MEMORIA

Stressorer i arbejdslivet, selvoplevet stress og demens

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Tak til kohorteejere for adgang til Copenhagen Male Study, Østerbroundersøgelsen og Den Nationale Arbejdsmiljøkohorte

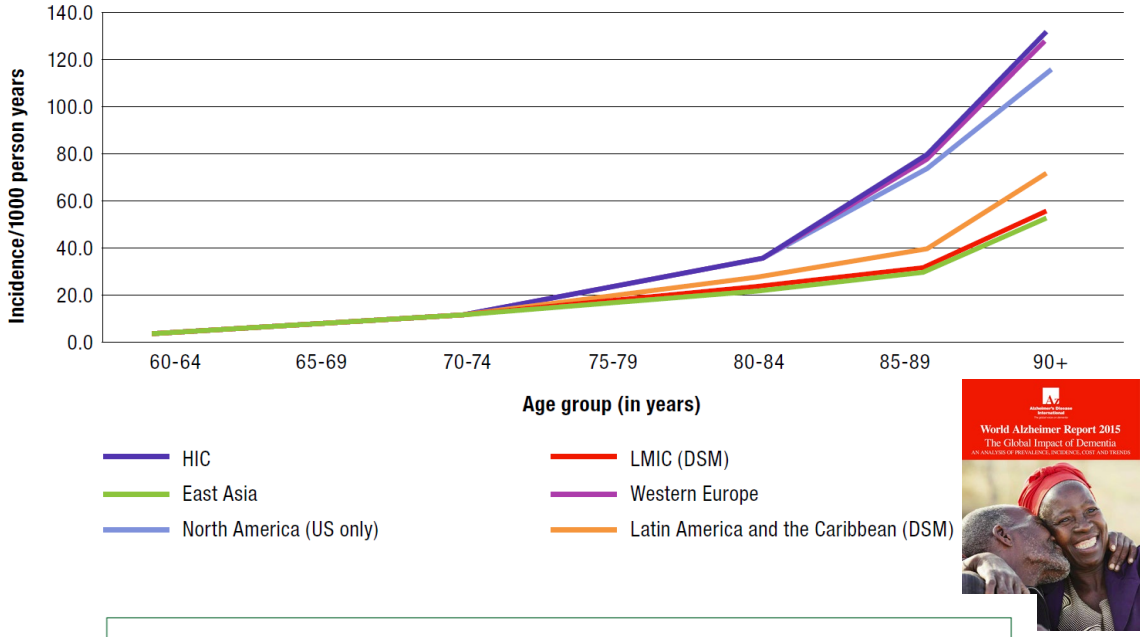
Indhold

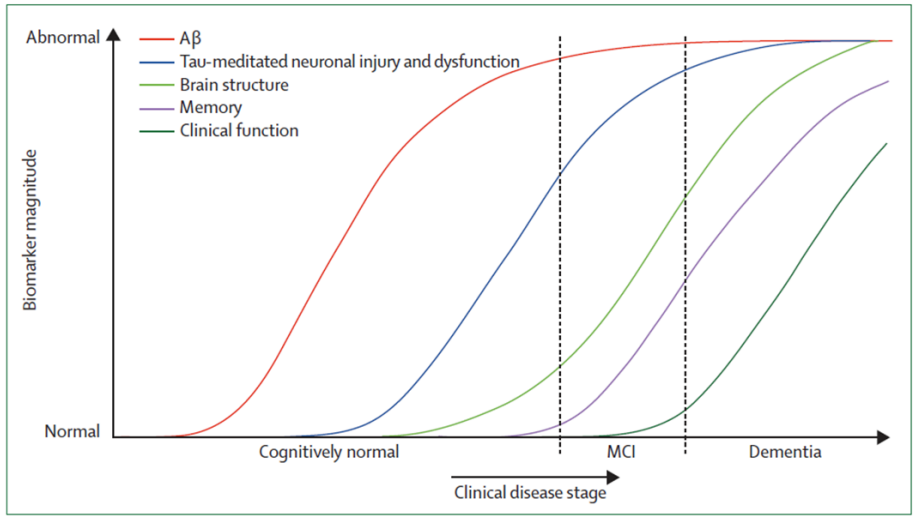
- Kort om baggrunden
- Forskningsspørgsmål
- Kort om metoder
- Resultater
- Konklusion og implikationer
- Afsluttende perspektiver

Baggrund for projektet (I)

- Demens er stærkt aldersrelateret
- Lang præklinisk fase
- Risikofaktorer midt i livet
- Omkring 1/3 af alle demenstilfælde kan forebygges

Figure 3.1
Estimated age-specific annual incidence of dementia, derived from Poisson random effects models, for world regions for which meta-analytical synthesis was feasible





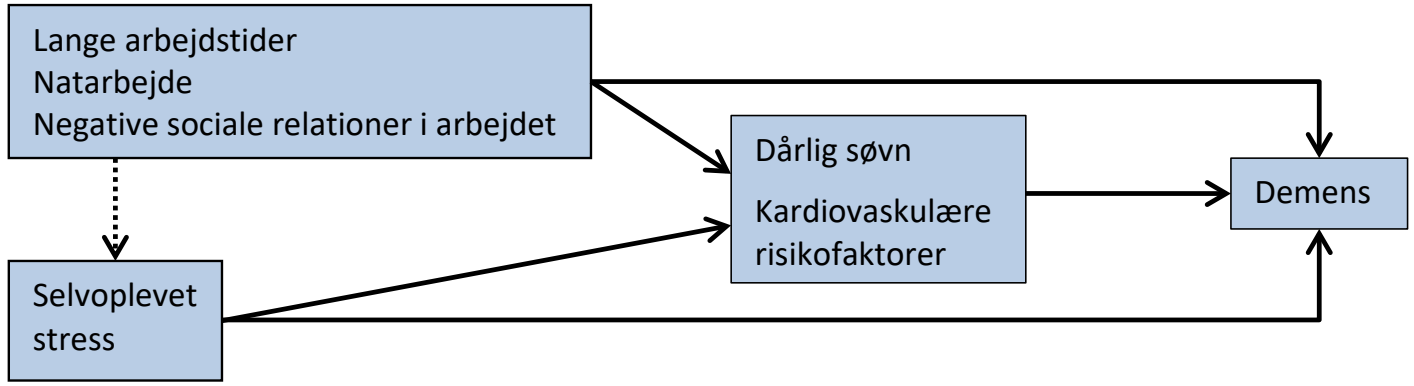
Jack et al. Lancet Hypothetical model of dynamic biomarkers of the Alzheimer's pathological cascade, Lancet Neurol 2010; 9: 119–28

Baggrund for projektet (II)

- Manglende viden om betydningen af arbejdsmiljøfaktorer for risikoen for demens.

- **Sociale relationer**
  - Veldokumenteret at sociale relationer blandt ældre/i fritiden har en betydning for demensrisikoen.
- **Natarbejde og lang arbejdstid**
  - Plausible mekanismer, men få empiriske undersøgelser.
- **Stress**
  - Plausible mekanismer, og få – men solide – empiriske undersøgelser.

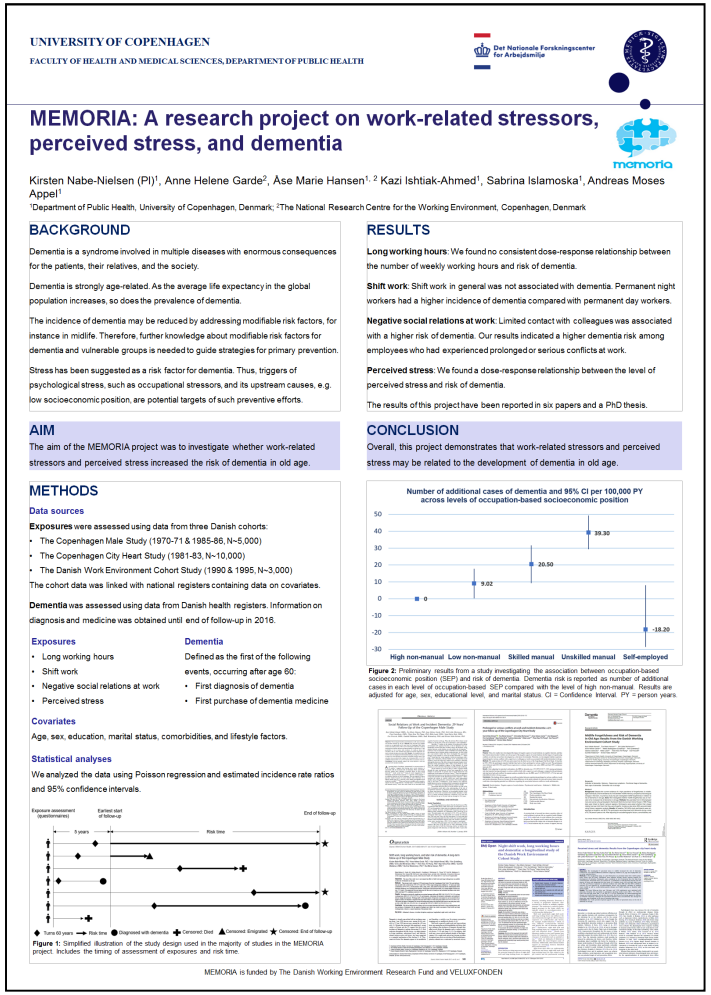
Grafisk præsentation af forskningsspørgsmålene



Figur 1: Sammenhængen mellem stressorer i arbejdslivet, selvoplevet stress, søvn, kardiovaskulære risikofaktorer og demens.

Kort om metoder – for mere info: Q&A eller poster

- Data fra 3 store danske kohorter:
  - The Copenhagen Male Study (1970-71 & 1985-86, N~5,000)
  - Østerbroundersøgelsen (1981-83, N~10,000)
  - Den Nationale Arbejdsmiljøkohorte (1990 & 1995, N~3,000)
- Registerbaserede oplysninger om demens fra 60-årsalderen (diagnoser, medicin og dødsårsager)
- Eksponeringsoplysninger fra spørgeskemaer
- Potentielle confoundere: Alder, køn, sociodemografi, komorbiditet (særligt psykiatri og kardio/cerebrovaskulære lidelser) og livsstil.
- 5-års "tidsvindue" fra eksponeringsmål til tidligste demensdiagnose.



UNIVERSITY OF COPENHAGEN
FACULTY OF HEALTH AND MEDICAL SCIENCES, DEPARTMENT OF PUBLIC HEALTH

Det Nationale Forskningscenter for Arbejdsmiljø

MEMORIA: A research project on work-related stressors, perceived stress, and dementia

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BACKGROUND

Dementia is a syndrome involved in multiple diseases with enormous consequences for the patients, their relatives, and the society.

Dementia is strongly age-related. As the average life expectancy in the global population increases, so does the prevalence of dementia.

The incidence of dementia may be reduced by addressing modifiable risk factors, for instance in midlife. Therefore, further knowledge about modifiable risk factors for dementia and vulnerable groups is needed to guide strategies for primary prevention.

Stress has been suggested as a risk factor for dementia. Thus, triggers of psychological stress, such as occupational stressors, and its upstream causes, e.g. low socioeconomic position, are potential targets of such preventive efforts.

AIM

The aim of the MEMORIA project was to investigate whether work-related stressors and perceived stress increased the risk of dementia in old age.

METHODS

Data sources

Exposures were assessed using data from three Danish cohorts:

- The Copenhagen Male Study (1970-71 & 1985-86, N~5,000)
- The Copenhagen City Heart Study (1981-83, N~10,000)
- The Danish Work Environment Cohort Study (1990 & 1995, N~3,000)

The cohort data was linked with national registers containing data on covariates.

Dementia was assessed using data from Danish health registers. Information on diagnosis and medicine was obtained until end of follow-up in 2016.

Exposures

- Long working hours
- Shift work
- Negative social relations at work
- Perceived stress

Dementia

Defined as the first of the following events, occurring after age 60:

- First diagnosis of dementia
- First purchase of dementia medicine

Covariates

Age, sex, education, marital status, comorbidities, and lifestyle factors.

Statistical analyses

We analyzed the data using Poisson regression and estimated incidence rate ratios and 95% confidence intervals.

Figure 1: Simplified illustration of the study design used in the majority of studies in the MEMORIA project. Includes the timing of assessment of exposures and risk time.

RESULTS

Long working hours: We found no consistent dose-response relationship between the number of weekly working hours and risk of dementia.

Shift work: Shift work in general was not associated with dementia. Permanent night workers had a higher incidence of dementia compared with permanent day workers.

Negative social relations at work: Limited contact with colleagues was associated with a higher risk of dementia. Our results indicated a higher dementia risk among employees who had experienced prolonged or serious conflicts at work.

Perceived stress: We found a dose-response relationship between the level of perceived stress and risk of dementia.

The results of this project have been reported in six papers and a PhD thesis.

CONCLUSION

Overall, this project demonstrates that work-related stressors and perceived stress may be related to the development of dementia in old age.

Number of additional cases of dementia and 95% CI per 100,000 PY across levels of occupation-based socioeconomic position

High non-manual | Low non-manual | Skilled manual | Unskilled manual | Self-employed

Figure 2: Preliminary results from a study investigating the association between occupation-based socioeconomic position (SEP) and risk of dementia. Dementia risk is reported as number of additional cases in each level of occupation-based SEP compared with the level of high non-manual. Results are adjusted for age, sex, educational level, and marital status. CI = Confidence Interval. PY = person years.

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Negative sociale relationer og demens

- Signifikant højere incidens af demens (IRR=2.49; 95% CI: 1.14-5.44) blandt personer med dårlige muligheder for at være i kontakt med deres kolleger i løbet af arbejdstiden (Ishtiak-Ahmed et al. JOEM 2017).
- Mål for de sociale relationers *kvalitet* hang ikke sammen med risikoen for demens (ibid).
- Tendens til højere incidens af demens blandt personer med langvarige eller alvorlige konflikter med både ledere og kolleger (Ishtiak-Ahmed et al. IAOEH 2019).
- Måske stærkere sammenhæng blandt mænd end blandt kvinder (ibid).

ORIGINAL ARTICLE

OPEN

Social Relations at Work and Incident Dementia: 29-Years' Follow-Up of the Copenhagen Male Study

International Archives of Occupational and Environmental Health (2019) 92:165–173
https://doi.org/10.1007/s00420-018-1365-9

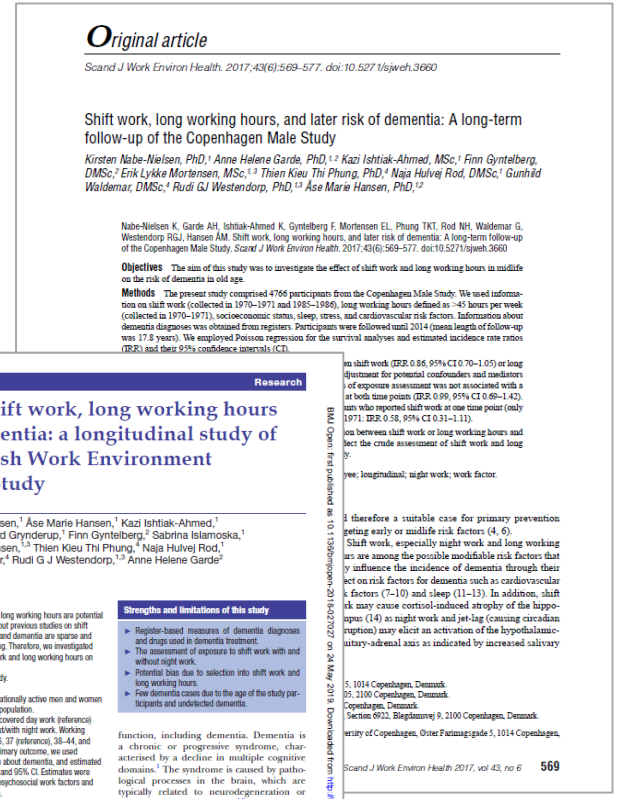
ORIGINAL ARTICLE

Prolonged or serious conflicts at work and incident dementia: a 23-year follow-up of the Copenhagen City Heart Study

Resultater sammenfattet i ph.d.-afhandling

Skifteholdsarbejde, lange arbejdstider og demens

- Skifteholdsarbejde *generelt* er ikke associeret med en højere demensrisiko.
- Vi fandt en højere incidens af demens blandt personer med fast natarbejde (IRR=3.24; 95% CI: 1.35-7.83).
- Vi fandt *ikke* en stigende demensrisiko med et stigende antal ugentlige arbejdstimer.



Original article

Scand J Work Environ Health. 2017;43(6):569–577. doi:10.5271/sjweh.3660

Shift work, long working hours, and later risk of dementia: A long-term follow-up of the Copenhagen Male Study

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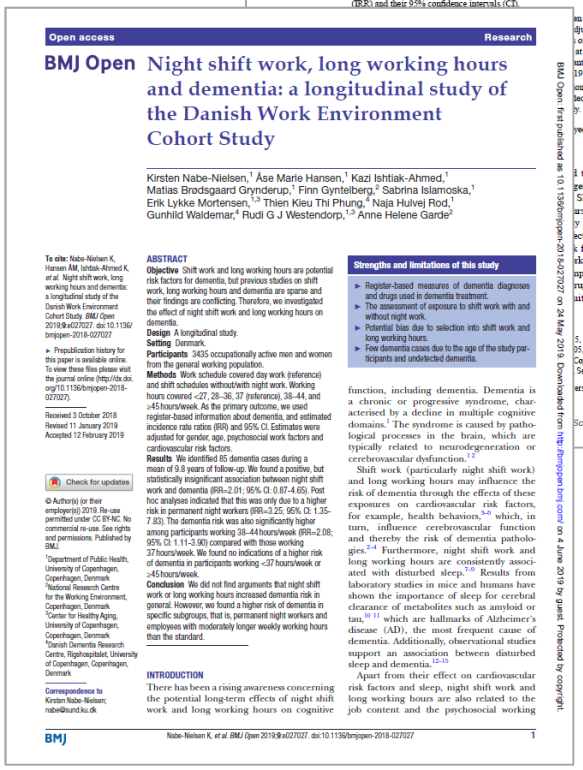

Open access Research

BMJ Open

Night shift work, long working hours and dementia: a longitudinal study of the Danish Work Environment Cohort Study

Kirsten Nabe-Nielsen,[1] Åse Marie Hansen,[1] Kazi Ishtiak-Ahmed,[1] Matias Brødsgaard Grynderup,[1] Finn Gyntelberg,[2] Sabrina Islamoska,[1] Erik Lykke Mortensen,[1,3] Thien Kieu Thi Phung,[4] Naja Hulvej Rod,[1] Gunhild Waldemar,[4] Rudi G J Westendorp,[1,3] Anne Helene Garde[2]

ABSTRACT

Strengths and limitations of this study

INTRODUCTION

BMJ

Selvoplevet stress og demens

- Selvoplevet stress er associeret med en højere incidens af demens (IRR=1.36; 95% CI: 1.13-1.65).
- Justering for potentielle confoundere havde minimal indflydelse på resultaterne.
- Effekten ser ud til at være størst blandt personer i arbejde (IRR=1.68; 95%: 1.29-2.17).
- Ingen tegn på kønsforskelle.

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Perceived stress and dementia: Results from the Copenhagen city heart study

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ABSTRACT

Objectives: We investigated if perceived stress in midlife increased the risk of dementia. Furthermore, we explored differences between subgroups related to sex, age and employment status when reporting stress.

Methods: In this longitudinal study, we used information on perceived stress from 10,814 participants (mean age 56.7 years). Participants were followed through Danish national registers for development of dementia. Participants were considered at risk of dementia from the date they turned 60 years. Perceived stress was assessed as a combination of self-reported intensity and frequency of stress, and categorized into low (score 0–1), medium (score 2–4), and high stress (score 5–6). We used Poisson regression to estimate incidence rate ratios (IRR) and their 95% confidence intervals (CI) and adjusted for sociodemographic factors and psychiatric morbidity at baseline (main model) as well as cardio/cerebrovascular diseases and health behaviors at baseline (additional model).

Results: The mean follow-up time was 13.8 years, and 1,519 participants were registered with dementia. Dementia risk was higher in participants reporting medium stress (IRR = 1.11, 95% CI: 0.99–1.24) and high stress (IRR = 1.36, 95% CI: 1.13–1.65). Adjustment for cardio/cerebrovascular diseases and health behaviors did not alter the results. We did not find strong support for differences between subgroups, although the association between stress and dementia was stronger for those who were employed at the time of reporting high stress.

Conclusion: Our results provide empirical support for an effect of perceived stress on the risk of dementia in old age.

ARTICLE HISTORY
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KEYWORDS
Alzheimer's disease; cognitive function; distress; mental health; psychological stress

Introduction

Dementia is a strongly age-related syndrome afflicting multiple cognitive domains with enormous consequences for the individual, his or her relatives, and for the society (Livingston et al., 2017; Winblad et al., 2016). Despite the increasing life expectancy, recent data suggest that the age-standardized dementia incidence is decreasing (Birdi, Stephan, Robinson, & Davis, 2015; Langa et al., 2017; Satizabal et al., 2016; Wu et al., 2016), at least in European countries and in the US (Roehr, Pabst, Luck, & Riedel-Heller, 2018). Improvements throughout the life course in living conditions, educational level, and cardiovascular risk factors potentially explain this decline (Birdi et al., 2015; Wu et al., 2016). Thus, the dementia incidence could possibly be reduced by addressing risk factors, and therefore, further knowledge about modifiable risk factors for dementia, a deeper understanding of the pathways through which they are acting, and knowledge about particularly vulnerable groups is needed to guide strategies for primary prevention (Solomon, Kivipelto, & Soininen, 2013; Wu et al., 2016). Psychological stress and its upstream causes, e.g. adverse living conditions, social deprivation, and occupational stressors, are potential targets of such preventive efforts.

Psychological stress may increase the risk of dementia through its effect on cardiovascular diseases (Ginty, Kraynak, Fisher, & Gianaros, 2017; Lagraauw, Kuiper, & Bot, 2015; Raz, Knoefel, & Bhaskar, 2016) or other pathways such as depression (Cohen, Janicki-Deverts, & Miller, 2007; Kessing, 2012; Kessing & Andersen, 2004) and chronic sleep problems (Ju, Lucey, & Holtzman, 2014; Palma, Urrestarazu, & Iriarte, 2013; Åkerstedt, 2006). Furthermore, psychological stress activates the physiological stress response resulting in elevated cortisol levels, which in turn could lead to cortisol-induced atrophy of the brain (Greenberg, Tanev, Marin, & Pitman, 2014; Justice, 2018; Lucassen et al., 2014; McEwen, 1998; Piirainen et al., 2017). Previous studies reveal an association between the experience of somatic symptoms as a reaction to emotional strain (Crowe, Andel, Pedersen, & Gatz, 2007), mental/psychological distress (Rosness et al., 2016; Skogen, Bergh, Stewart, Knudsen, & Bjerkeset, 2015), and self-reported stress in relation to circumstances in everyday life, such as work, health or family situation (Johansson et al., 2010), on the one hand, and dementia on the other hand.

Whereas these previous studies clearly point to an association between indicators of psychological stress and dementia, the operationalization of psychological stress differs

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Sammenfatning af resultater & implikationer

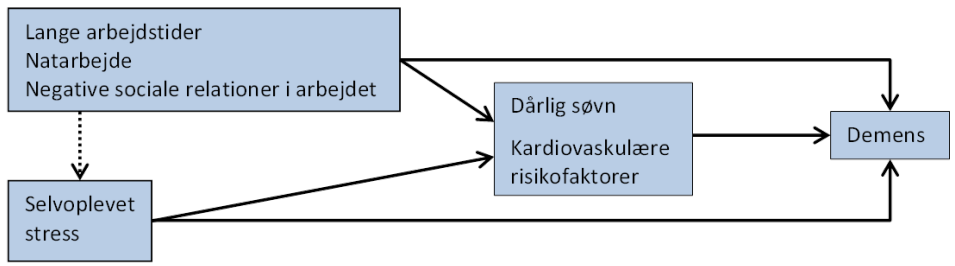
Sociale relationer:
Vi fandt *ikke* en overbevisende sammenhæng mellem sociale relationer i arbejdet og demens – men vores fund rokker ikke ved den eksisterende viden.

Natarbejde:
Vores – og anden forskning – støtter hypotesen om, at *natarbejde kan øge risikoen for demens*. Eksisterende forskning giver mulighed for at foreslå, hvad den enkelte medarbejder selv kan gøre for at forebygge demens, hvis natarbejde er uundgåeligt.

Lang ugentlig arbejdstid:
Ingen overbevisende sammenhæng. Medarbejdere med mange ugentlige arbejdstimer kan læne sig op ad generelle anbefalinger for demensforebyggelse.

Stress:
Vores – og anden forskning – støtter hypotesen om, at *oplevelsen af stress (af høj intensitet og over længere tid) hænger sammen med en øget risiko for demens*. Vigtigt med fortsat fokus på primær forebyggelse af stress.

Grafisk præsentation af forskningsspørgsmålene



Figur 1: Sammenhængen mellem stressorer i arbejdslivet, selvoplevet stress, søvn, kardiovaskulære risikofaktorer og demens.

Afsluttende perspektiver – hvad bør vi mere vide om arbejdets betydning for risikoen for demens?

- Hvad er betydningen af at have et kognitivt stimulerende arbejde?
- Hvad er betydningen af den kognitive funktion *inden* man indtræder på arbejdsmarkedet?
- Kan livsforløbsperspektivet bidrage til vores viden på området?

Kognitivt og socialt stimulerende aktiviteter

Stressorer og belastninger

Hvis du vil vide mere…

- Kontakt Kirsten Nabe-Nielsen (nabe@sund.ku.dk) eller en af de øvrige medlemmer af projektgruppen.
- Kontakt Sabrina Islamoska (saim@sund.ku.dk) for info om ph.d.-forsvar om (bl.a.) stress-diagnoser og risikoen for demens.
- Find vores publikationer via ResearchGate, pubmed eller KU's hjemmeside.
- Kom til vores poster i frokostpausen!