Finnish Institute of Occupational Health

Press Conference on Working hours, health, well-being and participation in working life (WOW)

13.11.2020 at 10–11 am

Programme

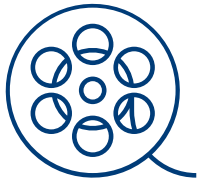
- **Opening**
  chair Dr. Kirsi Ahola, Director, Finnish Institute of Occupational Health (FIOH)
- **Introduction to the WOW project**
  Prof. Mikko Härmä, FIOH
- **Shift work, health and wellbeing – how to schedule night shift work?**
  Prof. Mikko Härmä, FIOH
  Dr. Johnni Hansen, Danish Cancer Society Research Center
  Prof. Anne Helene Garde, National Research Centre for the Work Environment
- **Control of working hours, health and well-being**
  Dr. Constanze Leineweber, Stockholm University
  Dr. Kati Karhula, FIOH
- **Questions and answers**

Practical arrangements

Questions during the Press conference can be presented

- by email kirsi.ahola@ttl.fi
- In Teams meeting by raising a hand

The questions will be answered in the end of the Press Conference



The stream will be recorded and can be watched for two weeks after the Symposium

The presentations can be found with the press releases www.ttl.fi in Finnish, Swedish and English

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Working hours, health, well-being and participation in working life (WOW)

Creating new working time models and solutions to Nordic countries

Mikko Härmä, MD, PhD, prof.

@MikkoHaermae

Co-operating partners

Finnish Institute of Occupational Health

Det Nationale Forskningscenter for Arbejdsmiljø

STAMI
NATIONAL INSTITUTE OF OCCUPATIONAL HEALTH

Stockholms universitet

Danish Cancer Society Research Center

Aarhus University Hospital

UNIVERSITY OF BERGEN

UNIVERSITY OF COPENHAGEN

Karolinska Institutet

Tampere University

NordForsk

WOW research has focused on:

Trends and patterns of working hours (WP1)

- *to investigate the societal and socio-economical differences and trends* of Nordic working hour patterns using representative national and European data to identify policy-relevant trends and vulnerable groups for targeted interventions

Epidemiological research (WP2)

- *to study the effects of shift work and working time autonomy* on health, work-life balance and work participation using well-established five large prospective cohort studies

Intervention studies (WP3)

- *to create and test organizational and individual level interventions* to generate criteria and tools to improve health, well-being and work participation

WOW has produced over 110 original publications

Different study designs

- comparative studies, epidemiological studies, organizational and individual-based intervention studies, time-budget studies

Diverse outcomes on health and safety

- Short-term: sleep, fatigue, perceived health, accidental injuries
- Long-term: breast and prostate cancer, cardiovascular, neurological, musculoskeletal and mental diseases, maternal health and miscarriage, mortality

Wellbeing:

- work-life conflict, work-time control, work engagement, coping with stress

Work participation:

- short and long-term sickness absence, disability pensions

WOW has supported co-operation and implementation of the study results

- **Several joint Scandinavian studies**
- **Annual Nordic Symposia** (by supporting the Working Hours in the Nordic Countries research network): in Helsinki (2015), Stockholm (2016), Oslo (2017) and Copenhagen (2018, 2019)
- **International NIVA courses** on working hours and health: Helsinki (2015), Copenhagen (2018), *next one in Stockholm (June 2021)*
- **Consensus reports** on working hours and health with recommendations
  - WOW final report 2020
  - Scandinavian Journal of Work, Environment & Health 2020
- **Co-operation with companies and public organizations**
  - the bases for the implementation in all the WOW studies
- **Dissemination of information** through expert reports, public statements, hearings, press releases, interviews, lectures, seminars and workshops, publications in general and union-magazines, and participation in international conferences

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Shift work, health and well-being - how to schedule night shift work

Mikko Härmä, Johnni Hansen, Anne-Helene Garde

mikko.harma@ttl.fi, Johnni.Hansen@cancer.dk, ahg@fa.dk

The new studies presented here are a part of the overall results of WOW presented today

Support for the association of shift work with the increased risk for

- fatigue, insomnia and headache
- **occupational injuries**
- obesity, type-2 diabetes, dyslipidemia and hypertension
- **miscarriage and preeclampsia during pregnancy**
- rheumatoid arthritis and multiple sclerosis
- short and **long sickness absence**
- disability pension

Mixed results regarding the association between night shift work and

- **breast cancer**
- dementia
- mortality

- studies recording longer exposure times tended to be more positive

No support for an association between night shift work and

- prostate cancer

1. Breast cancer – Johnny Hansen

IARC Night shift work. IARC Monogr Identif Carcinog Hazards Hum 2020:124:1-371.

2. Occupational injuries – Mikko Härmä

Härmä et al. Scand J Work Environ Health 2020: 46(6), 570–578.

3. Miscarriage and pre-term birth – Anne Helene Garde

Specht et al. PLoS ONE 2019:14(4), e0215748
Begtrup et al. Occup Environ Med 2019: 76(5), 302-308.

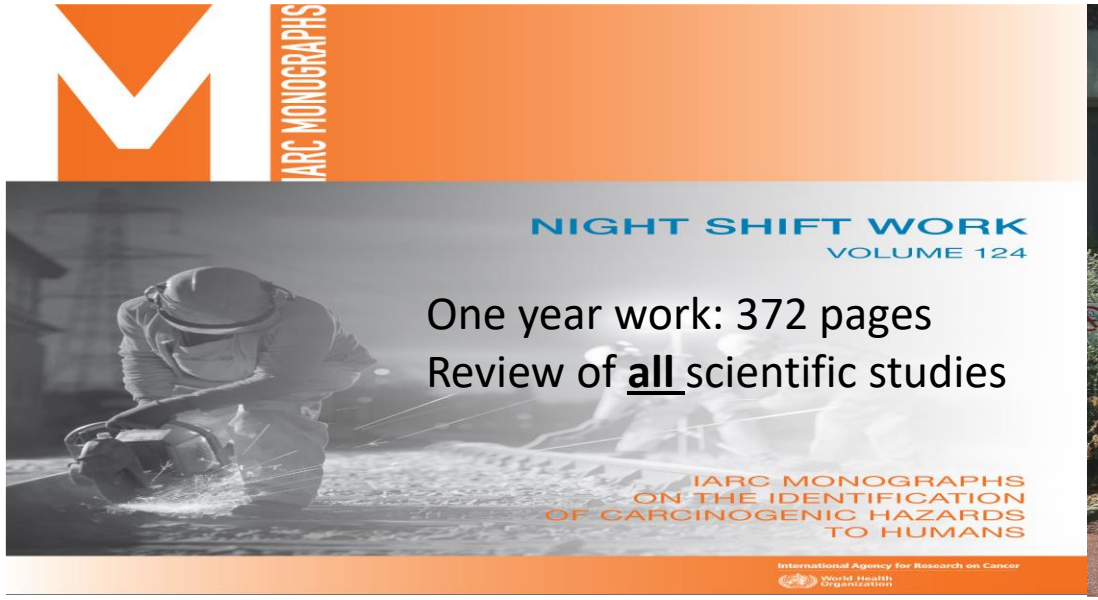
4. Long sickness absence – Anne Helene Garde

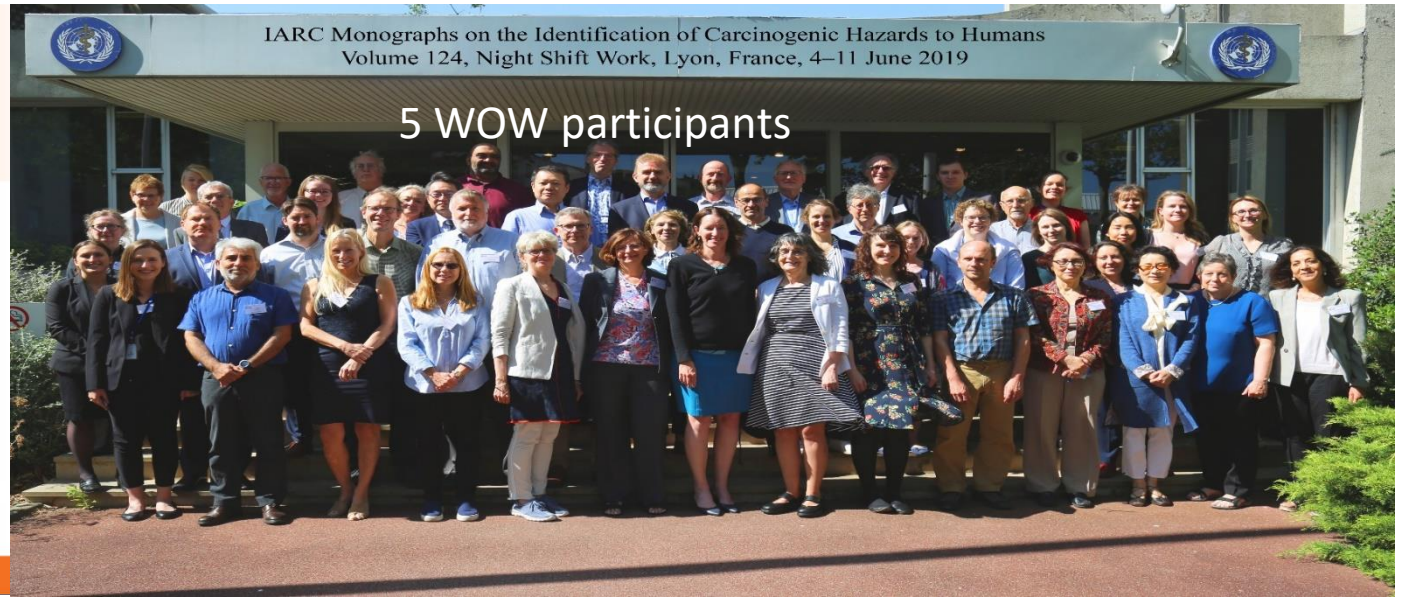
Larsen et al. Int J Nurs Stud, 2020 May 21, 103639.

Recommendations – Anne Helene Garde and Mikko Härmä

Garde et al. Scand J Work Environ Health, 2020 Sep 8;3920.
Härmä M, Karhula K (Editors). WOW final report 2020

Night work and cancer – an IARC/WHO evaluation with contributions from WOW





Exposure assessment

Cancer in humans

Positive associations have been observed between night shift work and cancer: *limited evidence*

Cancer in exp. animals

There is *sufficient* evidence in experimental animals for the carcinogenicity of alteration in the light–dark schedule

Mechanistic data

Strong mechanistic evidence in experimental systems: *a) immunosuppression, b) chronic inflammation, and c) cell proliferation*

Overall evaluation

Night shift work is probably carcinogeninc to humans [2A]

Breast | Prostate | Colon and rectum

WOW-recommandations

Reduce circadian disruption: i) ≤3 consecutive night shifts, ii) shift intervals of ≥11 hours, iii) ≤9 hours shift duration

Scand J Work Environ Health. 2020;46(6):570–578

Characteristics of working hours and the risk of occupational injuries among hospital employees: a case- crossover study

Mikko Härmä[1], Aki Koskinen[1], Mikael Sallinen[1], Tomohiden Kubo[2], Annina Ropponen[1], David A. Lombardi[3]

- **registry data of occupational injuries of hospital employees** from the Finnish Public Sector (FPS) study was linked to daily payroll data to obtain working hours for 37 days preceding the first incidence of the injury (N=18 700).
- **a case-crossover design and associated matched-pair interval analysis** were used to compare working hour characteristics for three separate hazard windows (injury day, the preceding day and the preceding week) among the same subjects
- conditional logistic regression was used to calculate odds ratios (OR) with 95% confidence intervals (CI).

[1] Finnish Institute of Occupational Health, Helsinki, Finland.
[2] National Institute of Occupational Safety and Health, Kawasaki, Japan.
[3] Harvard T.H. Chan School of Public Health, Boston, USA.

Results

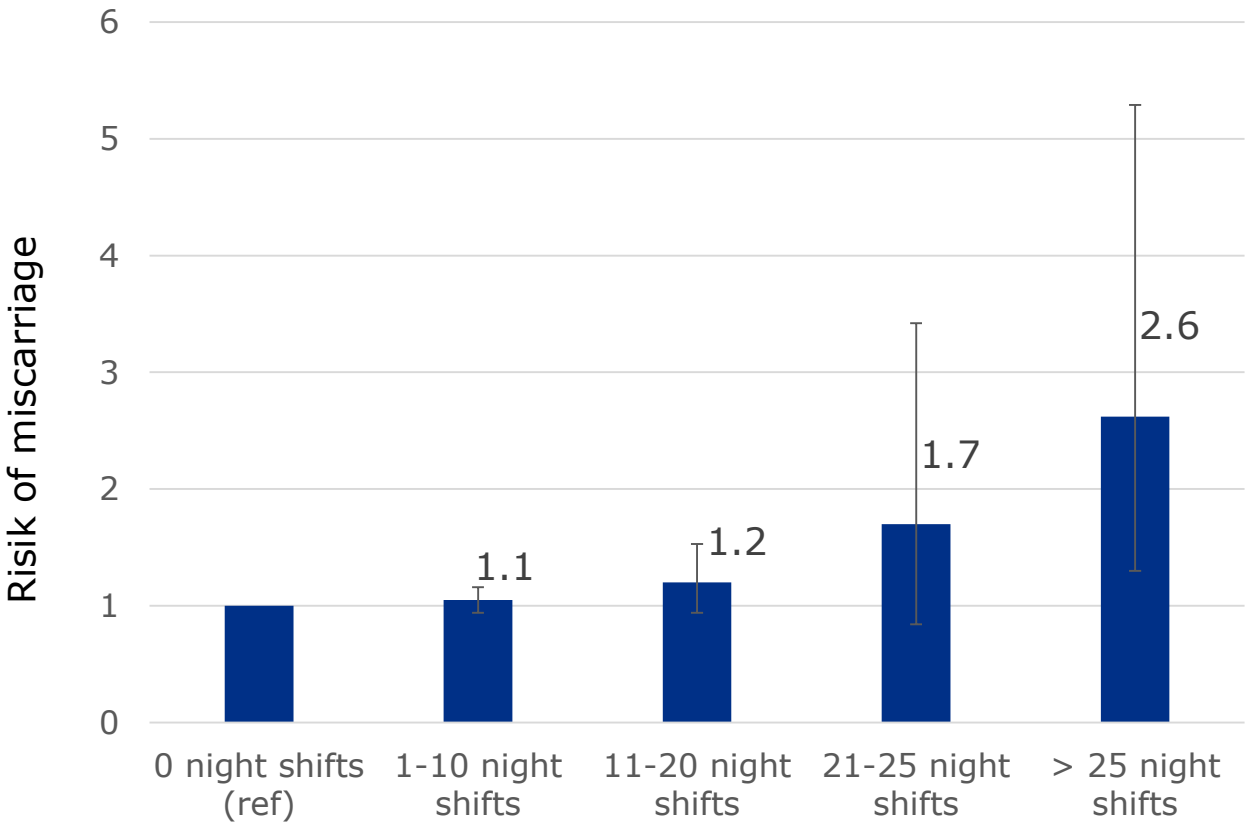
- an elevated risk of an occupational injury for

workdays with evening shifts	OR 1.09, 95% CI 1.03–1.14
workdays following night shifts	OR 1.33, 95% CI 1.17–1.52

- In relation to the previous week, an elevated injury risk increased **following a week of ≥3 evening shifts or ≥5 morning shifts**
- **An elevated risk in 12 hour or longer work shifts**
  OR 1.22, CI 1.06–1.42
- **Sufficient recovery time before the night shifts** decreased the risk:

Preceding day	*Following day*	
morning shift	- **night shift**	OR 0.63 (95%CI 0.43-0.93)
evening shift	- **night shift**	OR 0.69 (95%CI 0.48-0.99)

Miscarriage



Adjusted for mothers age, BMI and smoking during pregnancy, parity, socioeconomic status (SES), and previous miscarriage.

- More night shifts are associated with higher risk of miscarriage.
- Pregnant women who work 2 or more night shifts in a week have approx. 30% increased risk of miscarriage the following week.
- This corresponds to 5.5 cases of miscarriage among 100 pregnant women with 2 or more night shifts than in a week. For comparison there are 4.2 cases of miscarriage among women with only day work.
- **The results support that, in order to reduce risk of miscarriage, pregnant women should have no more than one night shift in a week.**

National Research Centre for the Working Environment

Begtrup et al. Occup Environ Med 2019;76:302–308.

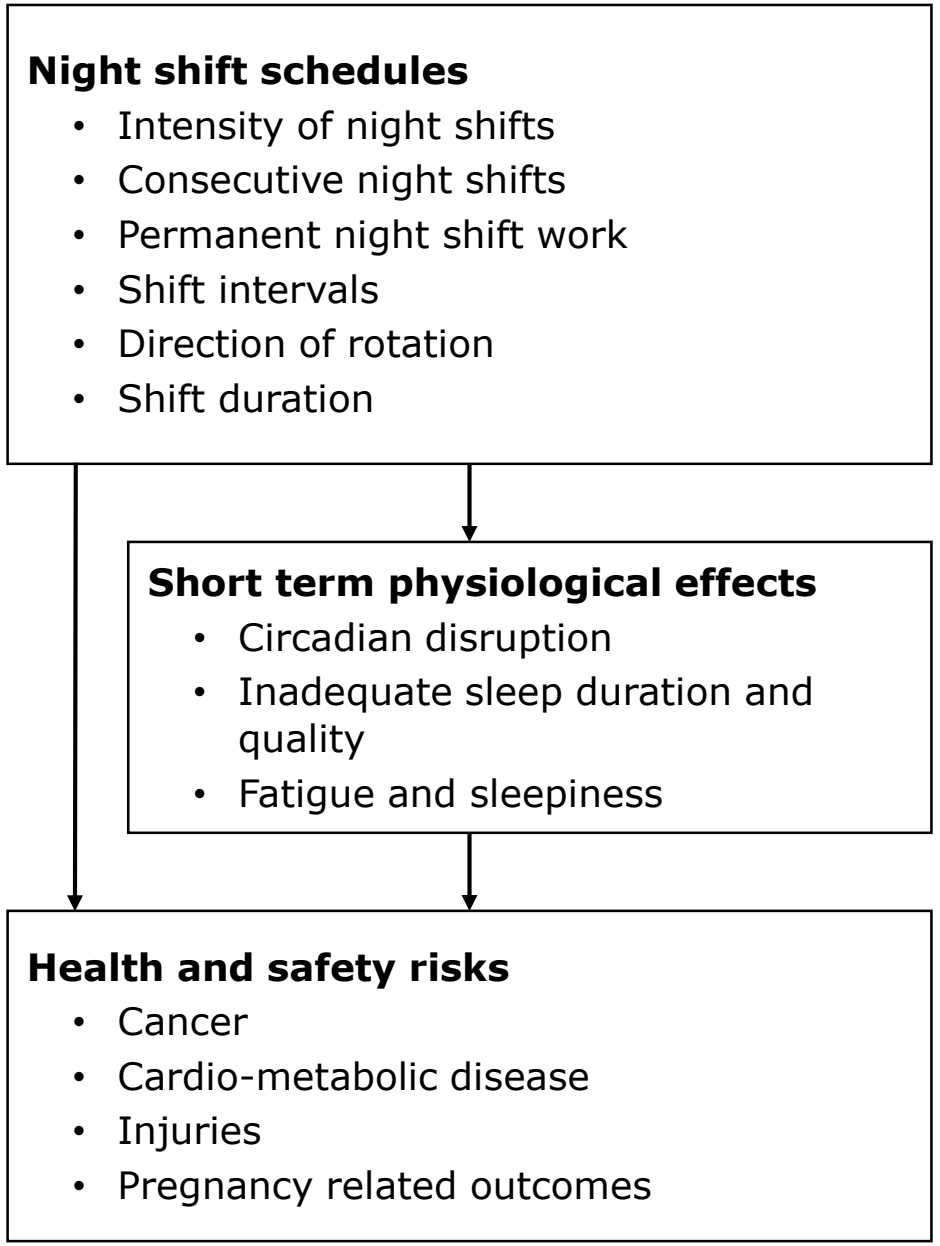
Working hours and long-term sickness absense (LTSA)

- The aim of the study was to investigate the association of working hours and risk of long-term sickness absence (LTSA) of 30 consecutive days or more. Day-to-day information in working hours and sickness absence in Denmark and Finland
- The Danish data showed having evening work, night work or five or more consecutive night shifts were associated with higher risk of LTSA among non-pregnant women.
- The Finnish results showed a higher risk of LTSA in relation to working nights, long shifts, quick returns, and long work weeks.
- The inconsistencies between results from Denmark and Finland may be due to contextual differences e.g. in the legislations and rules related to sickness absence benefits. Thus comparison of risk of LTSA in relation to working hours between countries should be performed with caution.
- The risk of LTSA in relation to working hours was lower in the younger age groups and higher among the oldest.

Larsen et al. Int. J. Nurs. Stud. (2020)

Night shift work, health and safety

- Based on requests from policy-makers, employers and employees the aim is to provide scientifically based recommendations on night shift schedules, which may reduce risk of cancer, cardio-metabolic disease, injuries, and pregnancy-related outcomes
- 15 experienced shift work researchers primarily from the Nordic countries and part of the WOW-project participated in a 3-day workshop held in January 2020 in Denmark.
- Prior to the workshop, the participants identified the most relevant scientific literature on the associations and possible mechanisms within their main research area.
- After the workshop, a supplementary literature search was performed.



How to schedule night shift work in order to reduce health and safety risks?

- The consensus among the researchers was that schedules which reduce circadian disruption may reduce cancer risk, particularly for breast cancer, and schedules that optimize sleep and reduce fatigue may reduce the occurrence of injuries.
- This is generally achieved with fewer consecutive night shifts, sufficient shift intervals, and shorter night shift duration.
- Based on the limited, existing literature, the researchers recommend that in order to reduce the risk of injuries and possibly breast cancer, night shift schedules have:
  - (i) 3 or less consecutive night shifts;
  - (ii) shift intervals of 11 hours or more; and
  - (iii) shift duration of 9 hours or less.
- In special cases – eg, oil rigs and other isolated workplaces with better possibilities to adapt to daytime sleep – additional or other recommendations may apply.
- Finally, to reduce risk of miscarriage, pregnant women should not work more than one night shift in a week.

More reading

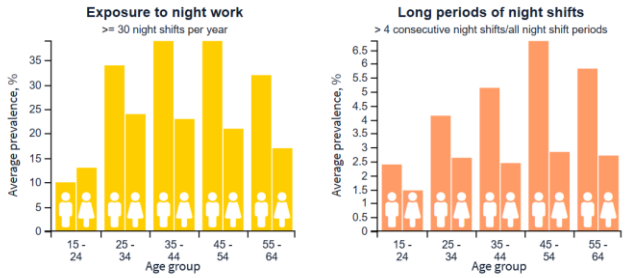
https://www.julkari.fi/handle/10024/140634

https://www.sjweh.fi/show_abstract.php?abstract_id=3920

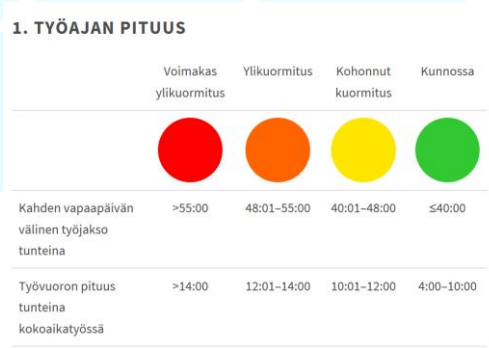
https://nfa.dk/docs/fa72.html

Possibilities to utilize working time recommendations – examples from Finland

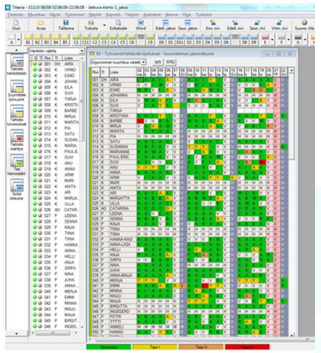
- FIOH traffic light model Working hour recommendations supporting health (in webpages)
- Linking FIOH traffic light model to private shift scheduling software used by the majority of the health and social care sector (Titania®, CGI Finland)
- Feedback to communities and hospitals on their working hour characteristics using a feed-back portal (*Shift work report*)
- Open trend data *(Finnish/English/Swedish)*
- Updating for health basis for protective legislation (e.g. Finnish Working Time Act) and collective agreements



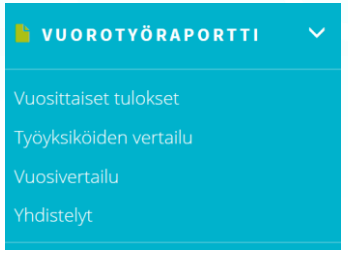
FIOH traffic lights



Titania® (CGI Finland) Traffic light apps



FIOH Shift work report



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Control of working hours, health and well-being

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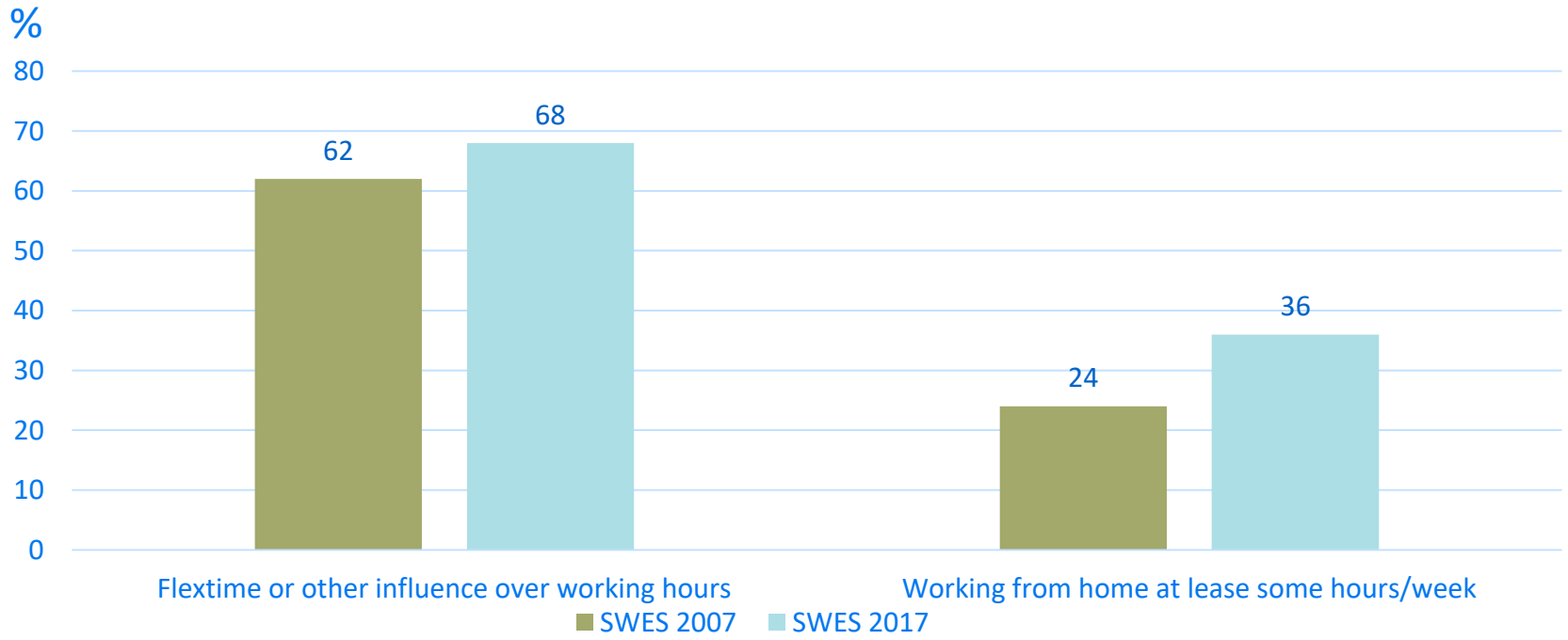
Good work-time control decreases risk for musculoskeletal and mental symptoms, sickness absence and occupational accidents

Constanze Leineweber

Stockholms universitet

Influence over working times and place of work in 2007 and 2017 in Sweden



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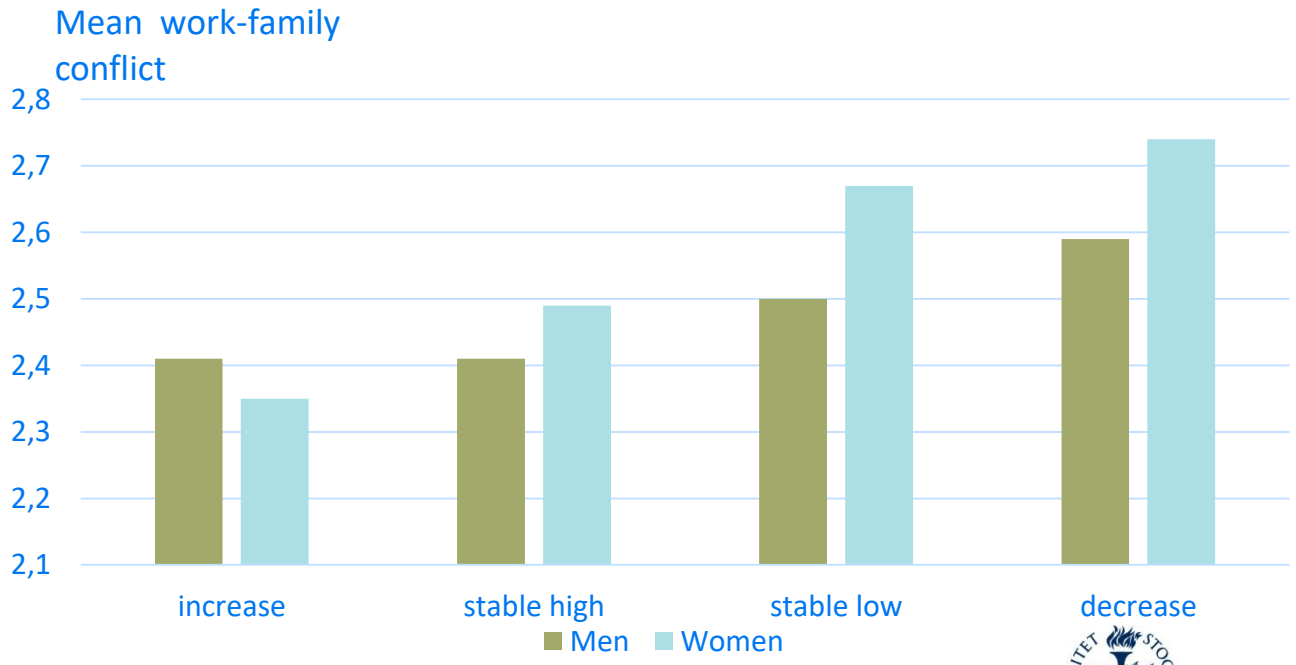
Work-time control is positively associated with work-life balance

- Strong cross-sectional evidence for positive associations between work-time control and work-life balance/health and moderately strong evidence for a positive causal association with work–life balance (Nijp et al., 2012)

- In WOW we could show that positive perceptions of work-life balance are most prevalent in the Nordic countries (where work-time control is high) (Anttila et al. 2015)

Change in work-time control associates with work-life balance among Swedish working men and women

- WTC is rather stable over a time span of two years
- A decrease in WTC had negative effects on work-life balance
- Stable low WTC had negative effects on work-life balance (women only)
- More women report low WTC and work-life balance



Leineweber et al., 2016

Stockholms universitet

Work-time control is positively associated with health

- Work-time control is inversely associated with depressive symptoms over time (Albrecht et al. 2017; Albrecht et al. 2020)
- Work-time control is inversely associate with musculoskeletal symptoms over time (Albrecht et al. 2020)
- Employees with high and moderate levels of work-time control had a decreased risk of sickness absence due to musculoskeletal disorders (Albrecht et al., under review)
- Work-time control do not related to sickness absence due to mental disorders (Albrecht et al., under review)

Work-life imbalance mediates part of the effect from work-time control to mental/musculoskeletal symptoms

(Albrecht et al, 2020)

WTC plays a small but consistent role in effects on health

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The effects of participatory working time scheduling

Kati Karhula

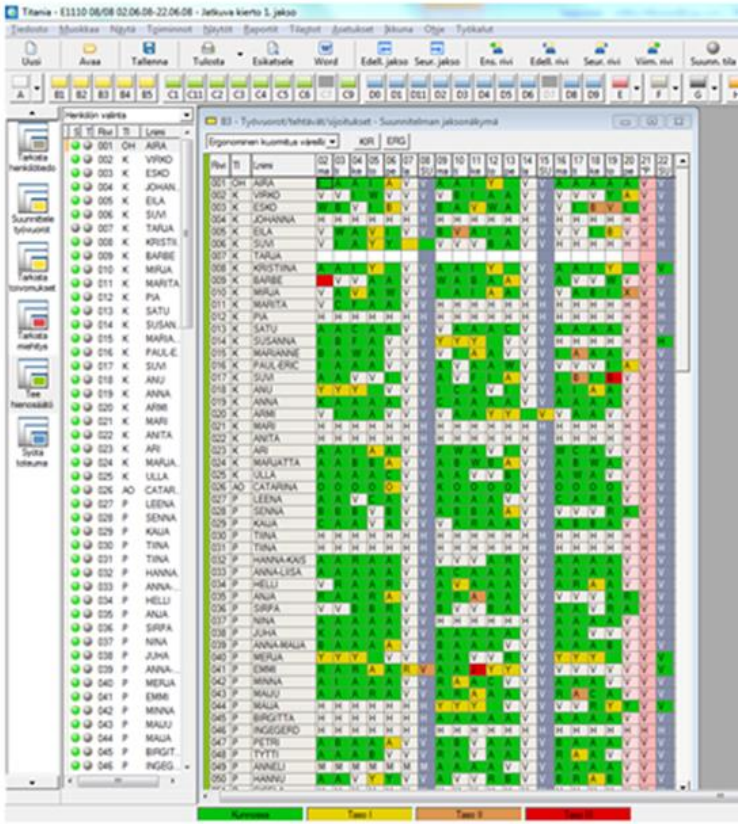
What is participatory scheduling?

- *Participatory working time scheduling* is a collaborative approach to scheduling of shifts in which
  - working time legislation
  - operation of the ward/unit
  - employees´ equality and fairness

  are all taken into account in cycles of negotiations and adjustments.
- Good work time control associates positively with well-being at work and can increase staff retention.

Effect of participatory scheduling on short sickness absence 2014-2017, 238 wards (approx. 9000 employees)

- Short (1–3 days) sickness absences decreased by 7% in the wards using participatory scheduling compared to those using traditional scheduling.
- The observed effect was stronger as the time of using the participatory working time scheduling software increased.



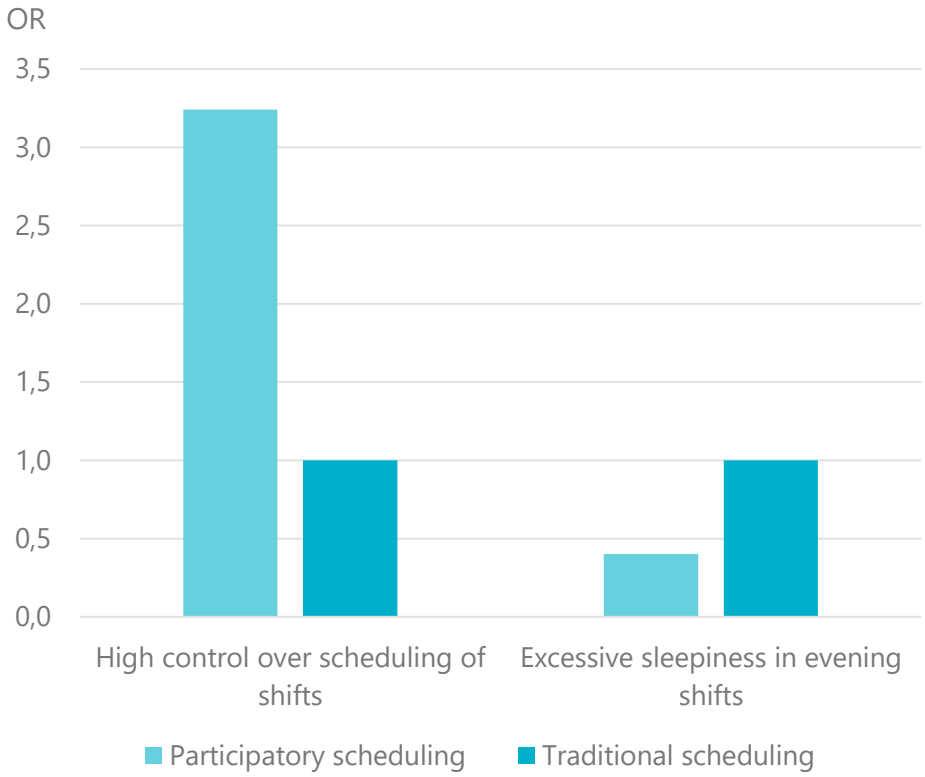
Titania® software view on ward level scheduling

Turunen et al. 2020 Int J Nurs Stud

Effect of participatory scheduling on realized working hours and employees´ well-being 2015-2017, n=677

- objective data on realized working hours show that working hour characteristics change only slightly after the implementation of participatory working time scheduling.
  - Long (≥12h) work shifts increased
- Using participatory working time scheduling software had a positive effect on employees´
  - perceived control over scheduling of shifts and
  - excessive sleepiness in evening shifts

  compared to traditional scheduling.



Karhula et al. 2020 Int J Nurs Stud

WOW recommendations regarding work time control

- Increasing work-time control and the use of participatory working time scheduling are potential and feasible ways to improve health, well-being and work participation.
- Guidelines on flexible working practices should be tailored according to age, gender, work ability and the type of work.
- Workers with especially low levels of control should be targeted in interventions to guarantee the availability of a minimum level of autonomy.

https://www.ttl.fi/en/summary-of-the-key-wow-recommendations/

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