

Employment trajectory as determinant of change in health-related lifestyle: the prospective HeSSup study

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Background: Changes in employment status may be associated with changes in health-related lifestyle, but population level research of such associations is very limited. This study aimed to determine associations between lifestyle and five employment trajectories, i.e. 'stable', 'unstable', 'upward', 'downward' and 'chronic unemployment'. **Methods:** A cohort of 10 100 employees was followed up for 5 years. Associations of the employment trajectories with changes in smoking, alcohol drinking, body weight, physical activity and sleep duration were assessed with analysis of variance for repeated measures and pairwise *post hoc* comparisons. **Results:** Smoking was the only lifestyle component that was not associated with employment trajectory. In both genders, sleep duration decreased during chronic unemployment and among those on a downward employment trajectory. In men, alcohol consumption also increased in these two groups and body weight increased in the latter group. In women, physical activity decreased among those on a downward trajectory. In contrast, an upward labour market trajectory was associated with healthy or no changes in lifestyle both in men and women. **Conclusion:** Changes in lifestyle may contribute to development of the health gradients between the employed and unemployed, whereas unstable employment versus permanent employment does not incur risk of unhealthy lifestyle changes. In order to prevent widening of employment-related health inequalities, passages into employment should be facilitated and opportunities for health promotion should be improved among those trapped in or moving towards the labour market periphery.

Keywords: alcohol drinking, career mobility, sleep, smoking, unemployment

Introduction

The conventional dichotomous classification into employed and unemployed seems not to be sensitive enough to explain health gradients in the modern labour force. Rather, the major gradients on the labour market core-periphery axis are located within the employed and within the unemployed work force.¹ As non-standard and irregular employment is related to poorer health, there is a reason to ask whether such employment also means non-standard and irregular, or more risky, lifestyle.

Risky lifestyle contributes to poor health and excess mortality among the unemployed.^{2–4} Unemployment is associated with smoking and heavy alcohol consumption,^{5–12} obesity^{7,8,13–15} and sleeping problems.¹⁶ Some studies suggest that loss of employment is associated with decreased rather than increased alcohol consumption and smoking.^{8,13,17}

The lifestyle of non-permanent employees has been paid little attention. A study of hospital employees found no associations between career direction and changes in smoking, drinking, body mass index and physical activity.¹⁸ However, fixed-term employment has been associated with deaths from alcohol-related causes in both sexes and smoking-related cancer in men.⁴

To date, we are aware of no population-based longitudinal studies on lifestyle changes in relation to labour market status. The existing studies on lifestyle with respect to unemployment are mainly limited to men^{8,13} and with respect to non-permanent job mainly on female fixed-term employees.¹⁸ In addition, previous research has rarely included potentially important details on the characteristics of the unemployment, such as the duration and recurrence of unemployment and the level and conditions of unemployment benefits. The Health and Social Support (HeSSup) Study provided us an opportunity to address the career in the labour market as a potential determinant of health-related lifestyle in a contemporary population-based cohort. We are expected to find associations between labour market trajectories and changes in smoking, alcohol consumption, physical activity, body weight and sleep duration during a 5-year follow-up.

Methods

The HeSSup Study is a longitudinal study of a sample representative of the Finnish population of four age groups (20–24, 30–34, 40–44 and 50–54 years). The Time 1 postal survey in 1998 yielded, with a response rate of 40.0%, 25 901 participants. By the follow-up survey 5 years later (Time 2) 216 participants had died, 234 had moved abroad and 969 could not be reached due to unknown addresses. Thus, the follow-up questionnaire was sent to 24 482 people, of which 19 269 (80.2%) responded. The respondents at Time 1 represented Finnish population in terms of age and gender.¹⁹ The spectrum of employment statuses among respondents corresponded to the proportions of the respective groups among the Finnish labour force.²⁰ Taking into account the high participation at Time 2, the cohort described below is likely to represent the active labour force and its trajectories on the national labour market.

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We excluded economically inactive population, i.e. those who were not working or seeking a job at Time 2 ($n = 3806$) or Time 1 ($n = 5363$). The remaining cohort of 10 100 participants was first classified into three groups both at Time 1 and Time 2: Group 1, permanent and fixed-term employees; Group 2, atypical employees, unemployed people receiving income-related daily unemployment benefit and those participating in re-employment programs; and Group 3, respondents receiving the basic unemployment benefit. The classification was based on previous findings of health gradients in the labour market core-periphery axis: poor health is least common in the core work force, or Group 1, and most common in the farthest periphery, or Group 3, while Group 2 is situated in between the two with respect to health as well (for a detailed definition of the labour market status, see Ref. 1). The employment trajectory was defined as 'stable' (respondents belonging at both times to Group 1, $n = 8235$), 'unstable' (those belonging at both times to Group 2, $n = 59$), 'chronic unemployment' (those belonging at both times to Group 3, $n = 160$), 'upward' (respondents who moved towards the core, $n = 579$) or 'downward' (those who moved towards the periphery, $n = 867$).

Health-related lifestyle

The respondents reported their habitual frequency and amount of beer, wine and spirits consumed per week. This information was transformed into grams of absolute alcohol.^{21,22}

Intensity of physical activity during leisure and the amount of time (hours per week) spent on activity of each intensity were used to calculate a weighted sum of weekly physical activity energy expenditure [Metabolic Equivalent Task (MET) hours per week].²³

The number of cigarettes smoked daily was elicited with the question 'How many cigarettes do you smoke a day on average?' (eight response categories, 1 = 0, 2 = 0–5, . . . , 8 = 36 or more).

In statistical analyses the categories were given respective weights of 0, 2.5, 7.5, 12.5, 17.5, 22.5, 30 and 40. Sixty-three percent of the respondents were non-smokers at both time points. They were not included in the analysis of change in smoking intensity.

Sleep duration was measured with the question 'How many hours do you normally sleep during the day and night?' (1 = 6 h or less, 2 = 6.5 h, . . . , 9 = 10 h or more).²⁴

In addition, we used self reported body weight as a proxy for eating habits.

To obtain measures of change in lifestyle, the value of the lifestyle variables at Time 1 was subtracted from the value at Time 2.

Statistical analysis

Lifestyle at baseline and changes in lifestyle during the follow-up by employment trajectory were studied with general linear models (GLM) with and without age group as a covariate. Base-line level of outcome was not adjusted for in the analyses of change-score, as this strategy is more likely to provide unbiased causal effect estimates than baseline-adjusted estimates.²⁵ If statistically significant, the interaction between age and employment trajectory was included in the model. In pairwise comparisons the Tukey–Kramer adjustment was used to control for Type I error. Men and women were studied separately. All statistical analyses were conducted with SAS 9.1.3 for Windows.

Table 1 Descriptive statistics of the participants

| | Men ($n = 4407$) | | | Women ($n = 5696$) | | |
|----------------------------------|--------------------|------|-----|----------------------|------|-----|
| | <i>N</i> | Mean | (%) | <i>N</i> | Mean | (%) |
| Age at Time 1 | | | | | | |
| 20–24 | 540 | | 12 | 661 | | 12 |
| 30–34 | 1192 | | 27 | 1388 | | 24 |
| 40–44 | 1355 | | 31 | 2001 | | 35 |
| 50–54 | 1314 | | 30 | 1646 | | 29 |
| Level of education | | | | | | |
| No vocational education | 986 | | 23 | 1271 | | 23 |
| Vocational school | 1429 | | 33 | 1184 | | 21 |
| College | 1292 | | 30 | 2343 | | 41 |
| University | 679 | | 16 | 861 | | 15 |
| Trajectory | | | | | | |
| Stable | 3652 | | 83 | 4580 | | 80 |
| Upward | 256 | | 6 | 323 | | 6 |
| Unstable | 83 | | 2 | 176 | | 3 |
| Downward | 315 | | 7 | 552 | | 10 |
| Chronic unemployment | 95 | | 2 | 65 | | 1 |
| Time 1 lifestyle | | | | | | |
| Smoking ^a | 1376 | 14.3 | | 1647 | 11.3 | |
| Alcohol consumption ^b | 4081 | 117 | | 4984 | 59.0 | |
| Body weight (kg) | 4385 | 81.8 | | 5646 | 66.2 | |
| Physical activity ^c | 4364 | 38.4 | | 5671 | 33.8 | |
| Sleep duration ^d | 4394 | 7.25 | | 5682 | 7.43 | |
| Time 2 lifestyle | | | | | | |
| Smoking ^a | 1376 | 12.8 | | 1647 | 10.1 | |
| Alcohol consumption ^b | 4081 | 124 | | 4984 | 58.9 | |
| Body weight (kg) | 4389 | 84.1 | | 5659 | 68.5 | |
| Physical activity ^c | 4374 | 33.4 | | 5667 | 30.5 | |
| Sleep duration ^d | 4290 | 7.22 | | 5532 | 7.40 | |

a: Cigarettes per day (non-smokers at both time points excluded)

b: Grams per week

c: MET hours per week

d: Hours per day

Results

Descriptive statistics of the cohort are presented in table 1. There were slightly more women (56%) than men and the majority (62%) of the participants were older than 40 years. No major differences were seen in the employment trajectories between men and women. From Time 1 to Time 2, smoking intensity decreased, body weight increased, physical activity decreased and sleep duration decreased slightly both in men and in women, while alcohol intake increased in men and remained unchanged in women.

There were differences in the lifestyles at baseline between employment trajectories (table 2). In men, those facing chronic unemployment scored highest on smoking and alcohol consumption, those facing an upward career had highest Body Mass Index (BMI), and stable trajectory was associated to the shortest sleep duration. The only variable not associated with employment trajectory was physical activity. Among women, stable employment was associated with the shortest sleep duration. Chronic unemployment predicted smoking and high BMI, but there were no differences in alcohol intake between the employment trajectories.

Lifestyle changes are presented in table 3. Among men, differences by employment trajectory were seen in alcohol consumption, body weight and sleep duration, and among women in physical activity and sleep duration. According to the pairwise comparisons in men (table 4) the upward trajectory, compared to stable trajectory, was associated with decreased alcohol intake whereas the downward trajectory and chronic unemployment were associated with increased alcohol intake. The increase of body weight was slower for the upward than the downward trajectory. There was an

Table 2 Smoking intensity, alcohol consumption, body mass index, physical activity and sleep duration (estimated marginal means and standard errors, adjusted for age) at baseline in men and women by employment trajectory during subsequent 5 years

| Sex Employment trajectory | Smoking intensity (cigarettes/day) | Alcohol consumption (g/week) | Body mass index | Physical activity (MET h/week) | Sleep duration (h/day) |
|------------------------------|---------------------------------------|---------------------------------|--------------------|-----------------------------------|---------------------------|
| Men | | | | | |
| Stable | 6.72 (0.25) | 103 (2) | 25.2 (0.1) | 38.6 (0.7) | 7.28 (0.14) |
| Upward | 10.90 (0.75) | 148 (8) | 25.5 (0.2) | 40.4 (2.4) | 7.34 (0.48) |
| Unstable | 7.48 (1.28) | 94 (13) | 25.3 (0.2) | 40.5 (4.0) | 7.46 (0.82) |
| Downward | 8.31 (0.69) | 118 (7) | 24.9 (0.2) | 43.4 (2.1) | 7.48 (0.43) |
| Chronic unemployment | 14.3 (1.08) | 206 (13) | 24.4 (0.4) | 41.1 (3.8) | 7.41 (0.78) |
| <i>P</i> for difference | <0.001 | <0.001 | 0.041 | 0.245 | <0.001 |
| Women | | | | | |
| Stable | 5.91 (0.20) | 52.5 (1.3) | 23.9 (0.1) | 34.3 (0.5) | 7.45 (0.01) |
| Upward | 6.86 (0.59) | 59.4 (4.2) | 24.3 (0.2) | 35.8 (1.6) | 7.46 (0.04) |
| Unstable | 6.89 (0.79) | 62.7 (5.6) | 24.7 (0.3) | 37.8 (2.2) | 7.73 (0.07) |
| Downward | 6.12 (0.46) | 52.8 (3.2) | 24.0 (0.2) | 38.3 (1.3) | 7.71 (0.03) |
| Chronic unemployment | 10.2 (1.24) | 48.6 (9.2) | 25.6 (0.5) | 30.9 (3.6) | 7.54 (0.09) |
| <i>P</i> for difference | 0.005 | 0.213 | 0.001 | 0.180 | <0.001 |

Table 3 Changes over 5 years in smoking intensity, alcohol consumption, physical activity, body weight and sleep duration by employment trajectory and sex (estimated marginal means and standard errors, adjusted for age and, when significant, for the interaction between trajectory and age in case)

| Sex Employment Trajectory | Smoking intensity (cigarettes/day) | Alcohol intake (g/week) | Body weight (kg) | Physical activity (MET h/week) | Sleep duration (h/day) |
|------------------------------|---------------------------------------|----------------------------|------------------|-----------------------------------|---------------------------|
| Men | | | | | |
| Stable | -1.73 (0.29) | 4.7 (2.0) | 2.77 (0.12) | -4.62 (0.68) | -0.050 (0.013) |
| Upward | -1.30 (0.91) | -23.1 (8.1) | 1.87 (0.39) | -5.95 (2.39) | 0.189 (0.045) |
| Unstable | -3.28 (1.77) | 3.5 (13.8) | 1.48 (0.68) | -5.63 (4.18) | 0.032 (0.077) |
| Downward | -0.48 (0.80) | 13.7 (6.3) | 3.39 (0.35) | -7.98 (2.15) | -0.140 (0.039) |
| Chronic unemployment | -1.19 (1.15) | 29.3 (12.1) | 2.28 (0.63) | -11.4 (3.89) | -0.078 (0.072) |
| <i>P</i> for difference | 0.510 | 0.001* | 0.015 | 0.279 | <0.001 |
| Women | | | | | |
| Stable | -1.43 (0.21) | -1.5 (1.1) | 2.48 (0.11) | -2.74 (0.52) | -0.005 (0.012) |
| Upward | -1.64 (0.65) | -3.1 (4.1) | 2.72 (0.38) | -5.42 (1.93) | 0.174 (0.045) |
| Unstable | -0.34 (0.86) | 7.6 (5.5) | 2.40 (0.51) | -4.87 (2.59) | -0.118 (0.061) |
| Downward | -0.78 (0.51) | -4.2 (2.9) | 2.74 (0.38) | -8.48 (1.37) | -0.267 (0.033) |
| Chronic unemployment | 1.85 (1.24) | 4.8 (8.5) | 2.42 (0.84) | -3.23 (4.02) | -0.242 (0.093) |
| <i>P</i> for difference | 0.054 | 0.373* | 0.906 | 0.002* | <0.001* |

*adjusted for age

Table 4 Changes from T1 to T2 (%) and significant pairwise Tukey–Kramer adjusted comparisons of the variables where GLM indicated differences by employment trajectory (see table 3)

| Employment trajectory | Men | | | Women | |
|-----------------------|---------------------------------|------------------------------|---------------------------------|----------------------|---------------------------------|
| | Alcohol intake ^a (%) | Body weight ^b (%) | Sleep duration ^c (%) | MET ^d (%) | Sleep duration ^e (%) |
| Stable | +7.0 | +2.8 | -0.4 | -8.4 | -0.2 |
| Upward | -10.3 | +1.3 | +3.1 | -8.9 | +2.4 |
| Unstable | +4.9 | +0.9 | +0.9 | -13.5 | -1.8 |
| Downward | +9.1 | +4.8 | -2.1 | -19.5 | -3.6 |
| Chronic unemployment | +13.9 | +2.2 | -0.7 | -15.0 | -3.2 |

a: stable versus upward, $P=0.008$; upward versus downward, $P=0.003$; upward versus chronic unemployment, $P=0.003$ b: upward versus downward, $P=0.031$ c: stable versus upward, $P<0.001$; upward versus downward, $P<0.001$; upward versus unemployed $P=0.012$ d: stable versus downward, $P=0.001$ e: stable versus upward, $P=0.001$; stable versus downward, $P<0.001$; upward versus unstable, $P=0.001$; upward versus downward, $P<0.001$; upward versus unemployed $P=0.001$

increase in sleep duration among those on the upward trajectory whereas stable employment, chronic unemployment and the downward trajectory were associated with decrease in sleep duration.

In women (table 4) the pairwise comparisons revealed that those on the downward employment trajectory had a greater decline in physical activity than those on the stable trajectory. The pattern of changes in sleep was similar to that in men,

i.e. the upward career stood out as the one with increased sleep duration while decreasing sleep duration was associated with the downward employment trajectory and chronic unemployment.

Discussion

This is apparently the first population-based prospective study to examine lifestyle changes among employees with different trajectories on the labour market. We found that being in or moving towards the labour market periphery was associated with increased risk in all lifestyle components studied except smoking. In contrast, an upward labour market trajectory was associated with healthy lifestyle changes, with these associations being more pronounced among men than women.

The figures for alcohol consumption concur with an earlier finding of contrasting patterns between genders.²⁶ In women the level of and change in alcohol consumption was relatively independent of labour market trajectory. In men, there was an overall increasing trend confirming the findings of previous population-based studies.²⁷ The only exception to this was those on an upward employment trajectory, as they had a decreasing figure in alcohol use. Marginalization in the labour market was strongly associated with increasing drinking. This is in contrast to two earlier studies reporting decline in alcohol consumption among marginalizing British men¹³ and Finnish construction workers.⁸ Differences in social security and time frame between these studies and the present investigation could have contributed to inconsistent findings. Furthermore, both previous studies targeted non-population-based samples.

Excess bodyweight is a major public health concern, contributing to the overall burden of disease worldwide.²⁸ Height does not substantially change in the age groups assessed in this study; therefore we used simple body weight rather than body mass index as a proxy of change in eating habits and other factors affecting weight. The reported weight gain of ~3 kg during the 5-year follow-up is an expected finding in light of other population studies.²⁹ Our results show that the increase in body weight does not slow down during unemployment; on the contrary, the downward labour market trajectory entails a risk of weight gain among men.

The prevalence of physical inactivity is high in contemporary populations, but there is no agreement about its trends.³⁰ This study showed an increase in sedentary life style during the 5-year follow-up across the labour market trajectories. Although increased leisure during unemployment would give opportunities for physical activity, this opportunity was not the case. In contrast, women those on a downward labour market trajectory actually showed larger reductions in physical activity than those with stable employment.

Sleep duration in the population seems to be declining. In the United States, for instance, the self-reported sleep duration has been estimated to be about 8 h in 1960s, while more recent studies have yielded estimates about 7 h.³¹ The change is important from the public-health perspective, as short self-reported sleep duration predicts increased mortality and ill-health.^{32,33} Our results may be interpreted as follows: the slight decrease in sleep duration in the cohort reflects the population level trend, and the contrasting patterns for upward and downward career trajectories reflect the sensitivity of sleep to changes in working life. Among women, in particular, instability and marginalization from work were associated with risks for reduced sleep.

In agreement with other Finnish population-based studies,³⁴ our results showed a decrease in smoking. The changes of smoking intensity by employment trajectory did not differ significantly. In the same vein, there were no differences in quitting of smoking between trajectories (figures of the

regression analyses not shown). However, an indication of increased smoking in women, chronically unemployed trajectory, gives a reason to recommend further studies on this issue, in particular because those women were already the heaviest smokers at baseline.

Economically inactive respondents were excluded from this study. The reasons for inactivity were manifold, including e.g. from sabbatical, studying, maternity and parent leave, sick leave and to permanent retirement due to disability. Part of the inactivity may be 'forced', i.e. a hidden form of unemployment. In all, however, these people could not be treated as a uniform group of 'flexible' labour force with a uniform lifestyle. However, changes in lifestyle while entering into and out of the work force would be worth to study in the future.

As indicated in the descriptive statistics (table 1), the participation of women in work force is quite high in Finland. Thus, from the public-health perspective, the findings of women may be considered equally important as those for men.

The analyses were adjusted for age but not for socioeconomic position. This does not mean that the latter was irrelevant. On the contrary, employment trajectories are likely to belong to the mechanisms linking socioeconomic position with health outcomes. This is well illustrated in our data, where only 5% of women and 6% of men with university degree belonged to the cohorts with adverse trajectories (unstable, downward or 'chronic unemployment') whereas the corresponding figures for those with no vocational education were 20 and 16%, respectively. Thus, we feel that adjustment for socioeconomic position would have presented over-controlling.

Although our findings of lifestyle changes were neither universal, as regards the lifestyle components, nor uniform, as regards the employment trajectories and sexes, they show more favourable changes in lifestyle among those on upward labour market trajectory and a deteriorating lifestyle among those on downward trajectories. Regarding to the socioeconomic correlates of the trajectories, the results justify two major conclusions. First, unstable trajectories include, by definition, unemployment with relatively high income and gainful, even if atypical, employment. This kind of instability seems not to incur risks of unhealthy behaviour. Second, chronic unemployment indicated a minimum level fixed basic allowance paid out by the national unemployment insurance scheme. These participants were in the 'hard core' of unemployment, characterized by several years of unemployment experiences, poor prospects for re-employment and poverty. Also part of those on downward labour market trajectory received this basic allowance at follow-up. It is obvious that the socioeconomic environments and the structures of day-to-day life offer them very rarely resources for changing their lifestyle healthier.

The findings may furthermore be converted into policy implications. By denominating the measured variables as 'lifestyle', we aimed to emphasize their duality: although an individual is relatively free to choose how to act, there are strong structural determinants in the society that limit the choices.³⁵ Our recommendations to policymakers are also two-fold: in addition to structural reforms facilitating passages towards the core of the labour market, there is a need to develop services in order to increase the opportunities for individual level health promotion among the long-term unemployed and those experiencing marginalization towards the labour market periphery.

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Conflicts of interest: None declared.

Key points

- Earlier research of associations between labour market status and behavioural health risks are limited to unemployment, to non-population level samples and to a few risk factors; this study of a nationally representative cohort analysed the associations of five employment trajectories with changes in five major risk factors.
- Compared to stable employment, unstable employment, even when prolonging, did not lead to risky lifestyle, while significant associations with the more adverse employment trajectories were seen.
- Downward trajectory and prolonged unemployment were most consistently associated with reduced sleep duration. Among men, the association with increased alcohol drinking was indisputable.
- In addition to employment policy measures facilitating passages towards the core of the labour market, novel health services are needed to create opportunities for individual level health promotion among employees moving into or trapped in the labour market periphery.

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