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Changes in healthy and unhealthy working life expectancies among older working-age people in Finland, 2000–2017

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Background: Raising the statutory retirement age has been a common policy response to population ageing, but health problems may restrict labour force participation in older ages. We examined the development of healthy and unhealthy working life expectancies in Finland from 2000 to 2017 using different measures of health problems. **Methods:** Healthy and unhealthy working life expectancies were calculated for the age range 50–65 years using the Sullivan method. The health measures were limiting long-standing illness, self-rated health, mental health problems and self-assessed work ability. **Results:** Healthy working life expectancy was highest when health was measured by work ability. From 2000 to 2017, working years in full ability between the ages 50–65 increased from 6.2 (95% confidence interval 5.9–6.4) to 8.2 (8.0–8.5). Healthy working life expectancy increased also when measured by the other indicators. Unhealthy working years also increased, except when health problems were measured by limiting long-standing illness. The share of years in work increased both within the healthy and the unhealthy years, the increase being larger or equally large for the latter. Within the healthy and unhealthy years measured by the other three indicators, the share of working years increased irrespective of whether work ability was full or limited, but the increase was larger for limited work ability. **Conclusions:** In Finland, healthy working life expectancy has increased irrespective of how health is measured but also working with health problems has become more prevalent. The estimates for healthy working years are highest when a direct measure of work ability is used.

Introduction

Most high-income countries are experiencing rapid population ageing, putting increasing pressure on their welfare systems. It has been estimated that in 2050 nearly 30% of the European population will be older than 65 and the old-age dependency ratio will exceed 50%.[1] As a response to these developments, many countries have raised their statutory retirement age and others have announced future increases. People are thus expected to stay in work longer than before.[2]

A major issue around the labour force participation among older workers is whether their health allows longer working careers. In the European countries, nearly half of the population aged 55–64 years have a long-standing illness or health problem,[3] and poor health is one of the main reasons for early exit from the labour market.[4,5] A recent study from England found that the working life expectancy without a limiting long-standing illness at the age of 50 was considerably lower than the state pension age.[6] Other studies have reported increases in unhealthy working life expectancies over the last few decades.[7,8]

However, all health problems do not necessarily lead to work disability. Furthermore, there are reasons to expect that illnesses may have become less limiting than before. These include the decline of hard physical work due to technological progress and shift of jobs to the service sector. On the other hand, mental strain and cognitive work demands may have increased.[9,10] Also due to improvements in medical treatments[11,12] and intensified employment-enhancing work disability policies[13] the possibilities to continue working despite illnesses may have increased.

In this study, we examine the development of healthy and unhealthy working years from 2000 to 2017 measuring health by various indicators, including limiting long-standing illness, self-rated health, mental health problems and self-assessed work ability. We calculate healthy and unhealthy working life expectancies and examine whether the share of working years within the years considered healthy or unhealthy has changed from 2000 to 2017. Furthermore, we examine changes in working years by dividing the years with and without limiting long-standing illness, poor self-rated health and mental health problems into those in full and those with limited work ability.

Methods

Data for health and work ability came from two population-based studies, the Health 2000 Survey and FinHealth 2017 Study. The Health 2000 Survey was based on a two-stage cluster sample of the 15 largest cities and 65 other health care districts in Finland.[14] The nationally representative sample consisted of 8028 people aged

30 years and over. Data were collected through questionnaires, interviews and a comprehensive health examination. The participation rate to at least one stage of the data collection was 93%.

The sampling frame of the FinHealth 2017 Study included 50 of the 80 healthcare districts in the Health 2000 Survey. Like in the previous Health 2000 Survey, sample size in each stratum was proportional to the contemporary population size in the area.[15] The study included a throughout physical examination and questionnaires. Among those aged 30 and over, the sample included 9085 persons. Participation rate in at least some part of the study was 71%.

For the current study, we included participants aged 50–64 years at the beginning to the survey year. The number of participants was 2207 in 2000 and 2784 in 2017.

The health measures used in this study included self-assessed work ability, limiting-long-standing illness, self-rated health and mental health problems. Work ability was measured by an identical single-item question in 2000 and 2017: 'Regardless of whether you are currently employed or not, how do you assess your work ability. Are you completely fit for work, partially disabled for work, or completely disabled for work?' Response items 'partially disabled for work' and 'completely disabled for work' were combined to reflect limited work ability.

In 2000, limiting long-standing illness was asked as follows: 'Do you have any permanent or chronic illness or any defect, trouble or injury, which reduces your working capacity or functional ability?' In 2017, participants were asked, 'Are you limited because of a health problem in activities people usually do?' For a limiting-long-standing illness in 2017, the response alternatives 'severely limited' and 'limited but not severely' were contrasted to 'not limited at all'.

Self-rated health was measured in both years by giving five response alternatives to a question 'Is your present state of health. . .?' The alternatives 'poor', 'rather poor' and 'moderate' were combined to reflect poor health, while the alternatives 'rather good' and 'good' described good health.

Mental health problems in both studies were measured by the 12-item version of the General Health Questionnaire (GHQ).[16] GHQ is a general mental health inventory that covers a wide range of common psychiatric problems, especially anxiety and depressive disorders, with reference to the recent past. Those scoring three or more were considered to be suffering from mental health problems.

Combined with these datasets was register-based information of one's socioeconomic position by Statistics Finland.[17] Those who were wage earners or self-employed were classified to be working. All others, including for example retirees, long-term unemployed and students, we classified to be not in work.

The studies were approved by the respective ethics committees,[14,15] and written informed consent was obtained from all participants.

Statistical methods

By combining data on work status and each of the four health variables in turn, the respondents were classified into one of four states: healthy and in work, healthy and not in work, not healthy and in work and not healthy and not in work. Survey procedures in Stata were used to account for the sampling design and weight the frequencies to be representative of the population.[18]

Age-specific mortality data for the total population in 2000 and 2017 were obtained from Statistics Finland's publicly available database.[19] Prevalence rates of the four mutually exclusive work and health states were combined with mortality in 1-year age groups to produce healthy and unhealthy working life expectancies using the Sullivan method.[20] Healthy working-life expectancy measures the remaining lifetime spent working in good health, whereas unhealthy working-life expectancy captures the lifetime spent working in poor health.[21] Standard errors were calculated to produce 95% confidence intervals.[22] In addition, we calculated the share of healthy and unhealthy years spent in work in the two study years according to each of the health variables. Finally, years in work and not in work were examined by dividing the years with and without limiting long-standing illness, poor self-rated health and mental health problems into those in full and those with limited work ability. Men and women were combined in the analyses because the results were similar for both genders.

Results

Table 1 shows the distributions of the health variables divided into three age groups. Overall, the prevalence of limited work ability within the 50–64 age group decreased from 36% to 30% between 2000 and 2017. The decrease was larger at the upper end of the age range, while among those aged 50–54 the prevalence of limited work ability remained almost unchanged. Having a limiting long-standing illness and reporting poor self-rated health were clearly more common than having limited work ability both in 2000 and 2017. Between the study years, the prevalence of a limiting long-standing illness decreased markedly, and reporting poor self-rated health became slightly less common in all age groups. In contrast to other health measures, mental health problems were more common in younger than older age groups, and even increased slightly from 2000 to 2017, particularly among the younger.

Figure 1 shows that the share of people aged 50–64 who were in work increased significantly between 2000 and 2017, with a particular increase in the middle age groups. For the whole age range, participation in employment increased from 55% to 74%.

From 2000 to 2017, life expectancy between the ages 50–65 increased from 14.3 to 14.5 years. In table 2, life expectancy in this age range is divided into four groups by work status and each health variable. The years spent working and in full work ability increased from 6.2 years in 2000 to 8.2 years in 2017. Working years with limited work ability also increased slightly. In contrast, the years outside work decreased, whether in full or limited work ability. However, the decrease was particularly large among those with limited work ability.

When health problems were measured by the other indicators, healthy working life expectancy was shorter than for the work ability measure (table 2). However, also for these indicators, the healthy working life expectancy increased markedly between 2000 and 2017. Working time with poor self-rated health or with mental health problems also increased, while working time with limiting long-standing illness remained stable. When health problems were

Table 1 Prevalence of health problems by age group in 2000 and 2017 (%)

	2000 ($n = 2207$)	2017 ($n = 2784$)	Change from 2000 to 2017
Limited work ability (WA)			
50–54	21	20	−1
55–59	40	28	−12
60–64	57	40	−17
All	36	30	−6
Limiting long-standing illness (LLI)			
50–54	50	38	−13
55–59	62	45	−17
60–64	71	48	−23
All	59	44	−16
Poor self-rated health (SRH)			
50–54	40	34	−6
55–59	47	43	−5
60–64	51	44	−8
All	45	40	−5
Mental health problems (GHQ)			
50–54	24	29	5
55–59	26	27	1
60–64	20	20	0
All	24	25	1

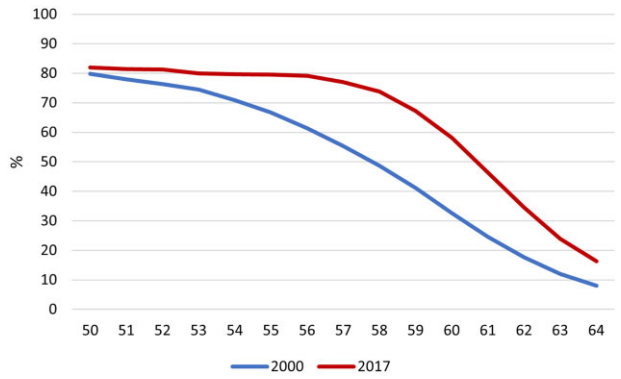

Figure 1 The share of people in work by age in 2000 and 2017[a]

Note: [a]The data were smoothed by local polynomial regression.

Table 2 Healthy and unhealthy working life expectancy (95% confidence intervals) in the 50–65 age range, using different health measures, in 2000 and 2017

	2000	2017	Change from 2000 to 2017
Work ability (WA)			
Working, full WA	6.2 (5.9–6.4)	8.2 (8.0–8.5)	2.0
Working, limited WA	1.0 (0.9–1.2)	1.3 (1.2–1.5)	0.3
Not in work, full WA	2.6 (2.4–2.8)	2.2 (2.0–2.4)	−0.4
Not in work, limited WA	4.5 (4.2–4.8)	2.8 (2.6–3.0)	−1.7
Share of working time (%)			
of the total time in full WA	70.2	78.8	8.5
of the total time with limited WA	18.6	32.3	13.7
Limiting long-standing illness (LLI)			
Working, no LLI	3.7 (3.5–3.9)	6.1 (5.8–6.3)	2.4
Working, with LLI	3.5 (3.2–3.7)	3.4 (3.2–3.7)	−0.1
Not in work, no LLI	1.9 (1.7–2.1)	2.1 (1.9–2.3)	0.2
Not in work, with LLI	5.3 (5.0–5.5)	2.9 (2.7–3.1)	−2.3
Share of working time (%)			
of the total time with no LLI	66.4	74.1	7.7
of the total time with LLI	39.8	54.1	14.4
Self-rated health (SRH)			
Working, good SRH	4.6 (4.3–4.8)	6.5 (6.2–6.7)	1.9
Working, poor SRH	2.6 (2.4–2.8)	3.0 (2.8–3.3)	0.4
Not in work, good SRH	3.2 (2.9–3.4)	2.4 (2.2–2.6)	−0.7
Not in work, poor SRH	4.0 (3.7–4.2)	2.6 (2.4–2.8)	−1.3
Share of working time (%)			
of the total time in good SRH	59.1	72.7	13.6
of the total time in poor SRH	39.8	53.8	14.0
Mental health problems (GHQ)			
Working, no mental problems	5.7 (5.4–6.0)	7.4 (7.2–7.7)	1.7
Working, mental problems	1.5 (1.4–1.7)	2.3 (2.1–2.5)	0.7
Not in work, no mental problems	5.3 (5.0–5.5)	3.4 (3.2–3.6)	−1.8
Not in work, mental problems	1.8 (1.6–2.0)	1.4 (1.2–1.5)	−0.4
Share of working time (%)			
of the total time in without mental health problems	52.0	68.3	16.3
of the total time in with mental health problems	46.6	62.4	15.8
Total life expectancy	14.3	14.5	0.2

measured by limiting long-standing illness or poor self-rated health, the time spent unhealthy and outside work strongly decreased. However, when mental health problems were examined, particularly the years outside work decreased.

The total time in full work ability was 8.8 years in 2000 and 10.4 years in 2017 (table 2). Of this time, the time spent in work covered 70.2% in 2000 and 78.8% in 2017. These shares were higher than within the healthy years measured by the other indicators, but the differences were relatively small. In contrast, the share of working time with limited work ability was considerably shorter than for the unhealthy years measured by the other health indicators, although it increased considerably between 2000 and 2017. The share of working time within the unhealthy years was highest when mental health problems were measured. Comparing the years with or without mental health problems, the share of working years was almost the same. For all four health measures, the share of working time increased from 2000 to 2017 both within the healthy and the unhealthy years. For work ability and limiting long-standing illness the increase was larger within the unhealthy years.

To further elaborate the importance of health and work ability on working years, we divided the years with and without limiting long-standing illness, poor self-rated health and mental health problems into those spent in full and with limited work ability (table 3). In both time points and for each health measure, most of the time was spent being free of health problems and in full work ability. Only a small proportion of time was spent without a limiting long-standing illness or good self-rated health but limited work ability. Of the unhealthy years, most were spent with limited work ability, except when mental health problems were measured.

Both within the healthy and the unhealthy years measured by the three indicators, self-assessed work ability had a strong effect on working years (table 3). For example, in 2000, of the years with a limiting long-standing illness the share of working years was 68% if work ability was full but only 19% if work ability was limited. For the years without a limiting long-standing illness, the effect of work ability was very similar. In contrast, the effect of the other health problems on working years was small: when comparing the years with and without a limiting long-standing illness but full work ability, the proportion of working was almost equal. The same was true for years spent with limited work ability. With poor self-rated health and mental health problems the results were similar as for limiting long-standing illness. Between 2000 and 2017, the share of working years increased in all combinations for all health indicators. The combinations of healthy years and full work ability showed the smallest increases. Within both healthy and unhealthy years, the increases in the share of working years were larger when work ability was limited. The relative increases were particularly large in these combinations. For example, for years with a limiting long-standing illness and limited work ability, the share of working years increased from 19% to 32%, with a relative increase of 70%.

Discussion

This study examined the development of healthy and unhealthy working life expectancies in the age range 50–65 years in Finland using various health measures. Measured with any of the four indicators, healthy working life expectancy increased strongly between 2000 and 2017. However, the choice of the health measure affected the number of healthy working years. Healthy working life expectancy was the highest when health was measured by work ability. With this measure healthy working years increased from 6.2 to 8.2 years during the study period. With the other health measures, healthy working life expectancy was 1 or 2 years lower but the change between the study years was roughly about the same magnitude for all measures.

Unhealthy working life expectancy also increased, except when health problems were measured by having a limiting long-standing illness. At first, these results seem somewhat contradictory to a study comparing healthy and unhealthy working life expectancies in various OECD countries at three points in time between 2002 and 2017.[23] In that study, changes in healthy working life expectancy were inconsistent whereas unhealthy working life expectancy increased in all countries. Poor health was measured by the presence of at least one chronic disease, which is fairly close to our measure of limiting long-standing illness. What obviously may affect our results is the very strong decrease in the prevalence of limiting-long-standing illness between the study years. However, when we examined changes in working time within the healthy and the unhealthy years, we found that for all health measures the share of working

Table 3 The expectancies of working years and years not in work and the share of working years (%) in the 50–65 age range in 2000 and 2017, cross-classifying limiting long-standing illness (LLI), self-rated health (SRH) and mental health problems with work ability (WA)

	2000				2017				
	Years in the health-WA combination	Working years	Years not in work	Share of working years (%)	Years in the health-WA combination	Working years	Years not in work	Share of working years (%)	Change in the share of working years from 2000 to 2017 (%-points)
No LLI—full WA	5.1	3.6	1.4	72	7.5	5.9	1.6	79	7
No LLI—limited WA	0.5	0.1	0.4	16	0.7	0.2	0.5	32	16
LLI—full WA	3.7	2.5	1.2	68	3.0	2.4	0.6	79	11
LLI—limited WA	5.0	0.9	4.1	19	3.4	1.1	2.3	32	13
Good SRH—full WA	6.3	4.4	1.9	70	7.9	6.2	1.7	79	7
Good SRH—limited WA	1.5	0.2	1.3	15	1.0	0.3	0.7	30	16
Poor SRH—full WA	2.5	1.8	0.7	72	2.6	2.0	0.5	80	11
Poor SRH—limited WA	4.1	0.8	3.2	20	3.1	1.0	2.1	33	13
No mental health problems—full WA	7.2	5.1	2.1	70	8.4	6.7	1.7	79	9
No mental health problems—limited WA	3.8	0.7	3.1	17	2.4	0.8	1.7	31	14
Mental health problems—full WA	1.7	1.2	0.5	70	2.2	1.7	0.4	81	11
Mental health problems—limited WA	1.6	0.4	1.3	23	1.5	0.5	1.0	36	13
Total years	14.3	7.2	7.1		14.5	9.5	5.0		

time within the unhealthy years increased notably from 2000 to 2017. This shows that, irrespective of the health measure, working with health problems has become more prevalent. Two Dutch studies also found that unhealthy working life expectancy has increased during the last decades.[7,8]

In addition to the prevalence of health problems, changes in employment rate affect the healthy and unhealthy working life expectancies. Employment rates can also affect the distribution of healthy and unhealthy years that are spent in work, as people with health problems are more likely to find and keep employment in good times. Furthermore, increasing unhealthy working life expectancy and increasing share of working despite health problems may have also been affected by improved treatment of illnesses and changes in working conditions, making it easier to continue working despite health problems.[24] Increased occupational rehabilitation and other workplace accommodations have also paved the way for working with health problems.[25,26] Overall, extending working careers even with suboptimal health has been strongly encouraged during the last decades.[27] Finally, as remarked by other authors,[7,8,23] the closure of early retirement pathways may also have led to involuntary continuation of working careers among older employees suffering from health problems, as the possibilities to withdraw from the labour market have been diminished. In Finland, the minimum retirement age for full-time retirement decreased from 65 to 63 between 2000 and 2017, due to a pension reform in 2005. A previous study showed that especially healthier people started to retire earlier, while those with health problems more frequently had utilized various early retirement pathways already before the reform.[28] Between 2000 and 2017, many of the early retirement pathways were cut,[29] which is one possible reason behind the increasing working life expectancy, particularly among the unhealthy. Figure 1 shows that the share of people in work increased particularly among those aged 55–62, who were the primary target group for these cuts.

The results for mental health problems differed in some respects from those for the other health indicators. This stems in part from the fact that mental health problems did not decrease from 2000 to 2017, unlike the other health problems. The working life expectancy with mental health problems between the ages 50–65 increased by 0.7 years, which is a considerable increase, particularly given the low starting level in 2000. Furthermore, more than 60% of the time with mental health problems was spent in work, which is a higher share than for the other health indicators, and almost equally high as the share of time spent working without mental health problems. These finding suggest that mental health problems assessed by the GHQ-12 measure do not limit work ability—or legitimize exit from working life—as much as somatic illnesses. However, it should be noted that the differences between the health measures may also be affected their different age distributions. While other health problems increased by age, mental health problems were least common in the 60–64 age group, where the share of people outside work increases rapidly. The decrease in mental health problems with age is therefore consistent with the possibility that the experience of mental health problems is related to being in work. Previous studies have shown that mental strain and psychological symptoms often tend to alleviate after retirement.[30,31]

During the period 2000–2017, the share of time in work increased both within the healthy and the unhealthy years, irrespective of the health measure. The increase was larger within the unhealthy than the healthy years when health was measured by poor work ability or limiting long-standing illness and equally large when the other health measures were used. When measured with work ability, the share of unhealthy working years was clearly lower than with the other indicators, although it also showed the largest increase. Combining the other health measures with work ability also showed that self-assessed work ability had a crucial effect on working. Both within the healthy and unhealthy years, the share of years in work was considerably lower when work ability was limited. In contrast, the share of working years varied very little between healthy and unhealthy years, when there was no difference in self-assessed work ability between the groups. Over time, the share of years in work increased in all health and work ability combinations. The increase was larger in combinations where work ability was limited, supporting increasing working despite work ability problems.

Methodological considerations

The strengths of this study include the possibility to use various health measures from nationally representative data sources with very high response rates. However, health measurements based on questionnaires are inevitably subjective, and the assessment of health and working ability is influenced by current living and working conditions and past life history. The formulation of limiting long-standing illness somewhat differed between the surveys while the other health measures were identical in both study years. Being in work was measured by register-based information on socioeconomic position. The classification is based on the person's main activity during the whole year and not exactly at the time of the surveys.

However, the age specific employment rates calculated from the data correspond to those in labour force surveys.[32]

Healthy working life expectancies were calculated using the Sullivan method rather than more complex multistate models based on transition probabilities. The Sullivan method is based on cross-sectional observations and its interpretation as an expectation assumes that mortality rates and age-specific proportions of health and work remain unchanged from the initial measurement year. The results do not markedly differ from those obtained using transition probabilities if changes in mortality, working and health are smooth and regular over time.[33] We examined healthy working life expectancies at two time points, 17 years apart. During this period, a large number of factors have contributed to the changes in mortality, employment, and health. These small effects are likely to even out the rapid but at least partly temporary effects of larger shocks such as the financial crisis. Since cross-sectional prevalence tends to respond slowly to changes in incidence, and since changes in employment and health have been towards positive, our estimate of healthy working years is probably an underestimate rather than an overestimate.

Conclusions

Healthy working life expectancy in Finland increased from 2000 to 2017 irrespective of how health was measured. When working life expectancy was based on work ability, healthy working years increased more than was observed when other health measures were used. In 2017, healthy working years with full work ability covered 8.2 years of the 14.5 years lived between the ages 50 and 65. Based on our analysis, work ability is arguably the preferable indicator in the context of working life expectancies, as it most directly measures the possibilities to continue in work.

The share of years in work increased within the healthy and the unhealthy years, irrespective of the measure of health problems. Within the unhealthy years, the increase was larger or equally large compared to that with the healthy years. These findings indicate that health problems do not seem to affect working as much as in the past. Both in 2000 and 2017, the share of working years was clearly lowest when health problems were measured by limited work ability, although the difference to other health indicators narrowed over time. Working years have increased as people have less health problems and better work ability, but also because working with health problems and poor work ability has increased.

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Conflicts of interest: None declared.

Key points

- For all health measures, healthy working life expectancy among older working-age people in Finland increased from 2000 to 2017.
- The share of time spent in work despite health problems also increased.
- Healthy working life expectancy was highest when health problems were measured by work ability.
- Work ability is arguably the preferable health measure in the context of working life expectancies, as it most directly relates to the possibilities to continue in work.
- Working years have increased as people have less health problems and better work ability, but also because working with health problems and poor work ability has increased.

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