare schemes aimed at families with children - Equal opportunities for all children regardless of social background is a central goal for the Norwegian welfare state. Family policy measures influence the family's level of time and money in critical phases of the childhood and can affect the children's health. Concrete

examples of such measures are child benefits, cash benefits, day-care centres, and parental leave. Possible significance for social inequality is particularly important: is the family policy arrangements strengthening those who already have the most, or does it contribute to a more even distribution of resources and less social inequality in health? NIPH has expertise in evaluating the effects of welfare schemes by examining changes and differences in changes through natural experiments.

Price and tax policy - the effect on diet, alcohol, and tobacco use - Price and tax policy is an important structural tool, both to make goods more expensive and to limit the consumption of goods defined as unhealthy, alternatively as a means of making healthier foods more accessible. Taxes have traditionally been an important tool in the tobacco and alcohol area, and to some extent in the diet area. The price and tax policy is a policy area that is political sensitive, and there is a need for knowledge about intended and unintended effects on health-related behaviour in a Norwegian context. A particular focus will be to examine the effects of price and tax policy on consumption in general, and in different population groups based on e.g. sex, age, socioeconomic status and ethnicity. Access to new data (turnover figures from grocery stores and other relevant data sources) make new analyses possible. Analysis of cross-border trade will be central to this work. One can also think of behavioural economics studies within this theme, as measures to encourage customers to switch from cardboard wine to bottled wine at the liquor store, or from candy and sweets in shops to healthier alternatives.

Corona-related structural measures - Most of the measures introduced in connection with the Corona-19 outbreak in March 2020 can be characterized as structural measures. All research at NIPH on the effect of the national corona measures will be able to be included as studies of structural measures. The centre participates in the department's subject initiatives Systematic evaluation of the effect of infection control measures and Compliance with measures and conditions that affect behaviour in connection with Covid-19, under the National knowledge program for Covid-19. One of the projects examines the connection between digital teaching or campus teaching on occurrence of coronavirus transmission. The centre also participates in several of the analysis activities that have been initiated based on the Prepared C19, and shall contribute to the ongoing evaluation of measures, both to limit the spread of Covid-19, and the consequences of such measures for other health outcomes.

How to implement these plans?

Applications for research and innovation funds. The potential for external funding from research funders such as the Norwegian Research Council is considered great. Furthermore, the venture will be able to attract funding from other sources (e.g. Gjensidigestiftelsen, Sparebankstiftelsen, DAM-stiftelsen). To secure financing of studies on effects of structural measures, it is a condition that resources are available, even if relevant grants is not announced. Implementation of structural measures should therefore be accompanied by funds for evaluation. Therefore, it is important to be in a regular dialogue with decision-makers when planning new measures.

Dialogue with national and local authorities and other areas of expertise. Good research into the effects of structural measures primarily requires close collaboration between the Institute of Public Health, other research environments, ministries, directorates, municipalities, and counties. The reason for this is to ensure enough time to secure access to relevant data and plans for introducing the measures that enable them to be evaluated. Without a close cooperation it becomes difficult on one systematic manner to develop new knowledge on this area. For directorate and ministry, it will be particularly important to prioritize the facilitation of research on structural instruments at national and local level. E.g., by better facilitating research ahead of the introduction of structural measures and, when possible, facilitating randomized studies.

International and national research collaboration. Good research also requires collaboration with the leading professional communities within the field both nationally and internationally. To establish, and maintain, such collaboration will therefore be a priority.

Intern competence building. Internally at NIPH we will initiate the need to strengthen competence in evaluation methodology through internal and external course activity. Internal course will be open for all employees.

Recruitment. Experience with research on structural means will be underlined when positions is announced.

Plans:

Generally:

- Study circle on method for interested by the institute, with a focus on natural experiment/quasi-experimental method.
- Dialogue meetings with municipalities to identify measures as is important and possible to evaluate, e.g. according to The Research Council's announcement of collaborative projects.
- Arrange a workshop with relevant research environment nationally and internationally.
- Resume contact with Nordic network on evaluation of public health measures (as NIPH have previously taken the initiative to).
- Apply for research and innovation funds, see concrete initiative in the overview under.

Ongoing and planned project under each thematic area:

Municipal fee policy:

- Decision-making, enforcement, duck effectiveness of local alcohol policies (planned application to the Research Council).

Food arrangements targeting children and young people:

- Free school meals – study of the effect of free school meals in it high school and secondary school. Cooperation with Oslo, Viken and Vestland counties (incl. application to the Research Council). Data collection has started.
- National mapping of school meal offered by Norwegian secondary schools and high school schools. Mapping is carried out with funds from Gjensidigestiftelsen. Data will be analysed and presented.
- School fruit – (i) the effect of school fruit on academic achievements and (ii) the effect of school fruit on body mass index in children (based on data from Ungvekst). Scientific articles.

Welfare schemes:

- Effects on health and social equalization of family policy reforms. Complete knowledge summary about the effect of political measures on children's health. Scientific article.
- Use quasi-experimental techniques to evaluate the effect of cash transfers on children's health, in collaboration with the Centre for Fertility and Health. Scientific article.
- A goal is to seek external financing in cooperation with relevant internal and external partners. Further analyses of other reforms.

Price- and fee policy:

- The cross-border trade project - examine the effect of tax policy (the sugar tax and liquidation of the NOK 350 limit) on Norwegians shopping habits. Financed of own funds from HOD.
- The sugar tax – (i) the effect on sales of soda and candy and (ii) the effect by socio-economic municipal variables.
- Establish new projects according to fee changes on alcohol, tobacco, and sugar.

Corona-related project:

- The context between digital and campus teaching and infect of corona among students at Norwegian universities and colleges. Anchored in the national knowledge program for Covid 19.
- SOAP – School Opening in the Age of Pandemic. One effect study (for now just protocol, not initiated) of the effect of school closures/openings on the spread of infection. Anchored in the national knowledge program for Covid 19.
- Mental complaints and quality of life among Norwegian university students: Stability, change, and connection with health outcomes and functioning. The project is a longitudinal study with weekly measurements of (and other parameters) mental health and quality of life in the period January 2020 – February 2021. Weekly questionnaires include corona-related question of consequence. The project is a collaboration between NIPH, NSD and UiB (<https://www.uib.no/studenthelse>).
- Prepared C19: Analyse the impact of closure of schools and kindergartens on children and parents (mental) health. Investigate the context between different types of occupations and characteristics by occupations (degree of physical proximity at work, possibility of home office, health burden) and risk of infection and hospitalization (possibly death) from Covid 19. Look at vaccine rollout along dimensions such as geography, socio-economic status, and immigration background/country background.
- The Bergen in Change COVID19 study (BiE) - The BiE -study. One longitudinal study with focus on providing knowledge about how the corona outbreak and the measures affect health, well-being, and lifestyles. The project covers both adults and children aged 12 and above. The project is a collaboration between the Norwegian Institute of Public Health, the University of Bergen and Bergen Municipality, and is anchored in Alrek Health Cluster (<https://www.uib.no/jgs/135092/bergen-i-endring-covid19-studien-bie-studien>).

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