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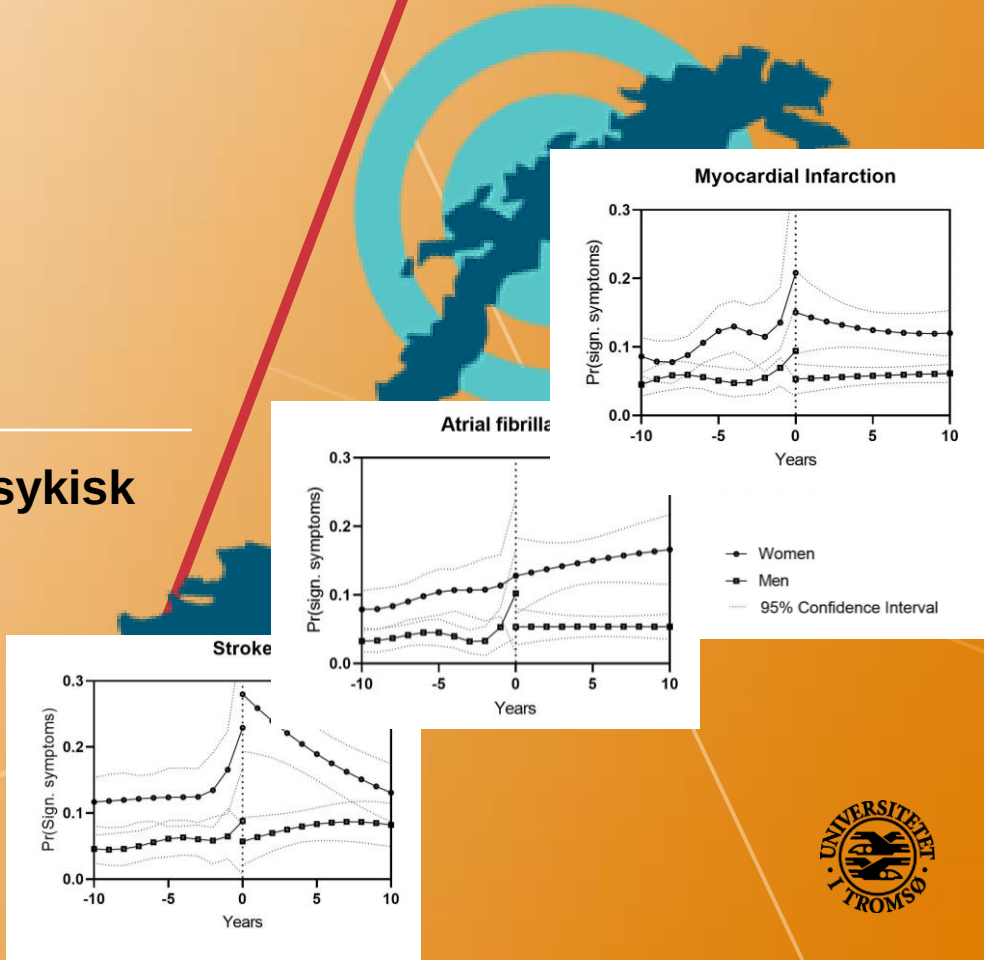
The head and heart connection

Et prosjekt om hjertepasienters psykisk helse



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/ PHYSICAL DISEASE AND RISK FACTORS

Illness accounted for 23% of variation. It lowers SRH whenever in life it occurs. 2 or more comorbid diseases increases this effect.

/ MENTAL HEALTH SYMPTOMS

Mental health accounted for 28% of the variation and is the most important factor for Significant symptoms lowers the SRH levels more than physical disease.

/ GENDER AND AGE

It is actually age that is the most important as gender accounts for only 0.4%. The most interesting gender difference is that men report higher SRH at 25, but women remain at good health longer.

/ HEALTH RELATED BEHAVIOR

Nothing can stop the age dependent SRH decline; however, even moderate exercise levels prolongs the period subjects are at good health by 10 years or more. Intensive training after 63 years of age was not beneficial

/ BODY WEIGHT

BMI is not the most important factor as such explaining 5% of the variation. Obesity is not beneficial. However, the most significant finding is what happens to very lean persons as they get older.

/ SOCIO-ECONOMIC CONTEXT

Accounting for 16%, higher education levels is beneficial. Living with others is generally also beneficial.

The characteristics of SRH has changed as the «objective» public health situation has improved

Symptoms of anxiety and depression associated with disease increases in the periode from T4 to T6

Open Access Research

BMJ Open

Ageing and mental health: changes in self-reported health due to physical illness and mental health status with consecutive cross-sectional analyses

Geir Fagerjord Lorem,[1] Henrik Schirmer,[2,3] Catharina E A Wang,[4,5] Nina Emaus[1]

Table 3 Direct and indirect effect size with 95% bias corrected CIs in parentheses, SEs and ratio of indirect to direct effect of age on self-reported health

	Tromsø 4 Effect (95% CI)	Tromsø 5 Effect (95% CI)	Tromsø 6 Effect (95% CI)
Total effect of age on SRH	−0.0175 (−0.0181 to −0.0170)	−0.0146 (−0.0157 to −0.0136)	−0.0128 (−0.0139 to −0.0117)
Indirect effect of age on SRH			
Total	−0.0034 (−0.0032 to −0.0037)	−0.0039 (−0.0034 to −0.0043)	−0.0046 (−0.0040 to −0.0052)
Age→HII→SRH	−0.0027 (−0.0028 to −0.0027)	−0.0043 (−0.0044 to −0.0041)	−0.0053 (−0.0054 to −0.0051)
Age→HII→HSCL→SRH	−0.0006 (−0.0006 to −0.0007)	−0.0013 (−0.0011 to −0.0014)	−0.0019 (−0.0017 to −0.0021)
Age→HSCL→SRH	0.000* (0.0002 to −0.0002)	0.0016 (0.0021 to 0.0011)	0.0026 (0.0032 to 0.0020)
Ratio of indirect to total effect of age on SRH			
Total	0.195 (0.176 to 0.215)	0.267 (0.217 to 0.318)	0.360 (0.284 to 0.442)
Age→HII→SRH	0.157 (0.154 to 0.158)	0.290 (0.281 to 0.299)	0.412 (0.391 to 0.433)
Age→HII→HSCL→SRH	0.037 (0.031 to 0.043)	0.086 (0.071 to 0.102)	0.148 (0.122 to 0.179)
Age→HSCL→SRH	0.002* (−0.010 to 0.013)	−0.109 (−0.135 to −0.083)	−0.200 (−0.229 to −0.170)

CIs and SEs are based on 1000 bootstrap samples.

We want to utilize the repeated measures of TS to examine how SRH, mental health and health service use change before and after a health shock

Tromsøundersøkelsen	1974	1979-80	1986-87	1994-95	2001-02	2007-08	2015-16
Oppmøteprosent	74%	78%	75%	72%	79%	66%	65%
Antall deltakere	6595	16 221	21 826	27 158	8 130	12 982	21 083

Fit Futures	2010-11	2012-13
Oppmøteprosent	93%	77%
Antall deltakere	1038	870

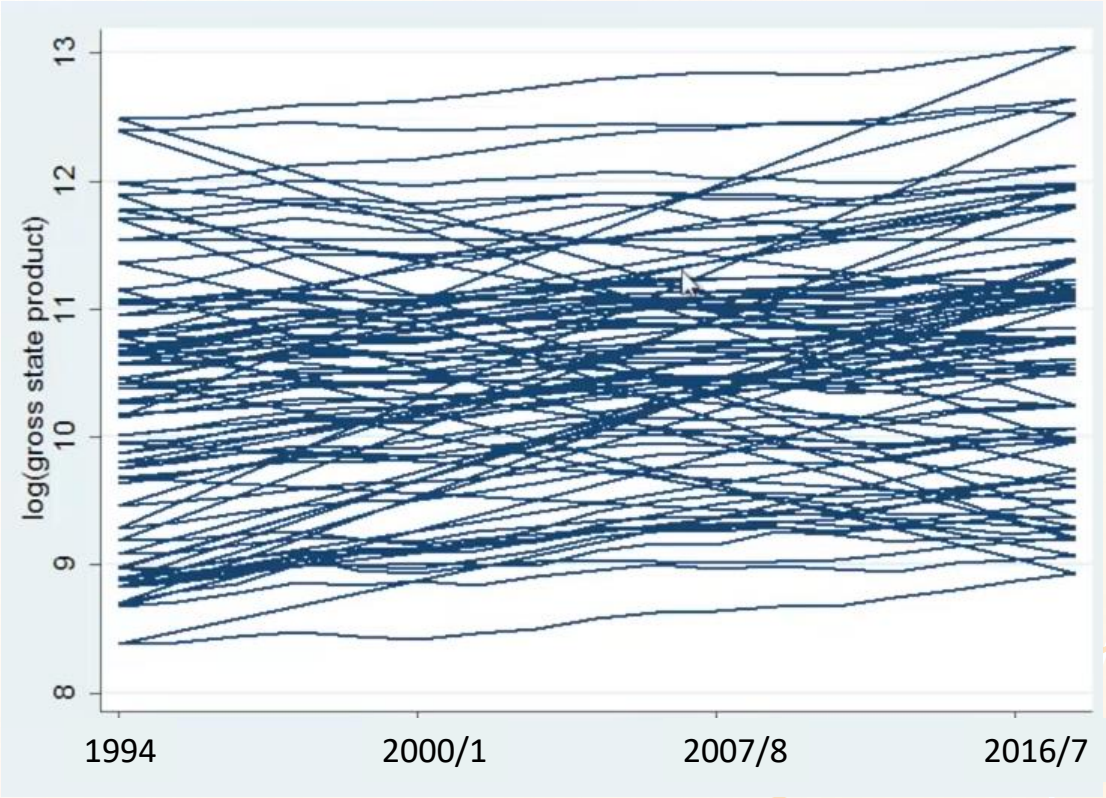
OVERVIEW OF FACTORS, TIME OF OBSERVATION AND NUMBER OF SUBJECTS AVAILABLE IN THE TROMSØ STUDY

Variable	Tromsø 4 (n=27158)	Tromsø 5 (n=8130)	Tromsø 6 (n=12984)	Tromsø 7 (n=21083)
Time	1994-95	2001-02	2007-08	2015-16
Mortality	Time and cause of death (n=6,691)			
CVD diagnosis	Time and CVD diagnosis (n=3,023)			
Cancer diagnosis	Time and Cancer diagnosis (n=5,606)			
Self-reported Health	SRH	SRH	SRH	SRH
Demography	gender, age	gender, age	gender, age	gender, age
CVD risk factors	BP, Chol, HDL, RHR, BMI, glucose and HBA1C	BP, Chol, HDL, RHR, BMI, glucose and HBA1C	BP, Chol, HDL, RHR, BMI, glucose and HBA1C	BP, Chol, HDL, RHR, BMI, glucose and HBA1C
Mental health	Conor MHI[3]	HSLC	HSCL	HSCL
Comorbid disease	HII	HII	HII	HII
Treatment	BP-treatment, lipid-treatment, painkillers	BP-treatment, lipid-treatment, painkillers	BP-treatment, lipid-treatment, painkillers	BP-treatment, lipid-treatment, painkillers
Socio-economic status	Education, marital status, household, income	Education, marital status, household, income	Education, marital status, household, income	Education, marital status, household, income
Health-related behavior	Smoke, alcohol, Physical activity	Smoke, alcohol, Physical activity	Smoke, alcohol, Physical activity	Smoke, alcohol, Physical activity

1. SRH = Self-reported Health, BP = Systolic and diastolic blood pressure, Chol= Total and high density lipid., RHR = Resting heart rate, BMI = Body mass index, MHI=mental health index (validated against HSCL). HSCL = Hopkins symptoms checklist, HII= Health impact index, BP-treatment = BP lowering drugs, lipid-treatment = Lipid-lowering drugs, education = highest level of education, household = numbers in the household. SMOKE = daily smoking, PA = physical activity levels
2. In all, a total of 40051 different people have participated in at least one of the six studies, while 15157 have participated on three or more occasions.
3. Conor MHI has been validated against HSCL-10

Modellering av tid

- Hvis vi nå skulle plotte inn utviklingen for hver enkelt person ville vi fått ulike linjer alla dette
- Det vi ønsker å gjøre er å integrere de longitudinelle trendene i disse forløpene inn i vår modell



Methods to utilize repeated measures

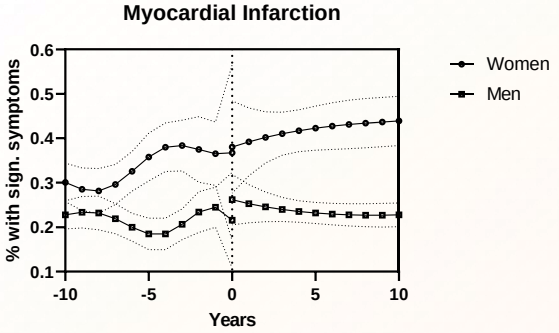
Tracking the population

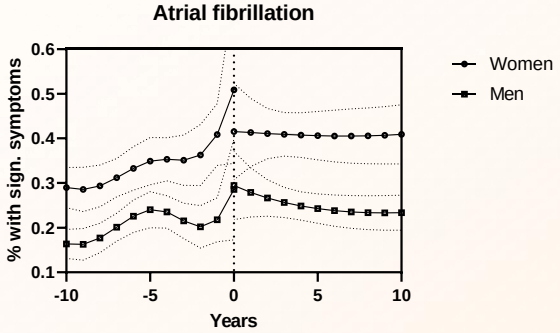
- Repeated x-sections
- X-sectional time series

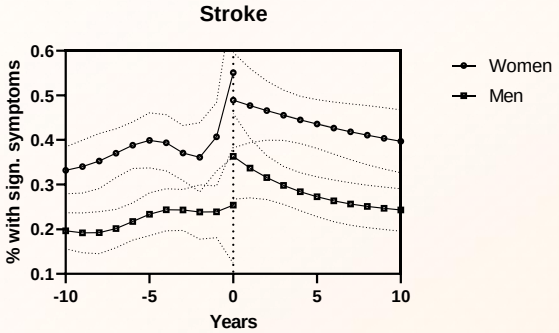
Tracking individuals with multilevel modeling

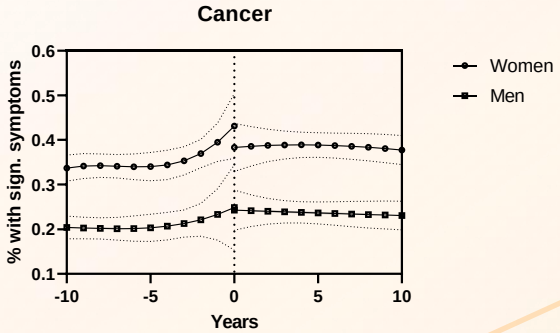
- Fixed effects: Within subject effects
- Mixed model: within- and between-subjects effects
- Inverse probability weights to control for prior exposure and attrition

Utvikling over tid:
Tiden før og etter første diagnose









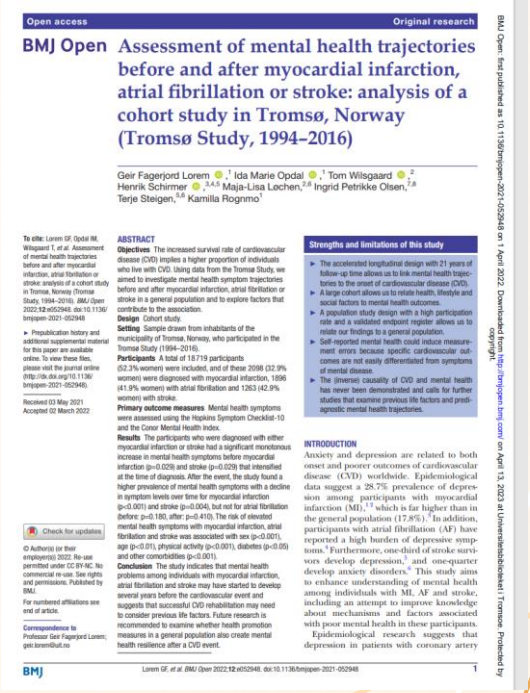
Tracking individuals with multilevel modeling

Heart disease	1,29***	1,44*
Other comorbid disease(except heart disease)		
No other disease		
1 additional diagnosis	1,47***	1,09
1-2 additional diagnosis	2,15***	1,28**
>2 additional diagnosis	3,97***	2,04**
Gender (Female ref)	0,57***	
Household	0,60***	0,89
Physical activity		
Inactive		
Some	0,84***	1,13*
Moderate	0,62***	0,97
Vigerous	0,62***	0,92
Smoking		
Daily smoker		
Previous smoker	0,93	1,27**
Never smoked	0,63***	0,80*
Education		
Grunnskole (ref)		
Videregående skole	0,72***	
Universitet/høgskole <4 år	0,66***	
Universitet/Høgskole >4 år	0,68***	

Hvilke faktorer bør følges opp?

- Kvinner er mer utsatt
- Yngre er mer utsatt
- Komorbide sykdommer gir en risiko (OR 1.22-1.39)
- Hypertensjon og Diabetes MT2 gir økt risk
- Helserelatert atferd beskytter

► The accelerated longitudinal design with 21 years of follow-up time allows us to link mental health trajectories to the onset of cardiovascular disease (CVD).
► A large cohort allows us to relate health, lifestyle and social factors to mental health outcomes.
► A population study design with a high participation rate and a validated endpoint register allows us to relate our findings to a general population.
► Self-reported mental health could induce measurement errors because specific cardiovascular outcomes are not easily differentiated from symptoms of mental disease.
► The (inverse) causality of CVD and mental health has never been demonstrated and calls for further studies that examine previous life factors and prediagnostic mental health trajectories.



Open access Original research

BMJ Open

Assessment of mental health trajectories before and after myocardial infarction, atrial fibrillation or stroke: analysis of a cohort study in Tromsø, Norway (Tromsø Study, 1994–2016)

Geir Fagerjord Lorem,[1] Ida Marie Opdal,[1] Tom Wilsgaard,[2] Henrik Schirmer,[3,4,5] Maja-Lisa Løchen,[2,6] Ingrid Petrikke Olsen,[7,8] Terje Steigen,[9,4] Kamilla Rognmo[1]

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ABSTRACT

Objectives The increased survival rate of cardiovascular disease (CVD) implies a higher proportion of individuals who live with CVD. Using data from the Tromsø Study, we aimed to investigate mental health symptom trajectories before and after myocardial infarction, atrial fibrillation or stroke in a general population and to explore factors that contribute to the association.

Design Cohort study.

Setting Sample drawn from inhabitants of the municipality of Tromsø, Norway, who participated in the Tromsø Study (1994–2016).

Participants A total of 18 719 participants (52.3% women) were included, and of these 2098 (32.9% women) were diagnosed with myocardial infarction, 1896 (41.9% women) with atrial fibrillation and 1263 (42.9% women) with stroke.

Primary outcome measures Mental health symptoms were assessed using the Hopkins Symptom Checklist-10 and the Conor Mental Health Index.

Results The participants who were diagnosed with either myocardial infarction or stroke had a significant monotonous increase in mental health symptoms before myocardial infarction (p=0.029) and stroke (p=0.029) that intensified at the time of diagnosis. After the event, the study found a higher prevalence of mental health symptoms with a decline in symptom levels over time for myocardial infarction (p<0.001) and stroke (p=0.004), but not for atrial fibrillation (before: p=0.180, after: p=0.410). The risk of elevated mental health symptoms with myocardial infarction, atrial fibrillation and stroke was associated with sex (p<0.001), age (p<0.01), physical activity (p<0.001), diabetes (p<0.05) and other comorbidities (p<0.001).

Conclusion The study indicates that mental health problems among individuals with myocardial infarction, atrial fibrillation and stroke may have started to develop several years before the cardiovascular event and suggests that successful CVD rehabilitation may need to consider previous life factors. Future research is recommended to examine whether health promotion measures in a general population also create mental health resilience after a CVD event.

Strengths and limitations of this study

- The accelerated longitudinal design with 21 years of follow-up time allows us to link mental health trajectories to the onset of cardiovascular disease (CVD).
- A large cohort allows us to relate health, lifestyle and social factors to mental health outcomes.
- A population study design with a high participation rate and a validated endpoint register allows us to relate our findings to a general population.
- Self-reported mental health could induce measurement errors because specific cardiovascular outcomes are not easily differentiated from symptoms of mental disease.
- The (inverse) causality of CVD and mental health has never been demonstrated and calls for further studies that examine previous life factors and prediagnostic mental health trajectories.

INTRODUCTION

Anxiety and depression are related to both onset and poorer outcomes of cardiovascular disease (CVD) worldwide. Epidemiological data suggest a 28.7% prevalence of depression among participants with myocardial infarction (MI),[1 2] which is far higher than in the general population (17.8%).[3] In addition, participants with atrial fibrillation (AF) have reported a high burden of depressive symptoms.[4] Furthermore, one-third of stroke survivors develop depression,[5] and one-quarter develop anxiety disorders.[6] This study aims to enhance understanding of mental health among individuals with MI, AF and stroke, including an attempt to improve knowledge about mechanisms and factors associated with poor mental health in these participants.

Epidemiological research suggests that depression in patients with coronary artery

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How does Potential Traumatic Events affect CVD risk and mortality?

A mixed methods study of comorbid mental health problems among persons with myocardial infarction in the Tromsø study

Tromsø-undersøkelsen

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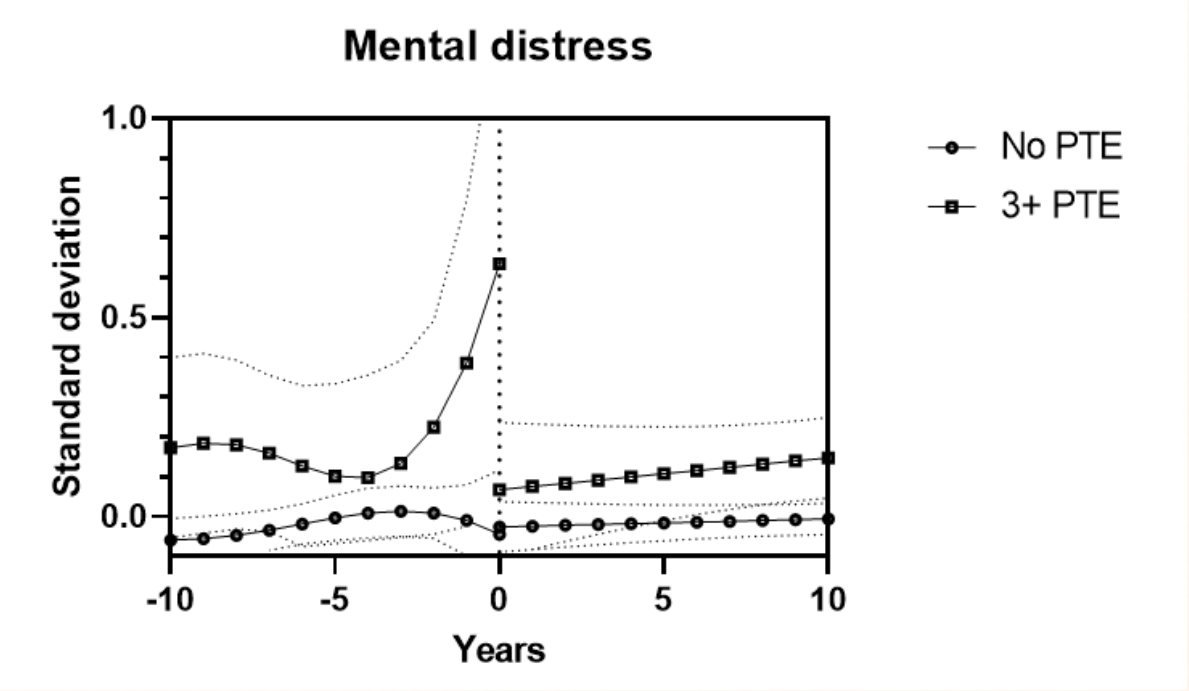
Det er den samme populasjonen, men nå stratifisert utifra traumeeksponering



PTE innbærer økt risk for MI og all-cause death

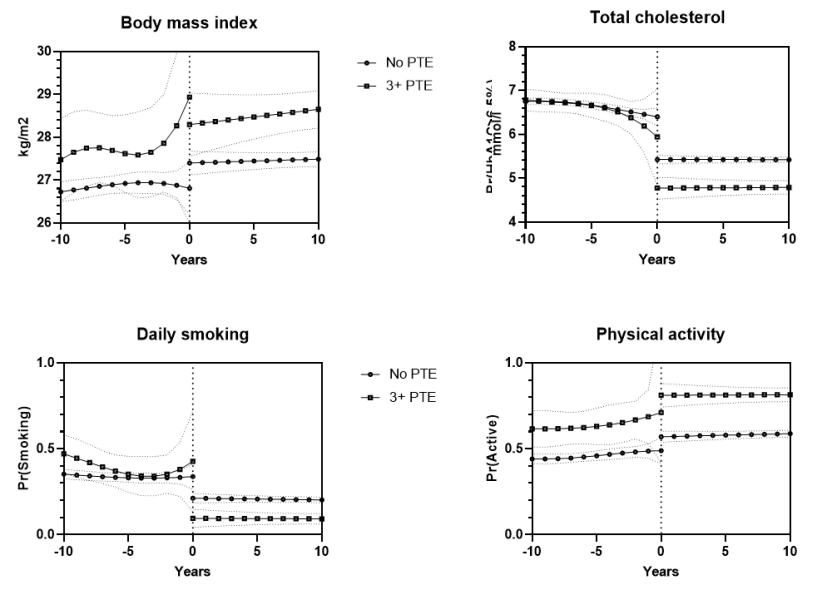
MI hazard

	Lifetime PTE		
Model 1			
No PTE	1.000		
1-2 PTE	1.186	(1.001	1.406)
≥3 PTE	1.516	(1.266	1.815)

Mortality hazard

	Lifetime PTE		
Model 1			
No PTE	1.000		
1-2 PTE	1.127	(0.902	1.407)
≥3 PTE	1.611	(1.277	2.033)

Vi finner også at PTE modererer helserelatert atferd



Vi ser at PTE er assosiert negativt til helserelatert atferd og CVD risk faktorer FØR hjertehendelsen.

Etter hendelsen ser vi hvordan de får kontroll på kolesterol, blodtrykk, trener mer og slutter å røyke.

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POST-TRAUMATIC STRESS SYNDROME AMONG HEART PATIENTS

A mixed methods study of comorbid mental health problems among persons with myocardial infarction in the Tromsø study

Tromsø-undersøkelsen

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Bakgrunn

- Myocardial infarction (MI) kan oppleves som en livstruende situasjon og kan følgelig bli en potensielt traumatisk erfaring.
- Det er få studier omkring sykdomstraumer. Det er et forholdsvis nytt kriterium I DSM-5
- Andre studier viser et gjennomsnitt på 12% (range 0%-38%) prevalence av PTSD etter hjertestans.

- Angst og depresjon er sekundærsymptom for PTSD. Det kan altså være vanskelig å identifisere i klinisk praksis

- Vi ønsket derfor å undersøke **hvor mange av dem med angst og depresjonssymptomer i Tromsø 7 hadde PTSD?**

Our vision is that all heart patients regardless of diagnosis, receive proper treatment to mental health problems.

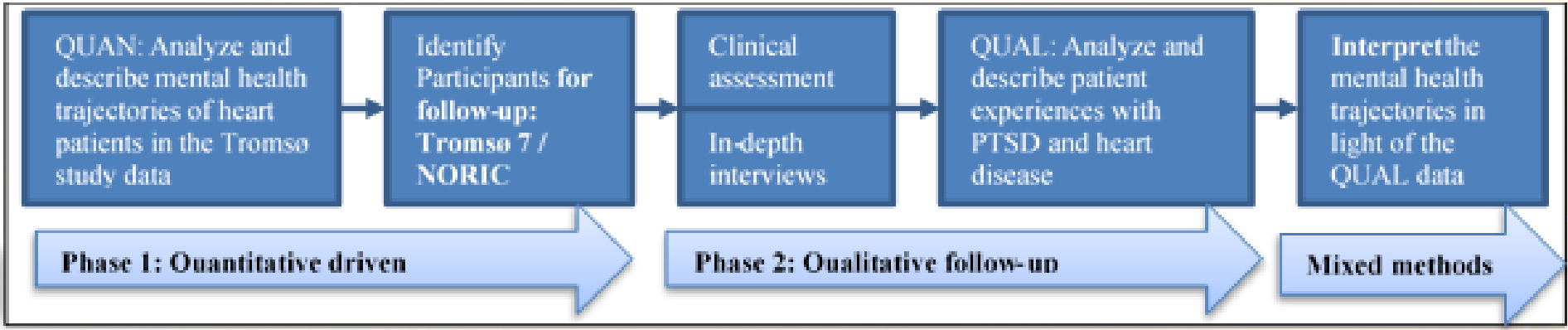


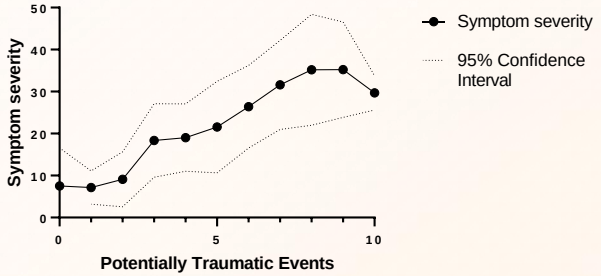
Figure 1. Flowchart showing the different phases of the study

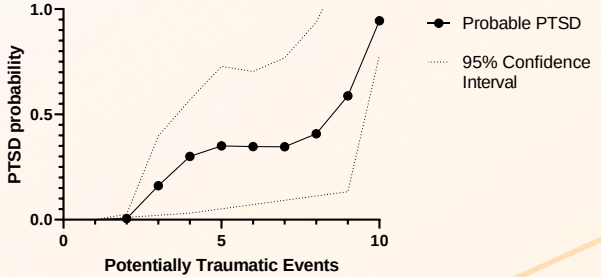
We know that around a third of heart patients report clinically significant symptoms of anxiety/depression.

- We how many of them experience these problems due to PTSD.
- We invited individuals with a confirmed MI diagnosis to a clinical screening.
- The aim was to examine the prevalence of potential PTSD in MI patients.
- We also examined how PTSD symptoms were associated with PTE exposure.

21 % med minst moderate symptom og 12.9% med en sannsynlig PTSD

1. Vi fant **Ingen** sammenheng mellom sykdomstraume og PTSD.
2. Men det var en significant assosiasjon mellom **traumeeksponering og PTSD**
3. Clinicians should know that anxiety or depression symptoms after MI could be secondary symptoms of PTSD.





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