

B4_ Oral presentations - ABSTRACTS

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Social capital and depression: The case of a community-based intervention

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Interventions aiming to create social capital in communities may have important health implications, but are often not measured as such. In the Swiss context, the "Neighbourhoods in Solidarity" (NS) are a group of community-based interventions that aim to create social capital by empowering elderly individuals to participate more in their neighbourhoods. The NS are a series of social interventions lasting approximately 5 years, and have been established in over twenty Swiss communities since 2002. At the moment, the NS have not yet been evaluated in terms of their impact on health related outcomes, such as depression. This study is the first quantitative evaluation of the NS, and is the first to look at the NS as an intervention targeting the social determinants of mental health. This study aims to evaluate differences in social capital, empowerment, and depression scores of individuals residing in neighbourhoods with and without the NS intervention, as well as in individuals with different levels of participation in the NS. Cross-sectional data was collected from ten neighbourhoods and 1,028 individuals in Vaud, Switzerland. We compare structural and cognitive dimensions of social capital, empowerment, and depression outcomes within individuals who lived in five neighbourhoods with the NS intervention to those who lived in five neighbourhoods without the NS. This study found that the participation in the NS is associated with higher structural social capital and empowerment scores for individuals who participated in the project, but not for individuals who dwell in those neighbourhoods but who did not participate. The presence of an NS was not directly associated with cognitive social capital or depression, although empowerment predicted cognitive social capital, and cognitive social capital was an important predictor for depression scores. This study highlights the link between social interventions and public health implications. It also stresses the importance of frameworks for monitoring and evaluation in future community-based interventions.

The association of daytime activity and sleep with quality of life: A compositional data analysis

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Background: Daily activity is an important factor in improving quality of life (QoL). However, the associations between time spent on physical activity (PA), sedentary behavior (SB) and sleep with QoL are usually studied without considering that time is finite, meaning that time spent on one behavior displaces time on another behavior. Therefore, we investigated the reallocation of time spent on PA, SB and sleep during the 24-hours day and its association with QoL in an elderly population.

Methods: This cross-sectional study included 1934 participants, aged 51–94 years, from the population-based Rotterdam Study. Activity levels and sleep were objectively measured with a wrist-worn triaxial accelerometer (GENEActiv) combined with self-reported sleep time. QoL was measured using the EuroQoL 5D-3L (EQ-5D-3L) questionnaire. The compositional isotemporal substitution method was used to examine a 30 minutes substitution of time spent on one activity for time spent on another and its association with QoL, adjusted for demographic, lifestyle and health factors.

Results: Only reallocations including moderate-to-vigorous physical activity (MVPA) were found to be statistically significant. Negative differences in QoL scores were estimated when reallocating time from MVPA to any other behavior, e.g. when reallocating 30 minutes from MPVA to sleep, the estimated difference in QoL score is -0.04 (-0.06, -0.02). Positive differences were estimated when reallocating time to MVPA from any other behavior, e.g. when reallocating 30 minutes from sleep to MVPA the estimated difference in the QoL score is 0.03 (0.02, 0.04). Additionally, these differences were not symmetrical when displacing one activity for another and vice versa.

Conclusion: To increase the time QoL of the elderly population, time spent on MVPA is important. While interventions to increase MVPA may be of benefit, attention should be given to strategies to avoid a decline in MVPA.

Suicide rates in farmers compared to other men 1991 to 2014: Swiss National Cohort

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Background: Swiss farmers have to deal with increasing economic pressure, driven by agricultural reforms and stricter requirements for animal protection and food safety. In recent years the media repeatedly reported on an “epidemic of suicide” in male farmers. However, it is unclear if farmers have a higher risk of suicide than comparable occupational groups. We investigated time trends of suicides in male farmers 1991 to 2014 in the Swiss National Cohort (SNC).

Methods: The SNC is a longitudinal study of the Swiss population, based on probabilistic and deterministic linkages of the full censuses 1990 and 2000 and the yearly registry censuses from 2011 onwards with death or emigration records up to 2014. We included all men who were covered by the 1990 or 2000 census and between 35 and 75 years old during the study period 1991 to 2014. We identified male farmers at census 1990 and 2000. Suicides were identified based on the codes in the deaths statistics, according to the International Classification of Diseases (8th or 10th revision).

Results: Analyses were based on 2,284,402 men, including 69,005 farmers. During the study period 11,798 suicides were recorded, including 420 in farmers. Crude rates of suicides were higher in male farmers than in non-farmers in all age groups (overall 38.5 per 100,000 person years vs 29.7 per 100,000 person years). Overall suicide by firearms (33% of all suicides) was the most frequent method, followed by suicide by hanging (31 %). Suicide by hanging was the most frequent method in farmers (59%). The multivariable Cox regression model adjusted for religion, education, marital status, type of household, the Swiss neighbourhood index of socioeconomic position, language region and nationality showed that the suicide rate of male farmers was comparable to the suicide rate of other self-employed men in the first study period (Hazard ratio 0.91, 95% Confidence interval 0.78-1.09), but higher in the later time period (HR 1.39, 95% CI 1.09-1.76).

Discussion: Further research is needed to clarify the reasons for the higher suicide rate in male farmers that has emerged in recent decades, but the worsening economic situation that increasingly threatens the livelihoods of farms and farming families may have contributed to this trend.

Association of thyroid function with life expectancy with and without non-communicable diseases

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Background: Variations in thyroid function within the reference range are associated with the risk of diseases and death. However, the impact of thyroid function on life expectancy (LE) and the number of years lived with and without non-communicable diseases (NCD) remains unknown. Therefore, we aimed to investigate the association of thyroid function with total LE and LE with and without NCD among subjects with thyroid function within the reference range.

Methods: Participants of the Rotterdam Study without known thyroid disease and with thyroid-stimulating hormone (TSH) and free thyroxine (FT4) levels within the reference ranges were eligible. NCD was defined as presence of cardiovascular disease, diabetes mellitus type 2, cancer, chronic obstructive pulmonary disease, or chronic kidney disease. We used multistate life tables to calculate the total LE and LE with and without NCD among TSH and FT4 tertiles, in men and women. LE estimates were obtained using prevalence, incidence rates and hazard ratios for three transitions (healthy to NCD, healthy to death and NCD to death). Analyses were adjusted for sociodemographic and cardiovascular risk factors.

Results: The mean age of 7644 participants was 64.5 (standard deviation, 9.7) years and 52.2% were women. Over a median follow-up of 8 years, we observed 1391 incident NCD events and 1379 deaths. Compared with those in the lowest tertile, men and women in the highest TSH tertile lived 1.5 (95% confidence interval [CI]=0.4; 2.6) and 1.5 (CI=0.4; 2.3) years longer, respectively. Compared with those in the lowest tertile, the difference in LE for men and women in the highest FT4 tertile was -3.6 (95% CI, -5.8 to -1.6) and -3.1 (95% CI, -4.9; -1.5), respectively; of which -1.7 (95% CI, -3.6 to -0.1) and -1.9 (95% CI, -4.0 to -0.1) years without NCD.

Conclusions: At the age of 50 years, men and women with low-normal thyroid function live longer overall and longer without NCD than those with high-normal thyroid function. These findings support a reevaluation of the current reference ranges of thyroid function, implying the possibility of an upward shift of TSH and a downward shift of the FT4 current limits in middle-aged and elderly subjects.

Precision nutrition: Hype or hope for public health interventions to reduce obesity?**Chatelan, Angeline**

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Western countries are experiencing an obesity epidemic that follows a socio-economic gradient, affecting groups of lower socio-economic status disproportionately. Recent clinical findings have suggested new perspectives for the prevention and treatment of obesity using personalized dietary approaches. Precision nutrition has been developed to deliver more predictive, accurate, feasible, and dynamic dietary advice than 'one-size-fits-all' guidelines. Personalized dietary advice is based on combined information from individuals' genetic, gut microbiota, physiological, and behavioural backgrounds (e.g. 'omics' data, dietary intake, and physical activity level). With large-scale interventions becoming increasingly plausible, using particularly artificial intelligence and smart-phone applications, some have begun to view precision nutrition as a novel way to deliver the right dietary intervention to the right population at the right time. We argue that large-scale precision nutrition interventions, if taken alone, might be of limited interest from a public health perspective for several reasons. First, building on Geoffrey Rose's theory regarding the differences in individual and population causes of disease (i.e., causes of cases and causes of incidence, respectively), we show that large-scale precision nutrition can only address some individual causes of obesity. This individual-centred approach is likely to have a small impact on the distribution of obesity at a population level because it ignores the causes of why certain populations become obese while others do not. These causes of obesity are embedded in the populations' social, cultural, economic, and political contexts that make environments obesogenic in the first place. Without addressing the latter, population benefits from large-scale precision nutrition are likely to be temporary and difficult to maintain in the long term. Second, the most socially privileged groups in the population are the most likely to respond to large-scale precision nutrition. This could have the undesirable effect of widening social inequalities in obesity. We caution public health actors that interventions based only on large-scale precision nutrition are unlikely, despite current beliefs, to improve dietary intake or reduce obesity at a population level.

Job industries at high risk for airway obstruction and mortality – A Swiss large-scale cohort study

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Introduction

Occupational exposure to vapors, gases, dusts or fumes (VGDF) has been described as a relevant risk factor for airway obstruction and mortality. Previous studies investigating the effects of occupational exposures on airway obstruction and on mortality are limited by their designs, by not accounting for confounding (e.g., smoking) or by being underpowered to detect effects on mortality. Thus, the contribution of occupational exposure on the risk of airway obstruction and mortality is still much debated. The aim of our population-based cohort study was to identify job industries that are at high risk for airway obstruction and/or mortality.

Methods

We linked two Swiss datasets (LuftiBus and Swiss National Cohort) and obtained occupational information for the year 2000, lung function data (2002-2012) and all-cause mortality up to 2015 from 19'740 subjects (≥ 40 years). We compared workers from job industries that are known to be at high risk for VGDF exposure (agriculture, food, textile, metal, wood, electronics/mechanics, paper, chemicals, construction/building, health care and cleaning/cosmetics/kitchen, $n=6'855$) with not or less exposed workers (mainly clerks, $n=4'473$). Airway obstruction was defined by the lower limit of normal of FEV1/FVC. The risk of airway obstruction and mortality was calculated by using logistic and proportional hazard regression, respectively, and both regressions were adjusted for age, sex, smoking status, BMI, season, year, education, NO₂, PM₁₀ and residential proximity to major roads.

Results

We found an increased risk of airway obstruction among workers from agriculture by 48% (OR, 95% CI 1.14-1.92, $p<0.01$) and among construction/building workers by 32% (OR, 1.01-1.73, $p=0.04$). The risk of mortality was increased in the group of construction/building workers (HR 1.51, 1.05-2.16, $p=0.02$) and food-processing workers (HR 1.46, 1.01-2.10, $p=0.04$).

Conclusions

Our results indicate that occupational exposures is still a health threat, especially in the agriculture and construction/building industries. Even though these job industries have been repeatedly identified by other studies to be at high risk, it appears that preventive measures are not effective enough, and further efforts are needed to mitigate the risks. We cannot exclude that the increased risk of mortality among the food-processing and construction/building workers may be explained by other causes of death and is therefore subject to further investigation.