

Project protocol:
Diagnostic Survey of Mental and Substance
Use Disorders in HUNT (PsykhUNT)

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Summary

Mental and substance use disorders are highly prevalent and cause enormous human suffering and economic loss for both the affected individuals, their families and the society. In 2016, the Norwegian Institute of Public Health (NIPH) was assigned by the Ministry of Health and Care Services to pilot a national epidemiological diagnostic survey on mental and substance use disorders. The diagnostic instrument employed in the World Mental Health Surveys, the Composite International Diagnostic Interview (CIDI) were to be used as data-collection instrument. The pilot was carried out in the geographical area of Nord-Trøndelag as a sub-project in the fourth wave of the Trøndelag Health Survey (HUNT4). After the completion of the pilot, the survey was expanded to include HUNT4 participants from the city of Trondheim. The working title of the survey was “the Psychiatry Project in HUNT4”, abbreviated to “PsykhUNT”.

The aims of PsykhUNT were to i) gather experience on how to conduct a prevalence study of mental disorders in the Norwegian setting, ii) collect data on the prevalence, risk factors and consequences of mental and substance use disorders, iii) collect data on treatment coverage for mental and substance use disorders, iv) conduct a thorough nonparticipation analysis.

The epidemiological psychiatric interview survey was conducted on a sub-sample HUNT4 participants aged 20 to 65 years from the geographical areas Nord-Trøndelag and the city of Trondheim. The targeted sample size was 4,000 participants, and 16,602 persons from the study population of HUNT4 participants were invited to reach this goal. The only exclusion criterion was insufficient understanding of Norwegian or English. Potential participants were sampled using probability sampling in repeated draws over the course of the data-collection period, which lasted from November 2nd 2018 to September 18th 2020. Younger persons were oversampled to adjust for the expected larger nonparticipation among these age-groups. The predesignated participants were informed about the project through postal letters. A week after receipt of the letter, each received an SMS with information on how to sign up for the psychiatric interview. One SMS reminder was sent to persons who did not respond to the initial invitation. We made four contact attempts to schedule the interview amongst those who registered; three by phone and one final by SMS. All participants received a \$30 gift card as a token of appreciation. Computer assisted face-to-face or telephone interviews were conducted by trained and certified interviewers at a local field station. In the period March to August 2020, the interviews were mainly conducted by telephone due to the social distancing measures introduced to contain the spread of coronavirus disease (COVID-19). A short questionnaire on COVID-19 related issues were also included in the data-collection in this period. The PsykhUNT data can be linked to data from all previous rounds of the HUNT-study, administrative registries from Statistics Norway, and national health registries.

The PsykhUNT project provides rich opportunities to conduct epidemiological studies on prevalence, risk factors and consequences, and the treatment coverage of mental and substance use disorders. The project has the potential to produce new and updated knowledge that can be essential in planning for a more effective and targeted prevention and treatment for mental and substance use disorders both nationally and internationally, as well as reducing the consequences of mental and substance use disorders.

Introduction

Mental and substance use disorders are highly prevalent and cause enormous human suffering and economic loss for both the affected individuals, their families and the society. International studies suggest that one in five have suffered from a mental or substance use disorder in the past 12 months,¹⁻³ while more than half of the population will satisfy diagnostic criteria for a mental or substance use disorder at least once during their life-time.^{4,5} Comorbidity between different mental and substance disorders are common^{1,4} and mental and substance use disorders also increase the risk of subsequent somatic medical conditions^{6,7} and premature mortality.⁸⁻¹⁰ Furthermore, mental disorders are dominant causes for drop-out from education,⁸ productivity loss⁹ and work-life exclusion.^{10,11} They are consistently ranked among the most important contributors to disease burden, particularly in the adolescent, young adults and working-age population.¹² As a result, their associated economic costs exceeds all other major causes of disease burden.¹³

High-quality diagnostic data on distribution of mental and substance use disorders in the general population are expensive, difficult to obtain and hence globally scarce. In the mid-1990s, the first Global Burden of Disease (GBD) report estimated that mental disorders ranked among the highest causes of disease burden worldwide.¹¹ This led the World Health Organization (WHO) to initiate several cross-national studies to assess population prevalence and treatment for mental disorders through the World Mental Health (WMH) Survey Initiative. The aim with the WMH project was to assist countries in their collection of relevant information that the health authorities could use for planning and distribution of resources to improve the mental health of their population.¹² The instrument developed for this assessment was the standardized psychiatric diagnostic interview Composite International Diagnostic Interview (CIDI).^{13,14} To date, CIDI has been used in WMH Survey data-collection in over 30 countries worldwide,¹⁴ and the results are hence comparable between countries. The majority of surveys in high income countries were, however, done in the 1990s and early 2000s, and the generalizability of these findings to the current situation is uncertain. There is thus a great need for updated data of the current mental health situation in high income countries.

Knowledge about the current mental health status of the Norwegian population is also poor, and epidemiological diagnostic surveys has not been conducted on the general population since the 1990s^{15,16}. Although mental health screening tools are commonly included in population based health surveys, these only give data on presence of mental health symptoms and mental distress. Such instruments will also substantially overestimate the prevalence of disorders of clinical relevance.¹⁷ Registries on health service use includes diagnostic information on mental disorders, but up to 2/3 of those suffering from the most common mental disorders do not seek help in the health services.¹⁸ Further, Norwegian data has shown poor agreement between cases identified in an epidemiological diagnostic interview survey and diagnostic records in the health registries.¹⁹ Thus, although severe mental disorders such as bipolar and psychotic disorders are likely to be represented in the health registries,²⁰ unrecognition and underutilization of health services among individuals with less severe but more common mental and substance use disorders indicates that data from registry-based sources will severely underestimate the prevalence of mental and substance use disorders in the population.

In 2016, the Norwegian Institute of Public Health (NIPH) was assigned by the Ministry of Health and Care Services to conduct a pilot on a national representative diagnostic survey on mental and substance use disorders. It was decided to use the latest version of the diagnostic instrument

employed in the WMH Surveys, the Composite International Diagnostic Interview.¹⁴ The pilot was carried out in the geographical area of Nord-Trøndelag as a sub-project in the fourth wave of the Trøndelag Health Survey (HUNT4). After the completion of the pilot, the survey followed HUNT4 to include the city of Trondheim. The working title for the survey was “the Psychiatry Project in HUNT4”, abbreviated to “PsyKHUNT”.

Aims

PsyKHUNT had four aims: i) gather experience on how to conduct a prevalence study of mental disorders in the Norwegian setting, ii) collect data on the prevalence, risk factors and consequences of mental and substance use disorders, iii) collect data on treatment coverage for mental and substance use disorders, iv) conduct a thorough nonparticipation analysis. Results from aims ii) to iv) will be published in separate papers. The present report will focus on the planning, implementation and future plans for the use of data from the survey.

Funding

The survey was funded the Ministry of Health and by the Norwegian Institute of Public Health.

Methods

Design and general framework

PsyKHUNT is cross-sectional and epidemiological psychiatric diagnostic survey conducted on a sub-sample of randomly drawn participants from the fourth round of the population based Trøndelag Health Study (HUNT4). The survey was conducted in two geographical areas of Trøndelag county in Mid-Norway, Nord-Trøndelag and the city of Trondheim. The survey was carried out from November 2018 to September 2019 in Nord-Trøndelag, and from January to September 2020 in Trondheim. The data-collection was done using the computer assisted personal interview (CAPI) methodology, conducted by trained lay interviewers in a face-to-face or telephone setting. From March to August 2020, the interviews were mainly conducted by telephone due to the social distancing measures introduced to contain the spread of coronavirus disease (COVID-19).

Setting

Trøndelag county is the third largest Norwegian county in acre, and the fifth largest county in number of inhabitants. It consists of large rural areas and some cities. Trondheim is the largest city of the county, and the third largest city in Norway. It is also an important city for higher education. Table 1 shows the main characteristics of the population in Nord-Trøndelag, Trondheim and Norway. Compared with Norway in general, a larger proportion of the population in Trondheim is in the age-group 20 to 65, while the opposite is the case for Nord-Trøndelag. The unemployment rate in Nord-Trøndelag and Trondheim is smaller than the national average, while the proportion of the workforce receiving permanent disability pension is higher in Trøndelag than the national average. The proportion of the population with higher education is around 10 percentage points higher in Trondheim, but 8 percentage points lower in Nord-Trøndelag compared with the national average.

Table 1. Characteristics of Nord-Trøndelag and Trondheim compared with Norway in general. 2017 -2019. Source: Statistics Norway

	NORD- TRØNDELAG	TRONDHEIM	NORWAY
Population (N)	137 233	196 159	5 328 212
Proportion of population aged 20 to 65	55.9%	63.3%	59.2%
Educational level¹	26.6%	45.0%	34.6%
Unemployment rate	1.8%	1.9%	2.3%
Disability pension rate²		10.7%	10.1%

¹Rate of the population aged 16+ with a lower or higher university or university college education.

²Numbers available for Trøndelag county only

The Trøndelag Health Study (HUNT4) and PsykHUNT

The Trøndelag Health Study (former: The Nord-Trøndelag Health Study - HUNT) is a repeated cross-sectional population based cohort study, with opportunities for retrospective and prospective follow-ups. Approximately 250,000 persons aged 13-100 years have been enrolled in four waves since the 1980s.^{21,22} It consists of two components: Young-HUNT for those aged 13 to 19, and HUNT for those aged 20 and above. Every citizen in the county within the given age-spans are invited to the study. The HUNT-participants can be followed over time, such as in new HUNT waves and other data-collections, and in national sociodemographic, health service use and disease specific registries. In the fourth wave of the survey (HUNT4), the study was expanded to include residents in the former neighboring Sør-Trøndelag county. The participation rates by geographical area in HUNT4 were 54.0% (men: 49.1%, women: 58.8%) in Nord-Trøndelag, and 42.7% (men: 36.5%, women: 49.1%) in Sør-Trøndelag (where Trondheim is based). Please see the HUNT study's homepage for more details.²³

Recruitment, sampling and participants

Participants to PsykHUNT was randomly sampled among the HUNT4 participants who had consented to be invited to further studies, were resident in Nord-Trøndelag or Trondheim, and between age 20 to 65 at the time of HUNT4 participation. We had full access to names, addresses and mobile phone numbers to the eligible population, in addition to information on sex and date of birth from the Norwegian population registry.

Invitation of participants continued until we reached the target number of 2,000 participants in Nord-Trøndelag and Trondheim, respectively. Repeated probability sampling were thus done throughout the data-collection periods, resulting in eleven sampling draws in Nord-Trøndelag, and four draws in Trondheim. A total of 16,602 persons were invited to the survey. Previous studies have shown lower participation rates among younger persons,^{24,25} and we therefore oversampled among the younger age-groups, see Table 2. Men were oversampled to constitute 58% of the sample in the first draw of participants in Trondheim, conducted in January 2020. This strategy was later abandoned, and no oversampling based on gender was done for the later sample draws in Trondheim. We will constructed weights to adjust for the gender-specific sampling in the Trondheim part of the survey. Due to the over-representation of women among the HUNT4 participants, women constituted more than half of the invited participants in PyskHUNT.

Table 2. Distribution of sampled sex and age-categories by draws in Nord-Trøndelag and Trondheim

	SAMPLED NORD- TRØNDELAG	SAMPLED TRONDHEIM DRAW 1	SAMPLED TRONDHEIM DRAW 2-4	TOTAL
NUMBER	9,602	2,000	5,000	16,602
SEX				
MEN	42.7%	58.1%	41.4%	44.2%
WOMEN	57.3%	41.9%	58.6%	55.8%
AGE-GROUP				
20 TO 29 YEARS	33%	33%	33%	33%
30 TO 39 YEARS	26%	26%	26%	26%
40 TO 49 YEARS	23%	23%	23%	23%
50+ TO 65 YEARS	18%	18%	18%	18%

The interviews were conducted at six local field stations; five in Nord-Trøndelag and one in Trondheim (Table 3). We primarily aimed for a distribution of participants at each of the of the five field stations in Nord-Trøndelag in accordance with the proportion of the population living in these areas. However, due to lower participation rate in the most remote areas, probably due to longer travelling distances for the participants, as well as other practical issues, we ended up with a higher proportion of participants at two of the field stations in Nord-Trøndelag (Levanger and Stjørdal).

Table 3. Description of the localities

FIELD STATION	NAMSOS	STEINKJER	VERDAL	LEVANGER	STJØRDAL	TRONDHEIM
INCLUDED MUNICIPALITIES	Namsos, Namsskogan, Overhalla, Namdalseid	Steinkjer, Verran, Inderøy	Verdal	Levanger, Frosta	Stjørdal, Meråker, Selbu	Trondheim
TIME-PERIOD FOR DATA COLLECTION	20/2-19 4/7-19	20/3-19 4/9-19	28/2-19 5/9-19	12/11-18 4/9-19	12/11-18 30/8-19	28/1-20 18/9-20
SIZE OF TARGET POPULATION						
NUMBER OF INVITATIONS	1000	1700	1600	2400	2900	7000
NUMBER OF PARTICIPANTS	162	401	379	548	658	2159
PARTICIPATION RATE (%)	16.2	23.6	23.7	22.8	22.7	30.8
PROPORTION OF PARTICIPANTS (%)¹	3.8%	9.4%	8.9%	12.9%	15.5%	50.1%

¹Proportion of the total number of PsykHUNT participants (N=4307)

Invitations containing written information about the project was sent as postal letters to predesignated respondents (Appendix 1). The information covered background and aim of the project, procedures, possible participant benefits and disadvantages, voluntary participation and how to withdraw consent, data handling and linkages between with participation, premises for the interview and contact details. In accordance with the new GDPR regulations, information was also given about ethical approval, the legal foundation for the data processing and where to complain.

The letter was signed by the general director at NIPH and managing director at HUNT. Invitations were sent in several rounds (batches) to avoid a long time-lag from the respondents signed up for an interview to when the interview could be scheduled. One reminder was sent by SMS to those who had not enrolled as participants at the first invitation. The timing of the reminder varied somewhat in Nord-Trøndelag, partly because permission to send a reminder was not given from HUNT until early 2019 (two months after we started data-collection). In Trondheim, the reminder was generally sent 1 to 2 after the original invitation. In order to increase participation rate, the respondents were offered a gift card with the value of about \$30 as a token of appreciation of the participation.

Potential respondents from Nord-Trøndelag could sign up for interview by either returning the response tag attached to the postal letter by mail, call the project coordinator by telephone, send an SMS or an e-mail. Due to very low registration by mail and telephone, this procedure was changed in Trondheim, and the potential respondents received an SMS about a week after they were sent the information letter. They could then sign up for interview by replying to the SMS, or sending an e-mail to the coordinator. Overall, 99.5% of the potential participants signed up for interview through SMS (88.0%) or e-mail (11.5%). Those who had signed up for interview were contacted by the local coordinators to schedule date and time for the interview. Each person who had signed up for interview was phoned three times and finally sent one SMS with information that we had tried to make contact before they were deemed as non-respondents.

Materials and Equipment

Instrument: Composite International Diagnostic Interview 5th revision (CIDI 5.0)

CIDI was developed by the WMH Survey Initiative as a fully-structured diagnostic research interview to be used in cross-national settings by lay interviewers with no previous clinical training.¹⁴ It assess presence, persistence and intensity of the most common mental disorders according to diagnostic criteria from the Diagnostic and Statistical Manual of Mental Disorders (DSM-5), published by the American Psychiatric Association (APA) and the International Classification of Diseases 11th edition (ICD-11), published by WHO. The validity of CIDI 5.0 has not yet been assessed, but previous versions of CIDI show good concordance with other diagnostic instruments, such as the Structured Clinical Interview for DSM-IV (SCID)²⁶ and Schedules for Clinical Assessment in Neuropsychiatry (SCAN)²⁷. The CIDI interview is built up by three main types of modules: background modules, diagnostic modules and non-diagnostic modules. Table 4 shows the modules and the diagnoses covered by each of the diagnostic modules, as well as the local adaptations done to the interview.

Table 4. Modules, diagnoses assessed and local adaptations of CIDI 5.0 in PsykHUNT.

CATEGORY	MODULE	DIAGNOSE	LOCAL ADAPTATIONS
BACKGROUND MODULES	BA: Your background		Questions about ethnicity, country background and distance to cities with more than 1 million inhabitants not included in PsykHUNT
	HE: Your health		
DIAGNOSTIC MODULES	DE: Depression	Major depressive episode, major depressive disorder	
	PD: Persistent depression	Dysthymia	
	SH: Self harm	Suicidality and self harm	
	HM: High mood	Manic episode, hypomanic episode, bipolar I disorder, bipolar II disorder, subthreshold bipolar disorder	
	WA: Worry and anxiety	Generalized anxiety disorder	
	AA: Anger attacks		Not included in PsykHUNT
	PA: Panic attacks	Panic attacks, panic disorder	
	PH: Phobias	Specific phobia	Avoidance of tunnels included as example of object for phobia instead of avoidance of tall buildings
	AG: Agoraphobia	Agoraphobia	
	SA: Social anxiety	Social anxiety disorder	
	OC: Obsessions and compulsions	Obsessive-compulsive disorder, hoarding disorder, body dysmorphic disorder, excoriation, trichotillomania	
	SE: Stressful experiences	Post traumatic stress disorder	
	TAD: Tobacco, alcohol and drugs	Alcohol and drug use disorders	Examples of drugs adapted to those used in Norway
	UE: Unusual experiences	Psychotic experiences	Examples of pharmaceuticals adapted to those used in Norway
NON-DIAGNOSTIC MODULES	TR: Treatment of emotional problems		Questions on hospitalizations adapted to local context
	EM: Employment		Only included in Trondheim
	FI: Finances		Only included in Trondheim
	PR: Personal relationships		Part of the module only included in Trondheim
	SN: Social networks		Not included in PsykHUNT
	CE: Childhood experiences		Not included in PsykHUNT
	CB: Childhood behavior problems		Not included in PsykHUNT
	SD: Self-description		Not included in PsykHUNT
	RC: Respondent contacts		Not included in PsykHUNT

Translation and adaptation of CIDI 5.0

As CIDI 5.0 had not been previously used in Norway, the instrument had to be translated and adapted to the local context. The translation were done in the period July 2017 to October 2018 and was lead by Ann Kristin Skrindo Knudsen (AKSK) at NIPH. The process was based on the guidelines for translation of international assessment instruments described in the manual Cross-Cultural Survey Guidelines,²⁸ as well as in the WMH survey guidelines (available from WMH upon request). It was stressed that the translation should be as close to the original meaning as possible, but with

necessary adaptations for the questions to make sense in a Norwegian context. The aim was to achieve conceptual and cultural equivalence rather than lexical or word-for-word equivalence. It was further a goal with the translation that the questions should be understandable for most people. A previous Norwegian translation of CIDI 1.1, terms used in the HUNT4 questionnaires and the F-chapter in the Norwegian version of ICD-10, as well as existing Norwegian translations of Mini International Neuropsychiatric Interview (M.I.N.I) and shorter instruments included in CIDI 5.0 (ie Adult ADHD Self Report Scale (ASRS v1) and Personality Inventory for DSM-5 Brief Form (PID-5-BF)) were used as guiding translations in the work.

The translation and adaption process included the following main steps:

- 1) Primary translation of all elements of the interview was done as independent translations within a team consisting of AKSK and four students late in the professional clinical psychology program at the University of Bergen. The Translation and Verification Follow-up Form (TVFF) used in the translation of the European Social Survey (ESS) was employed as a template for the translation.²⁹
- 2) An expert committee consisting of six experienced researchers with expertise in questionnaire development, psychiatry, mental health and previous Norwegian translations of CIDI reviewed each suggested translations item for item.
- 3) The revised version of the translation including the changes and modifications from step 2 was crosschecked for consistency in wording. Specific modules and questions were sent to professionals at NIPH and other institutions for a second quality control of translations of items within their area of expertise.
- 4) Internal testing of the quality of the translations through the tool Question Appraisal System (QAS-99) was conducted by four new students at the professional psychology program, with focus on ensuring that the Norwegian translation covered the same phenomenon as the English version, testing question comprehension and checking that questions were unequivocal. Comments regarding the original construction of questions were sent to WMH Data Analysis Coordination Center at Harvard Medical School US, which in some cases changed the original formulation of the questions.
- 5) A selection of questions from each diagnostic module, including all screening questions and some of the questions on age of onset, frequency, duration, recency and severity were tested through cognitive interviews on a convenience sample of 10 persons of different age, sex and educational background. The aim was to test the Norwegian translation.
- 6) The modification from the QAS testing, changes made by Harvard and comments from the cognitive interviews were included in the final version of the instrument. The item by item translations were then recorded in the Data Access Tool and sent to Harvard and the WMH Data Collection Coordination Center at the University of Michigan for programming into Blaise, which was the program to be used during the data-collection.
- 7) The Blaise programmed version of CIDI 5.0 was then thoroughly tested for missing items, typos, errors in question fillings and skip functions in close collaboration between the team at Harvard and the Norwegian team. Errors were corrected.
- 8) Some typos and skip-function errors were detected in the first months of the data-collection in Nord-Trøndelag (November and December 2018). Further, it was reported from the field that several of the respondents had negative reactions toward the formulation in questions

regarding experiences with alcohol. The items in questions were modified and an updated version of the program was introduced in the field in January 2019.

- 9) A revised version of the CIDI 5.0 interview from Harvard was completed in June 2019. This revised version was employed in the data collection in Trondheim, starting January 2020. Other updates to the interview in Trondheim included date and time of the interview, and the inclusion of three additional modules: employment, finances and personal relationships (Table 4).

A challenge in the translation process was that the instrument was not finalized from WMHSI when the translation work began. CIDI was updated several times, which caused extensions of the translation period, and also introduced some inconsistencies in question wording. Most, but not all, of these were discovered and corrected before we went into field in Nord-Trøndelag. For the data-collection in Trondheim, the interview was mainly free for wording and skip-errors.

COVID-19 questionnaire

The COVID-19 pandemic came to Norway in late February 2020, and as we already had an ongoing data-collection, we decided to expand the interview with short questionnaire assessing issues related to the pandemic. The questionnaire was introduced in the data-collection as of April 1st and was continuously used until the finalization of the data-collection on September 18th. The questionnaire was presented to the participants after they had done the CIDI interview. Items in the questionnaire included assessment of exposure to the COVID-19 virus (confirmed or suspected contamination of oneself or close relatives), being in isolation or quarantine, becoming unemployed or laid off due to the pandemic, working in the frontline sectors, worries about contamination or the disease, and three established instruments to measure mental health related issues; the Three Item Loneliness Scale³⁰, the five item version of Hopkins Symptom Checklist (HSCL-5)³¹ and the Cantril's Ladder of Life Scale (Appendix 2).

Field work organization and procedures

Staff

Project group

The project group had the overall responsibility for the project, including planning, ensuring that required documentation and legal requirements were met, and supervision of progress and quality control of the data-collection. The group consisted of experienced researchers in psychiatric epidemiology from NIPH and HUNT Research Center. Department director Anne Reneflot (PhD and sociologist) at NIPH was the project leader, and senior researcher Ann Kristin Skrindo Knudsen (PhD and clinical psychologist) was the assistant project leader and responsible for the translation and implementation of CIDI. Department Director and Professor Ted Reichborn-Kjennerud (PhD and psychiatrist), HUNT Director and Professor Steinar Krokstad (PhD and psychiatrist) and Center Director and Professor Simon Øverland (PhD and clinical psychologist) contributed in the project planning phase, whilst senior researcher Kristin Gustavson (PhD and clinical psychologist) and researcher Kim Stene-Larsen (PhD and clinical psychologist) contributed in the data-collection. The project group had at least one weekly skype meeting from August 2017, during the planning phase of the project, until the data-collection was finalized in September 2020.

Field coordinators and administrative staff

Two local coordinators had the day-to-day responsibility for the practicalities with the data-collection. Work tasks included identifying and renting premises for the local field stations, assisting in the recruitment of interviewers and supervisors, sending out invitations to potential participants, scheduling the interviews, sending out gift cards to the respondents and keeping track of progress of the data-collection. In addition, one administrative employee at NIPH were responsible for contracts and salaries for the staff. The local coordinators participated in the weekly project group meetings.

Supervisors

Seven local supervisors were responsible for practical training of the interviewers, and ensured that the interviews were conducted according to the standardized protocol during the data-collection. They had weekly telephone calls with each of the interviewers. The supervisors had background as clinical psychologists (3 persons), master of psychology (1 person) physiotherapist (1 person) and psychiatric nurses (2 persons). In addition, three internal supervisors at the NIPH were mainly responsible for the training and certification of the interviewers.

Interviewers

The interviewers for the data-collection in Nord-Trøndelag were recruited through the health trust of Mid-Norway, and the majority had a background as health secretaries or psychiatric nurses. In total, 43 interviewers worked in the field in Nord-Trøndelag, as the supervisors also conducted some interviews. On average, the interviewers conducted 26 interviews each (range: 1 to 230). Seven interviewers conducted less than 10 interviews, and 15 interviewers conducted more than 50. Interviewers in Trondheim were recruited among students at the professional program of psychology, professional program of medicine, bachelor program in nursing science and master program in physiotherapy at the Norwegian University of Science and Technology. A total of 56 interviewers were recruited for the data collection in Trondheim, and 1 interviewer dropped out during the data-collection. The average numbers of interviews conducted by each interviewer in Trondheim was 39 (range: 2 to 150). Nine interviewers conducted less than 10 interviews, and 16 interviewers conducted 50 or more. The high number of interviews conducted by some of the interviewers in both Nord-Trøndelag and Trondheim were mainly due to that several interviewers were unable to extend their engagement period when data-collection was extended.

Data-collection

The data-collection lasted for 10 months in Nord-Trøndelag (November 2018 to September 2019) and 9 months (January to September 2020) in Trondheim. In line with the general data-collection in HUNT, the respondents were invited to conduct the interviews at local field stations in proximity to their residential place. The field stations were centrally placed in the five largest municipalities in Nord-Trøndelag (Namsos, Steinkjer, Verdal, Levanger and Stjørdal), and in the city of Trondheim. The interview was conducted as computer assisted interview (CAPI) and took from around ½ hour to several hours to conduct, depending on the respondents endorsement of symptoms. The average time per interview was 1,5 hour. Before the start of the interview, all participants were given a brief oral presentation of the interview procedures, including information about why the interview had to follow a standardized cross-cultural manual. The respondents were also given information on help lines and who to contact if they felt the need for mental health follow-up after the interview.

Due to the COVID-19 outbreak, which hit Norway in February 2020, social distancing interventions were introduced at a national level on March the 12th. This was in the midst of the data-collection in

Trondheim, and the data-collection was paused for three days before we continued with interviews through telephones. By the end of June 2020, the dissemination rate was so low in Norway that we deemed it safe to conduct half of the remaining 400 interviews by face-to-face. This made it possible to do some comparisons of differences in detected diagnostic cases between face-to-face and telephone interview mode. These comparisons are presented in the Results section below.

Data quality control

Pre-training and certification

All supervisors and interviewers had to complete the training developed by the WHO Composite International Diagnostic Interview (CIDI) Training Centre at the University of Michigan, United States in order to certify for use of the CIDI interview. Project management, coordinators and supervisors underwent this training by members from the CIDI Training Centre in June 2018. All training material was then translated into Norwegian to be used during the training of the interviewers. The training took place in three rounds, two in Nord-Trøndelag and one in Trondheim. The training included plenary lectures, group exercises and role play, and practical technical training. The plenary and group training was led by the NIPH supervisors, while the local field supervisors participated actively in the pairwise interview training by listening and give feedback. Certification of the interviewers were given when the interviewers could demonstrate competence in conducting the interview according to general interview techniques and the standardized rules of the CIDI interview.

In field

Weekly and bi-weekly skype-meetings between the supervisors and the project group were held during data-collection. Supervisors had weekly telephone contact with each of the interviewers in their group. During these contacts they discussed specific challenges with the last weeks interviews, checked the interviewers motivation to follow the standardized rules, noted errors and difficulties with the interview, and recorded time-span of the interview. In addition, a supervisor directly observed one of the first interviews the interviewers conducted in the field. Observation by a supervisor was also done around mid-way in the data-collection, to ensure that the interviewers continued to follow the standardized procedures and acted professionally. Feedback was given immediately after the interview to the interviewers. If it was discovered that the interviewers did not follow the standardized procedures, or we were uncertain of the quality of the contact between the interviewer and the respondents, the interviewer was temporarily taken out of the field and given additional training. Only a few such cases (<5) were discovered. As the interview appointments were scheduled by the local coordinators, took place at the field stations (including the telephone interviews) and the interviewers received payment also for no-show, it was considered to be no need to do random checking on whether the interviews had actually taken place. Proportion of interviews with identified diagnoses, and number of diagnostic screening items coded as “don’t know (DK)” or “refuse to answer (REF)” were also compared between interviewers. In cases where it was discovered high rates of DK/REF responses or large deviation in rates of identified diagnoses among specific interviewers, these interviewers were given additional supervision, and in some cases taken temporarily out of the field.

Post data-collection quality control

Field collected data on date of interview, sex and age was double checked with the administrative records underlying the sampling lists. The administrative records were given precedence over field recordings in cases of discrepancies (date: n=16; sex: n=10; age: n=9). Variables with free text, such

as variables specifying symptoms, were coded into existing symptom categories or given additional categories. Age of onset and age of recency were checked against each-other and respondents current age. In cases of discrepancies, age of onset or age of recency were set to missing.

Overall, in 6.1% (95% CI: 5.1-7.2) of the Nord-Trøndelag interviews, two or more of the screening items in the diagnostic sections¹ were recorded as DK/REF (range 1-7). Most of this variation could be attributed to the specific interviewer doing the interview (see above), and for the majority of interviewers, the proportion of interviews containing DK/REF in the screening items was low (below 5%). Missing on screening items was only a minor problem in the Trondheim data-collection, with 1.3% interviews with 2 or more DK/REF in the screening items.

Data protection and ethical issues

The data-collection, the data linkage and the planned analyses are approved by the Regional Committee for Medical Research Ethics (2017/28/REK midt). Internal Data Protection Impact Assessment (DPIA) were conducted at NIPH in June 2020 to ensure that the project complies with the General Data Protection Regulation (GDPR). Informed consent for linkage with registries is collected from all HUNT participants. All laptops used for the data-collection were encrypted and without internet access. They were stored in locked cabinets at the field stations, with the list over invited participants stored in separate locked cabinets. All participants were given a project-specific respondent number. Hence no names or other directly identifiable information was provided together with the data from the interview. Once a week, a field station super-user or the local coordinators emptied the used laptops and uploaded the data through an encrypted portal to HUNT databank. Given the sensitive topic of the interview, great emphasis was placed on the well-being of the respondents during the interview. Emphatic handling of emotional reactions of the respondents was of particular focus during the interview training, and we had written standardized procedures that were to be followed if the interviewers were worried about strong emotional reactions and potential suicidality among the respondents after the interview (Appendix 2). Care will be taken to present the findings from the project in a respectful and non-stigmatizing way.

The project adheres to existing rules and regulations for data-linkages and storage of the data. Project specific ID-number will be given to each respondent, and this will be used to link the PsykHUNT data to data from the general HUNT study and official registries. The bridge between the respondents birth number and project ID-number will be stored at HUNT data-bank, and will not be accessible for the researchers in the project. Data are stored on secure servers at the HUNT data-bank and NIPH. These systems require log in and no data can be extracted and copied. Only approved researchers directly involved with the analyses in the project will have access to the data.

Results and planned analyses

Participation rate and representativeness

Participation rate

Table 5 shows the attrition from invited participants to final participation rate, and Table 6 describes the participation rate per invitation cycle (batches) in Nord-Trøndelag and Trondheim. Altogether, 16,630 invitations were sent from PsykHUNT – 9,630 in Nord-Trøndelag and 7,000 in Trondheim. A

¹ The following sections were included in estimation of items with response “don’t know” or “refuse to answer”: DE, WA, AG, PH, SA, OCD, SE.

total of 4,956 (29.8%) persons indicated interest to participate, with higher interest rate in Trondheim (37.0% of the invited) than in Nord-Trøndelag (24.5%). However, we were unable to make contact with a higher proportion of those interested in Trondheim (13.4%) than in Nord-Trøndelag (9.4%). The proportion of no-shows or withdrawn respondents among those scheduled for interview were relatively similar between Nord-Trøndelag (2.4%) and Trondheim (3.1%), as was the number of aborted interviews due to language problems or the respondents decision to withdraw after the interview had begun. Six persons who were not invited made contact with us, and wanted to conduct the interview. The final overall participation rate in PsykHUNT was 25.6%, and higher in Trondheim (30.8%) than in Nord-Trøndelag (21.6%).

Table 5. Number and percent of participants invited, and attrition from the number who showed interest to be interviewed, to final participation rate.

	NORD-TRØNDELAG	TRONDHEIM	SUM
Invited participants	9630	7000	16630
Signed up for interview	2361 (24.5%)	2595 (37.0%)	4956 (29.8%)
No contact	221	347	568
Arranged time for interview	2140 (22.2%)	2242 (32.0%)	4382 (26.3)
No show or withdrawn	52	70	122
Aborted interview	5	13	18
Final number of interviews	2083 (21.6%)	2159 (30.8%)	4242 (25.5%)

Table 6. Participation rate (%) per batch in Nord-Trøndelag and Trondheim.

BATCH #	NORD-TRØNDELAG			TRONDHEIM		
	Number invited	Participation rate	Dates of sent invitations	Number invited	Participation rate	Dates of sent invitations
1	400	17.8	9.11.18	2000	30.1	27.01.20, 03.02.20, 17.02.20
2	400	20.8	21.11.18	2000	33.1	09.03.20, 14.04.20, 04.05.20
3	400	19.5	04.12.18	1500	31.6	25.05.20, 15.06.20
4	400	20.5	21.01.19	1500	28.6	06.07.20, 17.08.20
5	1200	25.3	13.02.19			
6	400	23.0	11.03.19			
7	400	28.5	18.03.19			
8	750	22.7	21.03.19			
9	1280	21.3	26.03.19			
10	1300	24.0	09.04.19 14.05.19			
11	1200	21.7	04.06.19			
12	1200	20.2	20.06.19			
13	300	20.0	28.06.19			

The participation rate differed somewhat between field stations (ranging from 16.2% in Namsos to 30.8% in Trondheim, see Table 3), and batches in Nord-Trøndelag (ranging from 17.8% in Batch 1 to 28.7% in Batch 7), but was relatively stable between batches in Trondheim (Table 6).

The introduction of gift cards increased enrollment in Nord-Trøndelag from 14.4% to 17.8% (Table 7). The reminder further increased participation with 21.7%. However, attrition was larger among respondents enrolled after the reminder than those enrolled after first invitation, particularly in Nord-Trøndelag, where only 73.7% of those enrolled after the reminder participated, compared to 96.8% of those enrolled after the first invitation. Participation rate was higher among women and the older age-groups both in Nord-Trøndelag and Trondheim, see Table 8.

Table 7. Enrollment after first invitation, introduction of gift card and after reminder.

	NORD-TRØNDELAG	TRONDHEIM	SUM
	N (%)	N (%)	N (%)
Invited participants	9630	7000	16630
Enrollment after first invitation, no gift card¹	173 (14.4%)	-	
Enrollment after first invitation, with gift card	1503 (17.8%) ²	-	
Enrollment first invitation	1731 (18.0%)	2147 (30.7%)	3878 (23.3%)
Participation first invitation	1676 (17.4%)	1812 (25.9%)	3488 (21.0%)
Participation rate first invitation	96.8%	84.4%	89.9%
Enrollment reminder³	630 (8.0%)	448 (9.2%)	1078 (8.5%)
Participation reminder³	464 (5.9%)	355 (7.3%)	819 (6.4%)
Participation rate reminder	73.7%	79.2%	76.0%
Final number of participants	2083 (21.6%)	2171 (31.0%)	4254 (25.6%)
Proportion of participants due to reminder	21.7%	16.4%	

¹1200 invitations were sent without gift-card being offered, ²8430 invitations were sent with gift-card,

³Proportion among those not enrolled after first invitation

Table 8. Participation rate by age and gender

	Nord-Trøndelag	Trondheim	Total
Sex			
Men	23.8%	33.4%	27.7%
Women	18.8%	27.9%	22.8%
Age-group			
20 to 29 years	16.8%	28.5%	21.7%
30 to 39 years	20.9%	29.7%	24.6%
40 to 49 years	24.0%	30.3%	26.7%
50 to 65 years	28.8%	37.5%	32.5%

Face-to-face versus telephone interviews

Due to social distancing measures introduced to reduce the transmission of the COVID-19 disease, we had to change interviewer mode from face-to-face to telephone interviews in March 2020. The change of mode did not seem to have a large impact on the willingness to participate. The participation rates between invitations to the two modes of interview were 29.1% for face-to-face interview, and 34.8% for telephone interview (Table 9). Many of the planned face-to-face interviews were changed to telephone interviews, and around two-thirds of the interviews in Trondheim were conducted by telephone. 251 of the 1005 participants who were invited to face-to-face interviews conducted the interview by telephone, either because of the sudden introduction of social distancing measures, or because they found this mode more convenient. Nineteen persons who were invited to telephone interviews conducted face-to-face interviews instead.

Table 9. Participation rate between invitations to face-to-face mode and telephone mode. Trondheim only.

	Invited N (%)	Participated N (%)	Interview mode conducted
Face-to-face	3450 (49.3%)	1005 (29.1%)	772 (35.6%)
Telephone	3350 (50.7%)	1166* (34.8%)	1399 (64.4%)
Total	7000 (100%)	2171 (31.0%)	2171 (100%)

*Included 2 interviews conducted by Skype

In the last 10 weeks of the data-collection the transmission rate of COVID-19 in Norway was so low that it was decided to be safe to conduct some interviews face-to-face again. Thus, 190 of the last 480 interviews were face-to-face. Table 10 shows differences in 30 days and lifetime prevalence rates of any mental disorder between the two interview-modes.

Table 10. Differences in prevalence rates (percent with 95% confidence intervals) between face-to-face and telephone interviews. Interviews conducted from July 13 to September 18 2020.

	N (%)	30 days prevalence any mental disorder % (95% CI)	Lifetime prevalence any mental disorder % (95% CI)
Face-to-face	190 (40.3%)	15.3 (10.8-21.1)	57.9 (50.7-64.7)
Telephone	282 (59.8%)	12.4 (9.0-16.8)	50.0 (44.2-55.8)
Total	472 (100%)		

Representativeness

Table 11 shows the distribution of the participating samples in Nord-Trøndelag, Trondheim and overall compared to the general population of the same age-group in in Nord-Trøndelag, Trondheim and Norway on important socio-demographic variables. The participants in PsykHUNT were more often females, younger and had a higher educational level than the general population in both Nord-Trøndelag, Trondheim and Norway. Participants in Trondheim were younger and had higher educational attainment compared to participants in Nord-Trøndelag.

Table 11. Distribution of age and gender in 1) the population aged 20 to 65 in Norway, 2) the population aged 20 to 65 in Trondheim, 3) each draw of samples and total sample, and 3) final participation.

	Norway population ¹	Nord-Trøndelag population ¹	Trondheim population ¹	Participants Nord-Trøndelag ²	Participants Trondheim ²	All participants
Gender						
Men	51.2%	51.2%	51.8%	37.1%	41.7%	39.4%
Women	48.8%	48.8%	48.2%	62.9%	58.3%	60.6%
Age-group						
20 to 29 years	22.6%	22.3%	29.2%	25.5% ³	30.5%	28.1%
30 to 39 years	22.7%	19.6%	23.7%	25.1%	25.0%	25.0%
40 to 49 years	23.1%	23.4%	20.6%	25.5%	22.6%	24.0%
50+ to 65 years	31.6%	34.7%	26.5%	23.9% ⁴	21.9%	22.9%
Education level						
Up to high school	60.0%	68.1%	55.1%	44.7%	29.5%	37.0%
Higher education, lower degree	27.9%	25.8%	28.1%	32.7%	33.4%	33.0%
Higher education, higher degree	12.1%	6.1%	16.8%	22.6%	37.2%	30.0%

¹proportion of population aged 20 to 66 years, data from Statistics Norway, ²of total participants, ³1 participant was below age 20 at time of participation, ⁴52 participants were above age 65 at time of participation

[Linkage to other data-sources registers and HUNT data](#)

All Norwegian citizens have a personal identification number, issued at birth or at the time of residency. This number will be used to link data from PsykHUNT to other data-sources in both cross-sectional, retrospective and prospective analyses. At date, approval is given to linkage with data from all previous rounds of the HUNT-study, administrative registries from Statistics Norway, three national health registries: the Patient Registry for the Municipalities (“Kommunalt pasient- og brukerregister” – KPR), the Norwegian Patient Registry (NPR), and the Norwegian Prescription Database (NorPD), and the Norwegian Cause of Death Registry (CoDR). Current ethical approval for linkages span from 1970 (establishment of several of the administrative registries) to 2030. An overview of the planned linked data-sources is given in Table 12 and the planned analyses are briefly described below.

Table 12. Overview of other data-sources/registers that will be linked with PsyKHUNT

SOURCE	OWNER	DESCRIPTION
THE HUNT STUDY	HUNT research centre	Data on historical risk factors for and future consequences of mental and substance use disorders. Data available from 1984 (HUNT1)
THE POPULATION REGISTRY	Statistics Norway	Year of birth, sex, civil status, family status. Data available from 1970.
THE NATIONAL EDUCATIONAL DATABASE (NUDB)	Statistics Norway	Achieved educational level, drop-out from education, grade point average. Data available from 1970.
THE INCOME REGISTRY	Statistics Norway	Personal and household income. Data available from 1970.
THE NORWEGIAN SOCIAL INSURANCE DATABASE	Statistics Norway	Receipt of social insurance, including sickness benefits, social benefits and disability benefits and work assessment allowance. Data available from 1992.
THE PATIENT REGISTRY FOR THE MUNICIPALITIES (KPR)	The Norwegian Directorate of Health	Primary health service use. Data available from 2004.
THE NORWEGIAN PATIENT REGISTRY (NPR)	The Norwegian Directorate of Health	In- and outpatient treatments in the specialist health service. Established in 1997, person identifiable information from 2008.
THE NORWEGIAN PRESCRIPTION DATABASE (NORPD)	NIPH	Dispensed drugs in pharmacies from 2004.
THE NORWEGIAN CAUSE OF DEATH REGISTRY	NIPH	Time and cause of death. Relevant years: 2018 onwards.

Planned research projects

The following analyses are currently planned with the data from PsyKHUNT in linkage with other data-sources.

Non-participation analysis

Selective nonparticipation is a threat for the representativeness of the data. In addition to selective nonparticipation associated with age, gender and socioeconomic status²⁵, studies have also shown that persons with mental health and substance use problems are more prone to not participate in population based health surveys.³² When nonparticipation is specifically associated with the outcome of interest, this may lead to severe underestimation of prevalence rates. Thus, it is important to gain knowledge about the mental health status of the nonparticipants in the present project. This information will be achieved in two rounds. Firstly, the HUNT4 study will do their own analyses on characteristics of nonparticipants in the main survey. Secondly, as all invited participants in

PsykhUNT were sampled among participants in HUNT4, we will be able to compare participants with nonparticipants on HUNT4-variables assessing mental health and substance use. Further, registry information on primary and secondary health service use due to mental health and substance use problems will be linked to all invited individuals to PsykhUNT, as well as information on important sociodemographic factors such as educational level and income. These linkages between data from PsykhUNT and data from HUNT4 as well as a range of official administrative and health registries will allow for a thorough analyses of differences between participants and nonparticipants.

Validation of data from health registries and screening instruments

The diagnostic data from CIDI 5.0 can be used for much needed validations of the case-finding abilities of commonly used screening instruments for mental and substance use problems. Two such instruments were used in HUNT4; the Hospital Anxiety and Depression Scale (HADS)³³ and CAGE³⁴, in addition to short screenings based on three items on alcohol consumption and four items on mental health used in several of the Cohort of Norway (CONOR) surveys.³⁵ The data from the project can also be used to validate data from the health registries (NPR and KPR), including diagnostic information and use of health services due to mental health and substance use problems.

The prevalence of mental and substance use disorders

One of the main aims with the project is to get updated data on the prevalence of mental and substance use disorders in the general population. Hence the data from the project will be used to estimate 30 day, 12 month and lifetime prevalence; age of onset, frequency, duration and recency; and severity and disease burden of mental and substance use disorders of mental and substance use disorders. An important part of these assessments will be to explore how these factors differs with age, gender, socio-economic status and urban/rural residency (Nord-Trøndelag versus Trondheim).

Mental health before and during the COVID-19 pandemic

As the data-collection in Trondheim was conducted from January to September 2020, we have unique diagnostic data on mental and substance use disorders to examine how the COVID-19 pandemic affected the mental health of the population. The primary study will examine 30 day prevalence of mental and substance before and during the pandemic in the general population and specific groups. Together with the COVID-19 questionnaire, the data from PsykhUNT Trondheim also provide the opportunity to study how different exposure to the virus and disease itself, and consequences of the pandemic in terms of work-loss, worries and loneliness affected the mental health of the population.

Risk-factors and consequences of mental disorders

Linkages between data from PsykhUNT and the general HUNT survey and official administrative and health registries allows for the exploration of a range of risk factors and consequences potentially associated with mental and substance use disorders. Examples of research questions that can be studied includes:

- Are mental and substance use disorders associated with lower probability of lasting romantic relationships (marriage, cohabitation) and having children?
- What is the association between mental and substance use disorders and i) high-school drop-out, ii) achieved educational level and iii) average grade point? What are the directions of the associations, and how are these affected by age of onset, duration, frequency and severity of the disorders?

- To what degree does the presence of one or more mental and substance use disorders increase the risk for current and future work-outcomes, such as i) reduced quality of the work, ii) earned income and pension points, iii) receipt of social insurance, iv) sick-leave, v) work assessment allowance, and vi) permanent work-life exit through disability pensioning or early age retirement?
- What is the risk of comorbid somatic diseases and conditions among individuals with mental disorders?
- Do mental and substance use disorders increase the risk for later somatic diseases and conditions, such musculoskeletal disorders, diabetes type 2, cardiovascular diseases and cancers?
- To what degree do mental and substance use disorders increase the risk for mortality through i) suicide, ii) somatic diseases and iii) injuries?
- How much of the potential association between mental and substance use disorders and mortality can be explained by lifestyle factors?
- What is the expected lifetime among persons suffering from mental and substance use disorders compared with the general population?

Health service use and treatment for mental disorders

The data from PsykHUNT will give essential information on treatment rate and health service use among people with mental and substance use disorders. A large gap between those in need for treatment and those who actually receive adequate treatment for mental disorders is identified in several international studies. Whether a treatment gap is present also in Norway has never been studied. The linkage between PsykHUNT data and the health registries provides unique opportunities to study both basic characteristics of a treatment gap, as well as self-perceived, contextual and structural barriers to treatment.

Discussion

Strengths and limitations with the project

There are several strengths with the present project. Diagnostic data on mental disorders from the general population are expensive, time-consuming and challenging to collect. Hence, there are few such data-sources in the world. Further, the majority of epidemiological data-collections on mental disorders were conducted in the early 2000s, and the generalizability of these data to the current situation is unknown. PsykHUNT provides an unique globally and historically possibility to link rich individual level data on mental and substance use disorders assessed by diagnostic interviews in a large population-based survey with longitudinal, complete, objective and high-quality registry data. Further, as the sampling lists were based on the Population Registry of Norway, we had valid knowledge about who were invited to the survey, and the opportunity to do in-depth analyses comparing important characteristics between participants and nonparticipants.

However, there are also limitations. Firstly, instead of professional translators, we used researchers experienced in conducting population based mental health surveys and advanced students at the Program for Professional Psychology in the translation work of the CIDI. This decision was based on the experience that psychiatric epidemiological researchers and advanced students generally have good knowledge in nuances and use of psychiatric terms to make these understandable for most people. We also chose to not do a back-translation of the instrument. Although a common method

aiming to increase the quality of translation, back-translation is also regarded as a controversial assessment method.³⁶ Back translation may rise many false alarms, for instance ignoring that several terms can be used to describe the same phenomena or that the grammatical sentence constructions may differ between languages. Further, it would greatly increase both the time and the costs related to the translation process, with unknown effect of whether the quality of the translation would actually be improved. During the data-collection, we received very few comments from interviewers and participants about difficulties to understand the wording of the interview items.

Secondly, the sample was drawn among participating HUNT individuals. With a participation rate of 60% in Nord-Trøndelag and 43% in Sør-Trøndelag, and an overweight of female participants this study population may already differ from the target population on important measures that may introduce selection bias. The sample in our study was more often women, younger and had higher education than the population in both Trondheim, Nord-Trøndelag and Norway within the same age-group (20 to 65). A particular concern in data-collections aimed to gain information about prevalence, is that the sample may differ from the target population in these particular outcomes. As previously mentioned, studies have found that nonparticipation is particularly common among individuals with a mental or substance use disorder.³² Thus, the planned study exploring nonparticipant characteristics will be essential to gain knowledge about the representativeness of the PsykHUNT participants compared with the target population.

Thirdly, the shift from face-to-face to telephone interviews co-occurred with the onset of the COVID-19 pandemic, challenging the interpretation of whether a potential shift in prevalence of mental and substance use disorders between pre-pandemic and during-pandemic phases of data-collection is due to the pandemic outbreak or the change of interview mode. Previous studies have found that participants interviewed by telephone made less effort in giving a useful answer to the question (ie. more responses in terms of no opinion, non-differentiation or acquiescence), being less engaged and cooperative in the interview, finding the interview to be lengthy, be more suspicious about the interview process and more likely to express socially desirable responses compared with participants interviewed face-to-face.³⁷ Many of our interviewers felt that conduction of the interview through telephone reduced their sensitivity to pick up nuances in the participants replies or “read” bodily reactions from the participants that may indicate that the question was not fully comprehended or that they did not make an effort to answer the question accurately. There were also more reports about distracted participants, some doing other activities simultaneously as being interview over the phone. On the other side, the distance introduced by a telephone may also make it easier for some participants to open up on sensitive questions. Preliminary analyses comparing the telephone and face-to-face interviews done in the same time-period (mid-July to mid-September 2020) showed no statistical difference in rates of 30 days mental disorders between the two interview modes, however, lifetime prevalence rates were somewhat lower in the telephone interviews. This may indicate that respondents are less motivated to do a thorough memory search when answering lifetime questions over phone. We have planned to do a future short report comparing the two interview modes in terms of number of interrupted interviews, interview length, prevalence rates of diagnoses assess early and later in the interview, and responses to sensitive questions such as suicidality, substance use problems and sexual abuse.

Public impact of the project

Mental and substance use disorders are among the most important causes of disease burden and health related economic loss for the society, both in Norway and other high-income countries. At the same time, there is a severe lack of updated knowledge about the prevalence, risk factors and consequences, and the treatment coverage of these disorders. The PsykHUNT project provides an extensive assessment of these factors, both through the data-collection in itself, but also through the linkage with other high quality data-sources. The project has the potential to produce new and updated knowledge that can be essential in planning for a more effective and targeted prevention and treatment for mental and substance use disorders both nationally and internationally, as well as reducing the consequences of mental and substance use disorders. The timing of the project is also in many ways optimal, as the results may help inform several voted strategies for improving the mental health of the population, including the Norwegian Governments mental health strategy, the Sustainable Development Goals of the United, and the Lancet Commission on improved global mental health.

Dissemination of future results

The results from PsykHUNT can be disseminated through several channels. The scientific community will learn about the results through publications in international, peer-reviewed and open access journal, and presentations at conferences and meetings. Beside the scientific community, there are five major groups of stakeholders that will have great interest in the PsykHUNT results: i) international health organizations (ie WHO and Lancet Commission on Global Mental Health and Sustainable Development), ii) health authorities and health policy makers, iii) health professionals, iv) interest groups and patient organizations, and v) the general public. We will tailor the dissemination to reach each of these groups. NIPHs role as a national competence institution placed directly under the Ministry of Health and Care Services increase the potential for impact and translation of the research from the present project to policy. We will use this position to inform stakeholders at the policy and health authority level about the results through summary reports, oral presentations and individual meetings. We will offer oral presentations of the project and the results for local mental health services in Trøndelag, where the data is collected. Other health professionals will be informed about the results through chronicles or letters to the editor in relevant Norwegian professional journals. Finally, results will be disseminated to the general public through the traditional media (newspaper articles, radio and tv-interviews etc), newsletters and social media posts (Facebook, Twitter), chronicles and popular science talks. The project is also presented through the CRISTIN³⁸, NIPH³⁹ and HUNT web-pages.⁴⁰

Collaboration

Researchers may gain access to participant data by contacting the PsykHUNT publication committee (anne.reneflot@fhi.no). Approval from the Norwegian Regional Committee for Medical and Health Research Ethics (<https://helseforskning.etikkom.no>) is a pre-requirement. The PsykHUNT dataset is administrated by the HUNT databank, and guidelines for access to PsykHUNT data are found at <https://www.ntnu.edu/hunt/data>.

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