

VU Research Portal

Interplay between work, retirement and health in an ageing society

Sewdas, R.A.

2020

document version

Publisher's PDF, also known as Version of record

[Link to publication in VU Research Portal](#)

citation for published version (APA)

Sewdas, R. A. (2020). *Interplay between work, retirement and health in an ageing society*.

General rights

Copyright and moral rights for the publications made accessible in the public portal are retained by the authors and/or other copyright owners and it is a condition of accessing publications that users recognise and abide by the legal requirements associated with these rights.

- Users may download and print one copy of any publication from the public portal for the purpose of private study or research.
- You may not further distribute the material or use it for any profit-making activity or commercial gain
- You may freely distribute the URL identifying the publication in the public portal ?

Take down policy

If you believe that this document breaches copyright please contact us providing details, and we will remove access to the work immediately and investigate your claim.

E-mail address:

vuresearchportal.ub@vu.nl



Chapter 1

General Introduction

In most European countries, the population is ageing rapidly due to lower fertility rates, longer life expectancies and maturing of the *baby boom* generation (1-3). A considerable proportion of the European population is aged 65 years and older; the old-age-dependency ratio (i.e. ratio between the number of persons aged 65 years and older, and persons aged 15-64 years) was 30 per 100 persons in 2017 (4). By comparison, this ratio was 25 per 100 persons in 2007. To minimize the economic burden on social security systems caused by the ageing population, current European policies encourage older workers to prolong their work participation (5, 6). Many countries have raised the statutory retirement age and have taken measures to discourage early exit from the labour force (7, 8). With an increasing statutory retirement age and discouragement of early retirement, older workers are encouraged to prolong their work participation. Although there is a gradual increase observed in the work participation rate of older workers in Europe, for example 30% in 2008 and 43% in 2017 (9), still a considerable proportion of the older working population retire before the official retirement age.

Effects of health on work participation and retirement

It is well known that an ageing society comes along with more health problems. Namely, the risk of chronic disease and multi-morbidity increases with age (10). Therefore, older workers will be more likely to suffer from chronic diseases. Previous studies have found that older workers in good health are more likely to prolong their work participation (11-13), while older workers with chronic diseases have a higher risk of an early exit from work (14, 15). In fact, workers with chronic diseases take more sick leave and have a lower work ability compared to their colleagues without chronic diseases (16, 17). An explanation for this can be that health-related problems caused by the presence of a chronic disease lead to functional limitations at work (15). Following this, older workers with chronic diseases may have specific needs (e.g., related to work adjustments) for prolonging their work participation that differ from older workers without chronic diseases (18, 19).

Among the general population of older workers, several factors influence work participation. Based on the literature, the Study on Transitions in Employment, Ability and Motivation (STREAM) research framework is proposed to capture the complexity of determinants that influence work productivity and employment transitions (Figure 1) (20). According to this framework, transitions in employment status are influenced by determinants in five domains: health, job characteristics, skills and knowledge, social factors, and financial factors. Furthermore, the International Classification of Functioning,

Disability and Health (ICF) model can be used as a framework to describe the functioning and disability of individuals whose body functions and body structures may be impaired, activities may be limited, and participation may be restricted (Figure 2) (21). The ICF model underlines the importance of taking into account personal and environmental factors in supporting work participation among workers with chronic diseases instead of only focusing on the health condition or disease. From these frameworks, it can be concluded that the decision to prolong work participation is not driven by a single factor, but rather should be considered as multifactorial. More knowledge about these factors influencing work participation and more knowledge about the possible differences in these factors between workers with and without chronic diseases are key factors for supporting sustained employment for an older working population in general.

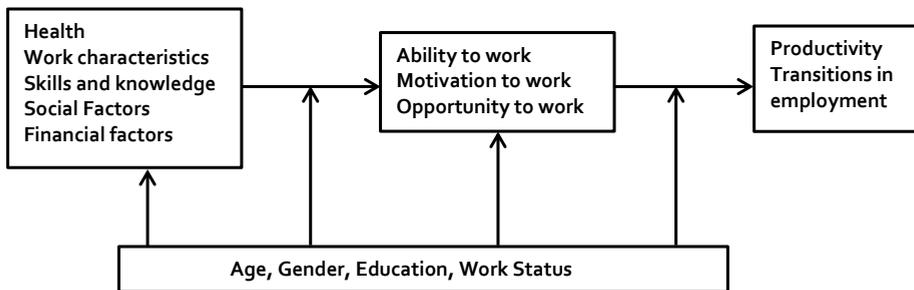


Figure 1. Research framework of STREAM including the five domains: health, work characteristics, skills and knowledge, social factors, and financial factors (20)

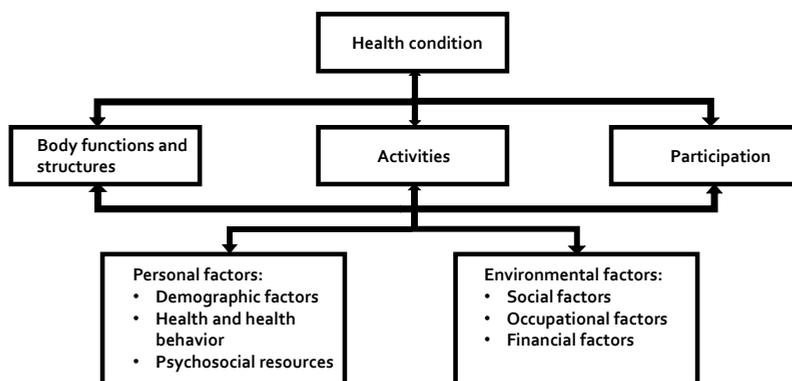


Figure 2. Overview of personal and socio-environmental factors in the ICF model (21)

Effects of work participation and retirement on health

The relation between work participation or retirement and health seems to be bi-directional. Not only can health influence work participation or (early) retirement, but work participation or (early) retirement can also influence the health of older workers. In general, work may be beneficial for someone's health and wellbeing (22-27). Work participation can help a person to build confidence and self-esteem, and rewards a person financially. Furthermore, retirement may lead to increasing health problems (28, 29). A previous study found that retirement can be perceived as a stressful event due to loss of social contacts, and is often associated with lower income compared to the situation before retirement (30). However, the influence of work participation or retirement on health is complex since work participation can also result in poor health: exposure to harmful working conditions can cause poor health (31). Furthermore, retirement may serve as a release from the adverse effects of work demands. This in turn may lead to an improvement in physical and mental health after retirement (32, 33).

The relation between poor working conditions and poor health can be further illustrated by the model workload (34). The model workload contains several elements, which are the work demands and decision latitude (i.e., the working situation) resulting in short-term effects and long-term health effects. According to this model, the interaction between the working situation and work capacity contribute to short-term effects, which may result in long-term health effects among workers. An imbalance between the working situation

and work capacity can result in an increased risk of diseases. For example, excessive work demands can lead to elevated stress levels. Normally, the worker can recover from the elevated stress levels before starting a new day at work. In case the worker is not able to recover, the short-term effect can shift to a long-term health effect, such as a burn-out. This may even further decrease the capacity of the worker. This illustrates how work participation can result in poor health.

To conclude, the older working population has to deal with current policy reforms aimed at prolonging the work participation of older workers. Given the complexity of the reciprocal effect of work participation and retirement on health, we do not know what the health-related consequences are of these policy reforms.

Objectives:

In the context of current policies aimed at prolonging the work participation of older workers, the overall aim of this thesis is to gain insight into the interplay between work, retirement and health of older workers.

The primary objectives of this thesis are:

1. To identify determinants of work participation and retirement for older workers with and without chronic diseases, and
2. To gain insight into health-related consequences of work participation and retirement.

Datasets used in this thesis

The analyses in this thesis are based on three datasets. Table 1 provides an overview of the data source, study type, the population, the main determinants, and the main outcome by chapter.

HEAF

In **chapter 3**, data were used from an ongoing prospective cohort study in the United Kingdom, Health and Employment after Fifty (HEAF) (35). The HEAF cohort is a community-based sample of older people recruited from 24 English general practices. In 2013-2014, a total of 8,134 respondents participated in the first wave of data collection.

Respondents aged 50-64 years completed annual questionnaires about their work and home circumstances in 2013-2014 (T₀), 2015 (T₁), and 2016 (T₂). The baseline (T₀), one-year (T₁), and two-year (T₂) follow-up data were included in the study described in **chapter 3**.

DANES

To investigate the determinants of early retirement among older workers with and without chronic diseases (**chapter 4**), a prospective study in Denmark followed participants in the Danish National Working Environment Survey (DANES) for four years in the National DREAM register (36). DANES was conducted from late 2008 to early 2009 and included 12,559 participants aged 18 years and older. The DANES 2008-questionnaire survey contains data about work environment, self-perceived health, lifestyle, social factors, and background factors (i.e., age, gender, and level of education).

STREAM

Data were used in **chapter 5, 6 and 7** from an ongoing prospective cohort study in The Netherlands, the Study on Transitions in Employment, Ability and Motivation (STREAM) (20). In 2010, 15,118 respondents in total participated in the first wave of data collection. Participants aged between 45 and 64 years filled out an annual online questionnaire on various topics (among others, employment status, work characteristics and health) in 2010 (T₁), 2011 (T₂), 2012 (T₃), 2013 (T₄), and 2015 (T₅). For the study described in **chapter 5 and 7** we used data from T₁, T₂, T₃ and T₄. Participants from STREAM aged 65 years or above, who had participated in the fifth wave (T₅) of data collection in 2015, reported having a post-retirement paid job or to be self-employed, and had given permission to be contacted for additional research were eligible for participation in the study described in **chapter 6**.

Pension systems discussed in thesis

In this thesis, the datasets used are from three countries: the Netherlands, the United Kingdom, and Denmark. The pension systems in these three countries are described below.

1. The Netherlands

The Dutch pension system contains three pillars: public old-age pension, work-related pension, and private pension (37). The first pillar is the public old-age pension and consists of an income of 70% of the national minimum wage for singles, and 50% of this minimum wage for each member of a couple. This public old-age pension is available for people who

have lived or worked in the Netherlands from 15 to 65 years. The second pillar is the work-related pension and this is provided by employers. It allows employees to accumulate a pension fund during their working life; a percentage of one's pay is put into the pension fund automatically every payday. Pension contributions are mandatory if the workplace has a collective agreement between labour unions and employers' organization. The third pillar is the private pension and this a voluntary saving system and consist of, for example, individual savings, shares, annuity insurance and financial capital. Next to the three pension arrangements, many sectors introduced early retirement schemes during the 1970s. After reaching a certain age (varying by sector), a worker could retire before the statutory retirement age and receive early retirement benefits of about 80% of the last earned wage. However, since 2006, measures were taken to make early retirement schemes financially less attractive. In addition, the age at which people were eligible for public old-age pension has been raised from 65 years in 2012 to 67 years in 2021 (for both men and women) (38). However, in June 2019 the government, employers and trade unions reached a pension reform agreement (39). This agreement includes freezing of the retirement age: the retirement age remains at 66 years and 4 months in 2020 and 2021 and then increases in two steps to age 67 in 2024. From 2025, the retirement age will rise based on increases in life expectancy (an increase by two months for every three-month increase in life expectancy).

2. The United Kingdom

The first pillar of the pension system in the UK consist of two components: the Basic State Pension, and the State Second Pensions (40, 41). The age at which men and women can receive Basic State Pension are 65 and 60 years, respectively. The State Second Pensions is extra money on top of the Basic State Pension, and depends on earnings and the duration of time paying National Insurance contributions. Similar to the Netherlands, early retirement is not possible within the first pillar. The second and the third pillar are work-related pension (i.e., workplace pensions arranged by the employer) and private pension (i.e., self-invested personal pensions), respectively. From 2010, the state pension age for women has gradually been increased; the state pension age is 65 years for everyone as of 2018, and by 2028 the state pension age will be increased to 67 years.

3. Denmark

The Danish pension system has also three pillars: public old-age pension, work-related pension, and private pension (42, 43). The first pillar has two components: i) a residence-based national pension (*folkepension*), and ii) labour market supplementary pension (ATP). The *folkepension* consist of two different elements: a) the basic amount, which depends on the duration of residence, and b) the income-tested pension supplement. The ATP is available for all employees between 16 and 67 years if working time exceeds 9 hours a week. The second pillar consists of privately managed, fully funded occupational schemes (i.e., work-related pension). The third pillar, the private pension, is a (voluntary) supplementary pension scheme managed by banks and insurance companies.

Different from the Netherlands and the UK, the first pillar also includes a voluntary early retirement scheme (*Efterløn*), which is available from the age of 60 years. Entitlement to the Danish voluntary early retirement scheme requires membership and contributions to the early retirement scheme for at least 25 years of the last 30 years. Claiming the retirement benefit after the age of 62 years was encouraged, since it leads to higher financial benefits for early retirement. However, since 2006, the maximum period for obtaining early retirement benefit from the Danish voluntary early retirement scheme has been reduced from five to three years before state pension age. Furthermore, the Danish government has introduced a gradual increase of the state pension age from 65 years in 2012 to 67 years or older by 2024.

Outline

Objective one, i.e., to identify determinants of work participation and retirement for older workers with and without chronic diseases, will be addressed in **chapter 2 to 6**. First, a systematic review will be conducted to assess the determinants of retirement timing in **chapter 2**. Second, the association and interactions of physical workload and poor health with health-related job loss (HRJL) among older workers in the UK, and the association and interactions of occupational social class and poor health with HRJL will be assessed in **chapter 3**. Third, using data from Denmark, the determinants of voluntary early retirement for older workers with and without chronic diseases will be assessed in **chapter 4**. Fourth, in **chapter 5**, the determinants of working until retirement for older workers with and without chronic diseases will be determined among Dutch older workers. Last, reasons

for working beyond the statutory retirement age from Dutch older workers' perspectives will be explored in a qualitative study in **chapter 6**.

Objective two, i.e., to gain insight into health-related consequences of work participation and retirement, will be addressed in **chapter 7 and 8**. In **chapter 7**, the differences in self-rated health and work ability between self-employed workers and employees among Dutch older workers will be assessed. In **chapter 8**, the association between early and on-time retirement compared to continued working and mortality will be investigated in a systematic review and meta-analysis.

Table 1. Data source, study type, population, main determinants and main outcome for each chapter in this thesis

Chapter	Data source	Study type	Population	Main determinants	Main outcome
1: General introduction	-	-	-	-	-
<i>To identify determinants of work participation and retirement.</i>					
2: Domains and determinants of retirement timing: a systematic review of longitudinal studies	-	Systematic review	Older workers	• Various	Retirement timing
3: Poor health, physical workload, and occupational social class as determinants of health-related job loss: results from a prospective cohort study in the United Kingdom	HEAF	Cohort study	British older workers	• Poor health • Occupational social class • Physical workload	Health-related job loss
4: Determinants of voluntary early retirement for older workers with and without chronic diseases: a Danish prospective study	DANES	Cohort study	Danish older workers with and without chronic diseases	• Various	Early retirement
5: Determinants of working until retirement compared to a transition to early retirement among older workers with and without chronic diseases: results from a Dutch prospective cohort study	STREAM	Cohort study	Dutch older workers with and without chronic diseases	• Various	Working until retirement
6: Why older workers work beyond retirement age: a qualitative study	STREAM	Qualitative study	Dutch older workers	• Various	Working beyond retirement
<i>To gain insight into health-related consequences of work participation and retirement.</i>					
7: Differences in self-rated health and work ability between self-employed workers and employees: results from a prospective cohort study in the Netherlands	STREAM	Cohort study	Dutch self-employed older workers and older employees	• Employment status	Self-rated health & work ability
8: The association between retirement and mortality: working longer, living longer?	-	Systematic review and meta-analysis	Older workers	• Various	Mortality
9: General discussion	-	-	-	-	-

References

1. Wang M. *The Oxford handbook of retirement*: Oxford University Press; 2012.
2. Harbers M. Old-age dependency ratio, trends and projections in selected countries, 1950-2050. Retrieved from Bilthoven. 2008.
3. Vaupel JW. Biodemography of human ageing. *Nature*. 2010;464(7288):536.
4. Eurostat. Old-age-dependency ratio 2018. [cited 15 June 2019] Available from: <https://ec.europa.eu/eurostat/web/population-demography-migration-projections/population-data/main-tables>.
5. OECD. Aging and Employment Policies - Statistics on average effective age of retirement: OECD; 2017 [cited 15 June 2019]. Available from: <http://www.oecd.org/els/emp/ageingandemploymentpolicies.htm>.
6. OECD. *Pensions at a Glance 2017: OECD and G20 Indicators*. Paris: OECD; 2017.
7. Sigg R, De-Luigi V. The success of policies aimed at extending working life. *Developments and Trends Supporting Dynamic Social Security*. 2007:51.
8. Duval R. *The Retirement Effects of Old-Age Pension and Early Retirement Schemes in OECD Countries*. 2003.
9. Eurostat. Employment rates by sex, age and citizenship (%) 2018. [cited 15 June 2019]. Available from: <https://ec.europa.eu/eurostat/web/lfs/Data/database>.
10. Eurostat. Population by type of longstanding health problem, sex and age. Eurostat; 2015. [cited 15 June 2019]. Available from: http://appsso.eurostat.ec.europa.eu/nui/show.do?dataset=hlth_dp020&lang=en.
11. Dingemans E, Henkens K, Solinge H. Working beyond retirement in Europe: An investigation of individual and societal determinants using SHARE. 2016.
12. Griffin B, Hesketh B. Post-retirement work: The individual determinants of paid and volunteer work. *Journal of Occupational and Organizational Psychology*. 2008;81(1):101-21.
13. Wang M, Zhan Y, Liu S, Shultz KS. Antecedents of bridge employment: A longitudinal investigation. *Journal of Applied Psychology*. 2008;93(4):818.
14. Fleischmann M, Carr E, Stansfeld SA, Xue B, Head J. Can favourable psychosocial working conditions in midlife moderate the risk of work exit for chronically ill workers? A 20-year follow-up of the Whitehall II study. *Occup Environ Med*. 2017;0emed-2017-104452.
15. de Boer AGEM, Geuskens GA, Bültmann U, Boot CRL, Wind H, Koppes LLJ, et al. Employment status transitions in employees with and without chronic disease in the Netherlands. *International Journal of Public Health*. 2018;63(6):713-22.
16. Roskes K, Donders NC, van der Gulden JW. Health-related and work-related aspects associated with sick leave: a comparison of chronically ill and non-chronically ill workers. *International archives of occupational and environmental health*. 2005;78(4):270-8.
17. Koolhaas W, van der Klink JJ, de Boer MR, Groothoff JW, Brouwer S. Chronic health conditions and work ability in the ageing workforce: the impact of work conditions, psychosocial factors and perceived health. *International archives of occupational and environmental health*. 2014;87(4):433-43.

18. Boot CRL, van den Heuvel SG, Bultmann U, de Boer AG, Koppes LL, van der Beek AJ. Work adjustments in a representative sample of employees with a chronic disease in the Netherlands. *J Occup Rehabil.* 2013;23(2):200-8.
19. Fleischmann M, Carr E, Xue B, Zaninotto P, Stansfeld SA, Stafford M, et al. Changes in autonomy, job demands and working hours after diagnosis of chronic disease: a comparison of employed and self-employed older persons using the English Longitudinal Study of Ageing (ELSA). *Journal of Epidemiology and Community Health.* 2018;72(10):951-7.
20. Ybema JF, Geuskens GA, van den Heuvel SG, de Wind A, Leijten FR, Joling CI, et al. Study on Transitions in Employment, Ability and Motivation (STREAM): The design of a four-year longitudinal cohort study among 15,118 persons aged 45 to 64 years. *British Journal of Medicine and Medical Research.* 2014;4(6):1383-99.
21. Organization WH. International classification of functioning, disability and health: ICF: Geneva: World Health Organization; 2001.
22. van der Noordt M, H IJ, Droomers M, Proper KI. Health effects of employment: a systematic review of prospective studies. *Occup Environ Med.* 2014;71(10):730-6.
23. Marmot M. Social determinants of health inequalities. *The Lancet.* 2005;365(9464):1099-104.
24. Klumb PL, Lampert T. Women, work, and well-being 1950–2000:: a review and methodological critique. *Social science & medicine.* 2004;58(6):1007-24.
25. Rueda S, Chambers L, Wilson M, Mustard C, Rourke SB, Bayoumi A, et al. Association of returning to work with better health in working-aged adults: a systematic review. *Am J Public Health.* 2012;102(3):541-56.
26. Schuring M, Robroek SJ, Burdorf A. The benefits of paid employment among persons with common mental health problems: evidence for the selection and causation mechanism. *Scandinavian journal of work, environment & health.* 2017;43(6):540-9.
27. Harvey SB, Modini M, Joyce S, Milligan-Saville JS, Tan L, Mykletun A, et al. Can work make you mentally ill? A systematic meta-review of work-related risk factors for common mental health problems. *Occupational and Environmental Medicine.* 2017;74(4):301-10.
28. van der Heide I, van Rijn RM, Robroek SJ, Burdorf A, Proper KI. Is retirement good for your health? A systematic review of longitudinal studies. *BMC Public Health.* 2013;13:1180.
29. Zantinge EM, van den Berg M, Smit HA, Picavet HS. Retirement and a healthy lifestyle: opportunity or pitfall? A narrative review of the literature. *European journal of public health.* 2014;24(3):433-9.
30. Van Solinge H. Health change in retirement: a longitudinal study among older workers in the Netherlands. *Research on Aging.* 2007;29(3):225-56.
31. Coenen P, Kingma I, Boot CR, Twisk JW, Bongers PM, van Dieën JH. Cumulative low back load at work as a risk factor of low back pain: a prospective cohort study. *Journal of occupational rehabilitation.* 2013;23(1):11-8.
32. Oksanen T, Vahtera J, Westerlund H, Pentti J, Sjösten N, Virtanen M, et al. Is retirement beneficial for mental health?: antidepressant use before and after retirement. *Epidemiology (Cambridge, Mass).* 2011;22(4):553-9.
33. Jokela M, Ferrie JE, Gimeno D, Chandola T, Shipley MJ, Head J, et al. From midlife to early old age: health trajectories associated with retirement. *Epidemiology.* 2010;21(3):284-90.

34. Van Dijk F, Van Dormolen M, Kompier M, Meÿman T. Herwaardering model belasting-belastbaarheid (Revaluation of the model of work load and work capacity). *T Soc Gezondheidsz.* 1990;68:3-10.
35. Palmer KT, Walker-Bone K, Harris EC, Linaker C, D'Angelo S, Sayer AA, et al. Health and Employment after Fifty (HEAF): a new prospective cohort study. *BMC public health.* 2015;15:1071.
36. Hjollund NH, Larsen FB, Andersen JH. Register-based follow-up of social benefits and other transfer payments: accuracy and degree of completeness in a Danish interdepartmental administrative database compared with a population-based survey. *Scandinavian journal of public health.* 2007;35(5):497-502.
37. Disney R, Johnson P. Pension systems and retirement incomes across OECD countries: Edward Elgar Publishing; 2001.
38. Co-operation OfE, Development. Ageing and employment policies: Netherlands 2014: Working better with age: OECD Publishing; 2014.
39. Rijksoverheid. Pensioenakkoord: een toekomstbestendig pensioenstelsel Nederland: Rijksoverheid; 2019 [cited 15 June 2019]. Available from: <https://www.rijksoverheid.nl/onderwerpen/pensioen/toekomst-pensioenstelsel>.
40. Blake D. The UK pension system: Key issues. *Pensions: An International Journal.* 2003;8(4):330-75.
41. Bound J, Waidmann T. Estimating the health effects of retirement. Michigan Retirement Research Center. 2007.
42. Andersen JG. Denmark: The silent revolution toward a multipillar pension system. *Varieties of Pension Governance: Pension Privatization in Europe*: Oxford University Press; 2011. p. 183-209.
43. Gagales A. Denmark-Selected Issues: International Monetary Fund; 1999.