

**Menopausal transition and change in employment:  
Evidence from the National Child Development Study**

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**Research Highlights:**

- This prospective cohort study examined the impact of the menopausal symptoms on changes in employment.
- Data on 3,109 employed women at age 50 from the NCDS were analysed.
- Women with severe symptoms had a higher chance of exiting employment or reducing their working hours.
- The strength of the associations varied according to the women's HRT usage and their partner's economic activity.

## **Abstract**

**Objectives:** This study aims to investigate the impact of the menopausal transition and severe symptoms on changes in employment.

**Study design:** This longitudinal prospective study analysed data from a population-based cohort study, the National Child Development Study Wave 8 and Wave 9, when the cohort was aged 50 and 55 respectively. The analytical sample comprised 3,109 employed women at age 50.

**Measures:** The outcome variable was the employment change from age 50 to age 55, with three categories defined as i) continued employed without reducing working time; ii) continued employed with reducing working hours; and iii) exit employment. The employment dynamics of women were compared using multinomial logistic regression modelling. Key independent variables included menopausal transition status and severe menopausal symptoms experienced.

**Results:** 53.5% of employed women at age 50 reported at least one severe menopausal symptom. Women experiencing severe menopausal symptoms reported significantly higher levels of employment exit or reducing their working hours. The odds ratios contrasting severely symptomatic women with those with no severe symptoms were 1.43 (95% CI =1.11 to 1.84) between exiting employment vs continued employment without reducing one's working hours, and 1.23 (95% CI =1.02 to 1.48) between reducing their working hours vs continued employment without reducing one's working hours. The strength of the association between women's severe menopausal symptoms and the risk of employment exit or reducing their working hours varied according to their HRT usage and their partner's economic activity.

**Conclusions:** Menopausal symptoms can pose obstacles to some middle-aged women in terms of remaining in employment or working longer hours.

**Keywords:** menopausal transition, symptoms, employment, National Child Development Study, cohort study

## 1.Introduction

Waged and salaried work is essential for many women's economic freedom and self-determination worldwide, and the majority of women would prefer to be working [1,2]. In the UK, labour market participation has been increasing for women aged 50 and over; in 1992, just 47 percent of women aged 50-64 were in employment, but by 2019 this had risen to 68 percent [3]. At the same time, research suggests that the average age of natural menopause is 50–51 in industrialised countries, and the menopausal transition can last 4–5 years [4]. As a result, more working women than ever before are experiencing the menopause transition. For the majority of women in good health, the menopause is a relatively neutral life event. However, women living in Western countries in general report more symptoms than those from non-Western cultures [5]. Against the background of women's increasing labour market participation, understanding how the menopause transition affects women's economic activity patterns is increasingly important.

In the literature, evidence of the relationship between women's menopausal status and work performance is inconsistent. Research analysing data from the 1946 British Birth Cohort study showed that menopausal transition status was significantly associated with a change in the psychosomatic domain of quality of life, which comprises self-perceived work-life [6]. Nevertheless, some researchers argued that relying on menstrual status alone may underestimate the impact of symptoms on women's labour market participation such as their work engagement, organisational commitment and intention to quit, because women's experiences are too diverse to make uniform predictions [7]. Likewise, Hardy et al. (2018) found that menopausal status was not associated with work outcomes; however problematic hot flushes at work was a predictor of women's intention to stop working [8].

It is relatively well established that individual symptoms associated with the menopause transition create challenges for women in the workplace, although the specific way in which such challenges are articulated by women varies. A systematic review of sleep disorders experienced by women during menopause suggests that changes in sleep activity can affect women's ability to perform at work [9]. Other studies found that vasomotor symptoms impact upon women's productivity, their capacity to work and their work experience [8, 10]. In addition, a depressed mood and difficulty concentrating interfered with women's work [11]. Griffiths (2013) explored women's experiences of working through the menopausal transition in the UK. Forty percent of respondents felt that their (self-perceived) performance at work

had been negatively affected by menopausal symptoms, with hot flushes being particularly difficult. Interestingly, an approximately equal proportion of surveyed women felt that their work performance was not affected. However, qualitative research shows that some women made additional efforts to adjust to the symptoms. One respondent noted that “I feel my menopausal symptoms could negatively affect my performance at work, but I work very hard to overcome the difficulties so that it is not actually affected.” [12, page 157]. Some studies also demonstrated that women’s work roles or working environments moderate the influence of menopausal symptoms on their work [13, 14]. Symptom severity matters when examining the relationship between menopausal transition and work productivity. A study using an Australian survey of women working at three universities found a negative impact of symptoms on work only when these symptoms became more frequent and more ‘bothersome’ [7]. Geukes et al. (2016) found a significant negative correlation between severe symptoms and workability (the balance between a person’s resources and work demands), which may increase the risk of taking a period of sick leave from work [15].

Most studies have focussed on a specific occupational group, with the study of the effect of transition symptoms upon the wider (or general) female labour force being rare. Di Bonaventura and colleagues (2012) found that the combined impact of depression and hot flushes among menopausal women could have resulted in work productivity loss measured as time missed from work [16]. Similarly, another study showed that women experiencing menopausal symptoms reported higher work impairment (a measure of work time lost and impairment while at work) [17]. A qualitative research interviewed 21 Korean perimenopausal and post-menopausal female migrants in the US in low-paid and low-status manual jobs. Some had reduced their hours due to the physical symptoms of menopause, others had changed jobs because they found their previous employment too challenging to manage with physical menopause symptoms. Some respondents did not change their working hours or their employment but worked harder in order to compensate or distract themselves from the experienced psychological symptoms [18]. Daysal and Orsini (2014) evidenced that women in the Medical Expenditure Panel Survey who had stopped taking Hormone Replacement Therapy (HRT) were more likely to leave their jobs than those who continued with the treatment. These women’s symptoms interfered with their ability to work to such an extent that they felt they had to quit their jobs [19]. Paul’s (2003) research reported that women lost their jobs following sickness absence or time off for treatments for menopausal transition symptoms [20]. However, these findings are based on reports from the UK Trades

Union Congress (TUC) safety representatives, rather than on data collected from working women themselves. In contrast to negative views of the effects of physical and psychological transition symptoms on economic participation, a study in the UK reported positive results. The majority of the respondents' capacity to work and develop their careers had increased, and working life had either not changed, or had improved since they entered the menopause transition [21]. Nevertheless, the detailed survey questions used for this report are not clear. Existing studies focusing on the effects of menopausal symptoms on work are typically cross-sectional and self-report surveys [17], and usually focus on one symptom only (like sleep disturbances) or a group of associated symptoms (such as hot flushes and night sweats) [8-11]. Few studies report a comprehensive list of symptoms as they affect work [15] and many study samples are not representative of the wider female workforce [18].

This study aims to examine the extent to which middle-aged women's menopausal transition and severe symptoms impact on their employment in the UK.

## **2. Methods**

### **2.1 Data**

This research used data from the NCDS, a cohort study of all children born in Britain in a single week in March 1958 who have been followed up through the course of their lives [22,23]. For this study, we used the information collected in Wave 8 (2008/09) and Wave 9 (2013/14), when the cohort was aged 50 and 55, respectively, covering the period when the majority of female respondents would have experienced the menopausal transition. From 4,968 women interviewed at age 50, there were 4,230 individuals with full interviews at both ages 50 and 55. Given the paper's objective of analysing the impact of the menopausal transition on women's employment patterns, a further 1,018 individuals were excluded because they were either self-employed or not working at age 50. The reason why we excluded around 300 self-employed women from the analysis is that there was a lack of information about the working hours for this sub-group, and without this information, we were not able to construct the outcome variable for this group. Amongst the 3,212 women individuals who were employed at age 50, 103 individuals had moved to self-employed work by age 55 and they were also excluded from the analysis. The final analytical sample size was 3,109.

## 2.2 Measures

**Change in employment:** Each woman reported their current economic activity status and weekly working hours at both age 50 and age 55. Those who had reduced their weekly working hours by 5 hours or more were classified as reducing weekly working hours. The change in employment was captured by three categories in two consecutive interviews at age 50 and age 55: i) those who had continued being employed without reducing their working hours (employed at age 50 and age 55, and weekly hours not reduced); ii) those who had continued being employed but had reduced their working hours (employed at age 50 and age 55, but weekly working hours reduced); and iii) those who had exited employment (employed at age 50, but not working at age 55).

**Menopausal transition:** Women's menopausal status was measured at age 50 and age 55. Women who reported no menstrual bleeding in the last 12 months and for whom the reason for their period ceasing was because of menopause were classified as post-menopausal. Those with menstrual bleeding in the previous 12 months were classified as pre-menopausal. Post-menopausal women who had experienced a hysterectomy or ovary removal, or for whom another medical reason had led to their period ceasing were classified into two separate categories. The four menopausal transition categories at two consecutive interviews at age 50 and age 55 were defined as: Pre-menopausal at both ages (pre-menopausal for at least 12 months at age 50 and age 55); Normal transition from pre- to post-menopause (pre-menopausal at age 50 then post-menopausal at age 55); post-menopausal at both ages (post menopause at age 50 and age 55); Operations or medical conditions (stop periods because of hysterectomy or removal ovary or other medical reasons at age 50 or age 55).

**Menopausal symptoms:** Menopausal symptoms were assessed at age 50 using 20 items. The NCDS adopted a computer assisted self-administered menopause-specific scale. Each woman reported whether they had experienced each of the twenty listed menopausal symptoms and the degree to which they had been affected in the last 12 months (was not bothered, bothered a little, bothered a lot). The items included trouble with sleeping, joint aches and pains, hot flushes, cold or night sweats, anxiety or depression, tearfulness, and others (Appendix Table 1). The Cronbach's alpha coefficient for the twenty items was 0.824, suggesting that the items have relatively high internal consistency. In the literature, menopausal symptom reporting is not universal across studies in different countries [24].

Compared to the Greene Climacteric Scale (GCS) originated in the UK, the 20 items used for this study are somewhat different. The original GCS has 4 answer options instead of 3: not at all; a little; quite a bit, and extremely. The items on urine frequency and incontinence were not included in the original GCS [24]. However, according to the UK's National Health Service (NHS), recurrent urinary tract infections with frequent episodes of incontinence are common menopausal symptoms [25]. In the NCDS questionnaire, the menopausal related symptoms were articulated as 'Some women report a number of symptoms associated with the menopause. The next few questions are about any symptoms you may have experienced over the last 12 months' [22]. Therefore, we assumed that all listed 20 complaints were associated with the menopause and all 20 items were used for this study. As a higher severity of symptoms is more likely to have an impact on women's work [7], we counted all reported items which had 'bothered' respondents 'a lot' and then created a dichotomous variable indicating whether women had experienced at least one severe menopausal symptom (bothered a lot) or had no severe symptoms at age 50. Women with no severe symptoms included those with no symptoms, those with symptoms but who were not bothered at all and those with symptoms who were bothered a little.

### **2.3 Statistical analysis**

We first compared the menopausal transition as well as whether women had experienced at least one severe symptom by different employment outcomes. Omnibus chi-square tests were conducted on categorical variables.

Multinomial logistic regressions were then performed in order to compare employment dynamics among women reporting different menopausal transition statuses or experiencing severe menopausal symptoms. The models controlled for the respondents' demographic, socioeconomic, job-related features and health characteristics, including their marital status and their partner's economic activity at age 50, education, socio-economic classification, housing tenure, full-time vs. part-time employed at age 50, job satisfaction, job security, job interference with family life, HRT at age 50, long-lasting illness, and health limits daily activities [17, 26].

### **3. Results**

Among 3,109 employed women at age 50, by age 55, 2,040 (65.6%) respondents had continued being employed without reducing their working hours, 720 (23.2%) were still employed but had reduced their weekly working hours (5 or more hours weekly), and 349



(11.2%) had exited employment (Table 1). Between age 50 to age 55, 1279 (41.1%) respondents had experienced a normal transition of menopause; 720 (23.2%) had already reached menopause at age 50; 351 (11.3%) had not yet reached menopause at age 55; and 759 (24.4%) respondents had had operations, such as hysterectomy or removal of ovaries. The frequency of reported menopause-related symptoms and the degree to which they affected the respondents are presented in Appendix Table 1. At age 50, the majority of women reported joint aches and pains, hot flushes, trouble sleeping, forgetfulness, irritability, tearfulness and cold night sweats. One in five women were 'bothered a lot' by hot flushes, trouble sleeping, joint aches and pains, anxiety and depression. In total, 1662 (53.5%) women reported at least one symptom which 'bothered' them 'a lot' (Table 1).

### 3.1 Menopausal transition status and change in employment

There was no difference in the employment outcomes by the different menopausal transition statuses (Table 1). Multivariate analysis confirmed that the menopausal transition status was not associated with the outcomes (Table 3).

Women's characteristics for all three employment outcome categories are presented in Appendix Table 2. The respondents' National Statistics Socio-economic Classification (NS-SEC), health limitations on their activities, long-lasting illness and HRT-usage were all associated with employment outcomes.

### 3.2 Severe menopausal symptoms and change in employment

A higher proportion of women who reported at least one severe menopausal symptom at age 50 exited employment or reduced their working hours at age 55 (Table 1).

Table 2 presents a breakdown of the major symptoms according to change in work patterns for women who were 'bothered a lot' versus those who had 'no such symptom or whose symptoms did not bother them or bothered them a little'. The results show that a higher proportion of women with severe hot flushes, cold, night sweats, joint aches and pains, anxiety, depression, tearfulness, feeling of panic, trouble sleeping, or forgetfulness exited their employment. By contrast, a higher proportion of women with severe hot flushes or forgetfulness reduced their working hours.

The odds ratios and 95% Confidence Intervals (CI) of the multivariate multinomial logistic regression presents in Table 3. Results from Model 1 show that women experiencing severe menopausal symptoms reported significantly higher levels of employment exit or

reducing their working hours. The odds ratio contrasting severely symptomatic women with those with no severe symptoms was 1.43 (95% CI =1.11 to 1.84) between exiting employment vs continued employment without reducing one's working hours, and 1.23 (95% CI =1.02 to 1.48) between reducing working one's hours vs continued employment without reducing one's working hours.

By including interactions, Model 2 assessed the effects of at least one menopausal symptom on shifts in the women's HRT usage and their partner's economic activity. The results show that the strength of the association between women's severe menopausal symptoms and the risk of employment exit or reducing their working hours varied according to their partner's economic activity or their HRT usage respectively. Women whose partner was not working at age 50, even those experiencing severe symptoms, had a much lower risk of exiting their employment by age 55 (OR=0.41, 95% CI =0.18 to 0.96). The effect of severe menopausal symptoms on reducing one's working hours was more positive for HRT users (OR=1.94, 95% CI =1.07 to 3.52). The ORs for all covariates are presented in Table 3. The analysis also examined the possibility that other factors (associated with severe menopausal symptoms) may be driving the respondents' exit from the labour force or their reduction of their working hours (e.g. long-lasting illness or health limits daily activities), by adding interaction terms between at least one severe symptom and the report of a long-lasting illness or between at least one severe symptom and their health limiting their daily activities. The additional analyses showed no significant interaction effect. In addition, there were no issues of collinearity between menopausal symptoms and all the covariates.

## **4. Discussion**

### **4.1 Main findings**

The aim of this study was to assess the impact of the menopausal transition on the change in women's employment status during their early fifties. Waves 8 and 9 of the NCDS data were used for this study, being the latest available cohort study in the UK, which included questions relating to menopausal symptoms. Previous studies have demonstrated an impact of menopausal symptoms on women's work performance and wider job market participation [7,15,16,18]. The results in this paper provide further confirmation that women who report suffering from severe menopausal symptoms are more likely to experience changes in their employment status, by leaving work altogether or reducing their working

hours compared to those who reported no severe symptoms. This study is unique in utilizing a prospective cohort study with a validated comprehensive instrument to measure the impact of menopausal symptoms, which enabled us to quantify the effects of such symptoms on employment outcomes.

The finding that severe menopausal symptom complaints led to an increased risk of exiting employment or reducing working hours, suggests that it is the presence of a combination of menopausal symptoms which is associated with productivity loss rather than a specific symptom. Many symptoms have been attributed to menopause, and individual experiences vary. Some symptoms, such as vasomotor dysfunction and vaginal dryness, are reported as directly induced by menopause. Other symptoms such as negative mood and sleep disturbances may be secondary to other symptoms, or related to other causes [4, 5]. The reasons why some of the women experiencing severe symptoms were more likely to exit their employment or reducing working hours requires further investigation with more detailed information, which is beyond the scope of this study.

Previous research among older European workers found that ill-health was a risk factor for transitions between paid employment and various forms of non-employment, including retirement, unemployment, disability, and taking care of the family [27]. Each pathway of transition possibly occurred in the context of other parallel social changes, such as pension benefits access and household finance sufficiency, a mismatch between an individual's capacities and the requirements of the job, functional limitations and/or unbalance between work and family [27, 28].

This study highlights that womens' likelihood of exiting employment due to severe menopausal symptoms are moderated by their partner's economic activities. This result is not surprising. If a woman's partner is unemployed due to being made redundant, their household income might be no longer sufficient, especially if the cost of their adult children's university education is taken into account [28]. A study covering 28 European countries from 2004 to 2013 also found a relationship between women's job participation with their husband's job loss – the so-called added worker effect [29]. Therefore, concerns about maintaining financial security at the household level may be being prioritised by middle-aged women over the adverse effects of experiencing menopause. The results also indicate that the strength of association between experiencing severe symptoms and reducing one's working hours was greater among HRT users. The possible explanation might be that some employed women

may take sickness absence or time off to seek HRT in order to help cope with the more troublesome symptoms [20].

The results show that the menopause transition status itself does not affect the employment outcomes, which is consistent with previous studies [7]. The menopause transition is a biopsychosocial process which is highly heterogeneous among middle-aged women. Individual variation in response to these changes, and nuances in the changes, result in different approaches to paid employment among women. Therefore, the menopausal transition status variable alone has little explanatory power in women's employment dynamics.

#### 4.2 Strengths and limitations

This paper contributes to the existing literature which uses a prospective cohort longitudinal analysis. The study sample is representative of Great Britain, and the sample size is large. Moreover, the reported menopausal symptoms are comprehensive, with the severity of each reported symptom, as described by the respondents themselves, taken into consideration. The limitations within the study should be taken into consideration. Due to the data restriction, self-employed women were excluded from the analysis. This is a growing proportion of the labour force with interesting and relevant work-dynamics. Future studies could examine whether there was any difference in outcomes between employed and self-employed women experiencing symptoms of equal severity. Secondly, menopausal status and symptoms in NCDS were self-reported, therefore recall bias may introduce measurement errors. Distinctions between perimenopause and post-menopause were not made explicitly [5] and it was unclear at what point each woman was in the menopause transition. Thirdly, for some women between age 50 and age 55, there may have been an unobserved change in their employment status which is not taken into account. Lastly, although menopausal symptoms were considered as predictors of employment change, it is possible that the relationship may be explained by unmeasured confounding variables. A number of conditions can cause symptoms similar to those of menopause and such conditions could partly explain the associations observed here [4].

#### 4.3 Conclusions

The major findings of this study highlighted that women experiencing severe symptoms had a significantly higher likelihood of exiting employment or reducing their working hours. The strength of the associations varied according to the women's HRT usage and their

partner's economic activity. Women whose partner was not working had a much lower risk of exiting employment. The effect of severe menopausal symptoms on reducing one's working hours was significantly more positive for HRT users. The majority of mid-life women in the UK are economically active [3]. Women work in order to attain financial security, build social relations, and gain personal development. Through paid work, women also contribute to the financial sustainability of pension schemes and other welfare systems in the context of an ageing population. However, this study found that more than half of women employed in the UK experienced at least one severe menopausal symptom during their early fifties. The physical and psychological symptoms associated with the menopausal transition were wide-ranging, although women experienced such transition in different ways. Experiencing severe symptoms increased the risk of reducing working hours or dropping out of the labour market altogether. Given the recent policy focus on extending working lives [30], it is important to raise awareness about menopausal transition symptoms and relevant alleviation and management among middle-aged women, medical and social care professionals and broader social communities in order to achieve an enabling working environment. Moreover, any workplace interventions aimed at reducing the adverse impact of menopausal symptoms need to recognise that there is no single symptom but need to account for a variety of possible difficulties [14]. Making workplaces more 'menopause friendly' [12, 14] (e.g. provision of specialist advice, tailored absence policies, flexible working hours, and relatively low-cost environmental changes, particularly concerning heating and ventilation) will both support more mid-life women in remaining in work and, by doing so, will also mean that more reach retirement with sufficient pension contributions for an adequate income in their later lives.

## **Contributors**

All authors made substantial contributions to the design and conduct of the study, the statistical analysis, and drafting the manuscript. All authors commented on drafts and approved the final version of this paper.

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## **Data Statement**

Due to the sensitive feature of the questions asked in this study, respondents were assured raw data would remain confidential and would not be shared.

## References

1. International Labour Office, Women in labour markets: Measuring progress and identifying challenges. [https://www.ilo.org/wcmsp5/groups/public/---ed\\_emp/---emp\\_elm/---trends/documents/publication/wcms\\_123835.pdf](https://www.ilo.org/wcmsp5/groups/public/---ed_emp/---emp_elm/---trends/documents/publication/wcms_123835.pdf) , 2010 (accessed 20 February 2020)
2. Gallup, Inc. and the International Labour Organization, Towards a better future for women and work: Voices of women and men. [https://www.ilo.org/wcmsp5/groups/public/---dgreports/---dcomm/---publ/documents/publication/wcms\\_546256.pdf](https://www.ilo.org/wcmsp5/groups/public/---dgreports/---dcomm/---publ/documents/publication/wcms_546256.pdf) ,2017 (accessed 20 February 2020)
3. Office for National Statistics Employment, unemployment and economic inactivity by age group (not seasonally adjusted). Table A05. <https://www.ons.gov.uk/employmentandlabourmarket/peopleinwork/employmentandemployeetypes/datasets/employmentunemploymentandeconomicinactivitybyagegroupnotseasonallyadjusted/a05nsa>, 2020 (accessed 6th March 2020).
4. H.D. Nelson, Menopause. *Lancet* 371 (2008) 760–770. doi:[https://doi.org/10.1016/S0140-6736\(08\)60346-3](https://doi.org/10.1016/S0140-6736(08)60346-3)
5. M. Hunter, M. Rendall, Bio-psycho-socio-cultural perspectives on menopause. *Best Pract Res Clin Obstet Gynaecol*, 21 (2007) 261–274. doi: 10.1016/j.bpobgyn.2006.11.001
6. G. Mishra, D. Kuh, Perceived change in quality of life during the menopause. *Soc Sci Med.* 62 (2006) 93–102. doi: 10.1016/j.socscimed.2005.05.015
7. G. Jack, M. Pitts, K. Riach, E. Bariola, J. Schapper, P. Sarrel, Women, Work and the Menopause: Releasing the Potential of Older Professional Women’, final project report, La Trobe University, Melbourne, Australia. (2014)
8. C. Hardy, E. Thome, A. Griffiths, M.S. Hunter, Work outcomes in midlife women: the impact of menopause, work stress and working environment. *Women’s Midlife Health*, 4 (2018) 1–8, doi: <https://doi.org/10.1186/s40695-018-0036-z>
9. S.D.T. de Araújo Moraes, A.M. da Fonseca, E.M. de Moraes, V.R. Bagnoli, C.F.S.b. Portella, L.C. Abreu, E.C. Baracat, Sleep disorders in climacteric women. *HealthMED: 6* (2012) 846–854.
10. R.E. Williams, K.B. Levine, L. Kalilani, J. Lewis, R.V. Clark, Menopause-specific questionnaire assessment in US population-based study shows negative impact on health-related quality of life. *Maturitas* 62 (2009) 153–159. doi: 10.1016/j.maturitas.2008.12.006
11. N. F. Woods, E.S. Mitchell, Symptom interference with work and relationships during the menopausal transition and early postmenopause: observations from the Seattle Midlife Women's Health Study, *Menopause*, 18 (2011) 654–666. doi: 10.1097/gme.0b013e318205bd76.
12. A. Griffiths, S.J. MacLennan, J. Hassard, Menopause and work: An electronic survey of employees’ attitudes in the UK, *Maturitas*, 76 (2013) 155–159. doi: 10.1016/j.maturitas.2013.07.005.
13. R.A. Hammam, R.A. Abbas, M.S. Hunter, Menopause and work—the experience of middle-aged female teaching staff in an Egyptian governmental faculty of medicine, *Maturitas* 71 (2012) 294–300. doi: 10.1016/j.maturitas.
14. G. Jack, K. Riacha, E. Bariolab, M. Pitts, J. Schapperb, P. Sarrel. Menopause in the workplace: What employers should be doing. *Maturitas.* 85 (2016) 88-95. doi: 10.1016/j.maturitas.

- 15.M. Geukes, M.P. van Aalst, S. J.W. Robroekc, J.S.E. Lavend, H. Oosterhof. The impact of menopause on work ability in women with severe menopausal symptoms. *Maturitas*. 90 (2016) 3–8. doi: 10.1016/j.maturitas.
- 16.M.D. Dibonaventura, J.S. Wagner, J. Alvir, J. Whiteley, Depression, quality of life, work productivity, resource use, and costs among women experiencing menopause and hot flashes: a cross-sectional study, *Prim Care Companion CNS Disord*, 14 (2012) PCC.12m01410. doi:10.4088/PCC.12m01410
- 17.J. Whiteley, D. Marco, W. Jan-Samuel, A. Jose, S. Sonali, The Impact of Menopausal Symptoms on Quality of Life, Work productivity, and Economic Outcomes. *J Womens Health*, 22 (2013) 983–990. doi: 10.1089/jwh.2012.3719
- 18.E.O. Im, A.I. Meleis, Women's work and symptoms during midlife: Korean immigrant women, *Women Health*, 31 (2001) 83–103, doi: 10.1300/J013v33n01\_06
- 19.N.M. Daysal, C. Orsini, The miracle drug: hormone replacement therapy and the labour market behaviour of middle-aged women, *IZA Discussion Paper Series: number 7993*. (2014)
- 20.J. Paul, *Working Through the Change: Health and Safety and the Menopause*, report for the Trades Union Congress, March. (2003)
- 21.Social Issues Research Centre, Jubilee Women. *Fiftysomething Women - Lifestyle and Attitudes Now and Fifty Years Ago Report for HRT Aware*. (2012)
- 22.University of London, Institute of Education and Centre for Longitudinal Studies 2012. *National Child Development Study: Sweep 8, 2008–2009 [data collection]*. Third edition, UK Data Service. SN: 6137, <http://dx.doi.org/10.5255/UKDASN-6137-2>.
- 23.University of London, Institute of Education and Centre for Longitudinal Studies 2015. *National Child Development Study Response and Outcomes Dataset, 2013–2014 [data collection]*. 5th edition, UK Data Service. SN: 5560, <http://doi.org/10.5255/UKDA-SN-5560-3>.
- 24.J.G. Greene, Constructing a standard climacteric scale. *Maturitas* 29 (1998) 25–31. doi: 10.1016/s0378-5122(98)00025-5
- 25.NHS. Symptoms, Menopause. (2018) <https://www.nhs.uk/conditions/menopause/symptoms/> (accessed 20 August 2020)
- 26.M. Gomez-leon, M. Evandrou, J. Falkingham, A. Vlachantoni The dynamics of social care and employment in mid-life. *Ageing & Society* 39 (2019), 381–408. doi:10.1017/S144686X17000964.
- 27.T. van den Berg, M. Schuring, M. Avendano, J. Mackenbach, A. Burdorf, The impact of ill health on exit from paid employment in Europe among older workers, *Occup Environ Med*, 67 (2010) 845–852. doi:10.1136/oem.2009.051730
- 28.K.D. Ballard, D.J. Kuh, M.E.J. Wadsworth, The role of the menopause in women's experiences of the 'change of life', *Sociology of Health & Illness*, 23 (2001) 397–424. doi: <https://doi.org/10.1111/1467-9566.00258>
29. J. Bredtmann, S. Otten, C. Rulff. Husband's unemployment and wife's labor supply: The added worker effect across Europe. *ILR Review*, 71 (2018) 1201–1231. doi: 10.1177/0019793917739617



30. D. Lain, M. van der Horst, S. Vickerstaff Extended Working Lives: Feasible and Desirable for All?. In: S. Czaja, J. Sharit, J. James (eds) Current and Emerging Trends in Aging and Work. Springer, Cham, (2020) doi: [https://doi.org/10.1007/978-3-030-24135-3\\_6](https://doi.org/10.1007/978-3-030-24135-3_6)

Table 1. Change in employment by menopausal transition and severe menopausal symptoms

|   | Employment continued without reducing working hours | Employment continued reducing working hours | Exit employment | Number of respondents | %     |
|---|---|---|-----------------|-----------------------|-------|
| Number of respondents                             | 2040  | 720   | 349             | 3109                  |       |
| %   | 65.6  | 23.2  | 11.2            |                       | 100.0 |
| <b>Menopausal transition between age 50 to 55</b> | P=0.504 (Chi-Square=5.314)                          |   |                 |                       |       |
| Pre-menopause both ages                           | 67.8  | 21.9  | 10.3            | 351                   | 11.3  |
| Normal transition from pre to post menopause      | 66.5  | 22.9  | 10.6            | 1279                  | 41.1  |
| Post-menopause both ages                          | 66.0  | 21.8  | 12.2            | 720                   | 23.2  |
| Operations/medical conditions                     | 62.8  | 25.4  | 11.7            | 759                   | 24.4  |
| <b>Severe menopausal symptoms age 50</b>          | P<0.001 (Chi-Square=26.696)                         |   |                 |                       |       |
| No  | 69.7  | 21.8  | 8.5             | 1447                  | 46.5  |
| At least one                                      | 62.1  | 24.3  | 13.6            | 1662                  | 53.5  |

Source: Authors' analysis of the National Child Development Study Wave 8 (2008/09) and Wave 9 (2013/14). Total sample size is 3109.

Table 2. The selected single symptom<sup>1</sup> and change in employment.

|  | Employment continued without reducing working hours | Employment continued reducing working hours | Exit employment | Number of respondents | %            |
|--|---|---|-----------------|-----------------------|--------------|
| <b>Total</b>   | <b>65.6</b>   | <b>23.2</b>                                 | <b>11.2</b>     | <b>3109</b>           | <b>100.0</b> |
| <i><b>Trouble sleeping</b></i>                               | P=0.009   |   |                 |                       |              |
| symptom bothered a lot                                       | 62.1  | 22.9  | 15.0            | 541                   | 17.4         |
| no such symptom or symptom not bothered or bothered a little | 66.4  | 23.2  | 10.4            | 2568                  | 82.6         |
| <i><b>Joint aches and pains</b></i>                          | P<0.001   |   |                 |                       |              |
| symptom bothered a lot                                       | 59.3  | 23.1  | 17.6            | 415                   | 13.3         |
| no such symptom or symptom not bothered or bothered a little | 66.6  | 23.2  | 10.2            | 2694                  | 86.7         |
| <i><b>Hot flushes</b></i>                                    | P=0.015   |   |                 |                       |              |
| symptom bothered a lot                                       | 55.2  | 26.7  | 18.1            | 574                   | 18.5         |
| no such symptom or symptom not bothered or bothered a little | 66.0  | 23.0  | 11.0            | 2535                  | 81.5         |
| <i><b>Irritability</b></i>                                   | P=0.091   |   |                 |                       |              |
| symptom bothered a lot                                       | 61.3  | 23.9  | 14.8            | 297                   | 9.6          |
| no such symptom or symptom not bothered or bothered a little | 66.1  | 23.1  | 10.8            | 2812                  | 90.4         |
| <i><b>Anxiety, depression</b></i>                            | P<0.001   |   |                 |                       |              |
| symptom bothered a lot                                       | 60.3  | 19.6  | 20.1            | 408                   | 13.1         |
| no such symptom or symptom not bothered or bothered a little | 66.4  | 23.7  | 9.9             | 2701                  | 86.9         |
| <i><b>Tearfulness</b></i>                                    | P=0.001   |   |                 |                       |              |
| symptom bothered a lot                                       | 59.1  | 24.0  | 16.9            | 350                   | 11.3         |
| no such symptom or symptom not bothered or bothered a little | 66.4  | 23.1  | 10.5            | 2759                  | 88.7         |
| <i><b>Feelings of panic</b></i>                              | P=0.002   |   |                 |                       |              |
| symptom bothered a lot                                       | 57.9  | 22.8  | 19.3            | 171                   | 5.5          |
| no such symptom or symptom not bothered or bothered a little | 66.1  | 23.2  | 10.8            | 2938                  | 94.5         |
| <i><b>Forgetfulness</b></i>                                  | P=0.005   |   |                 |                       |              |
| symptom bothered a lot                                       | 57.4  | 26.4  | 16.3            | 258                   | 8.3          |
| no such symptom or symptom not bothered or bothered a little | 66.4  | 22.9  | 10.8            | 2851                  | 91.7         |
| <i><b>Cold, night sweats</b></i>                             | P=0.002   |   |                 |                       |              |
| symptom bothered a lot                                       | 62.2  | 21.3  | 16.5            | 389                   | 12.5         |
| no such symptom or symptom not bothered or bothered a little | 66.1  | 23.4  | 10.5            | 2720                  | 87.5         |
| <i><b>Lost urine when didn't mean to</b></i>                 | P=0.498   |   |                 |                       |              |
| symptom bothered a lot                                       | 67.7  | 20.2  | 12.1            | 257                   | 8.3          |
| no such symptom or symptom not bothered or bothered a little | 65.4  | 23.4  | 11.2            | 2852                  | 91.7         |
| <i><b>Frequent severe headaches, migraine</b></i>            | P=0.420   |   |                 |                       |              |
| symptom bothered a lot                                       | 61.6  | 25.5  | 13.0            | 216                   | 6.9          |
| no such symptom or symptom not bothered or bothered a little | 65.9  | 23.0  | 11.1            | 2893                  | 93.1         |

Source: Authors' analysis of the National Child Development Study Wave 8 (2008/09) and Wave 9 (2013/14). Total sample size is 3109.

<sup>1</sup> To ensure each category had enough number of respondents, the selection criteria of symptoms here were that more than 5% of women reported such symptom bothered a lot in Appendix Table 1.

Table 3. Odds ratios (ORs) and 95% CI of multivariate multinomial logistic regression<sup>2</sup> (N=3109).

|   | Model 1  |  | Model 2  |  |
|---|--|--|--|--|
|   | Employment continued but reducing working hours vs employment continued without reducing working hours | Exit employment vs employment continued without reducing working hours | Employment continued but reducing working hours vs employment continued without reducing working hours | Exit employment vs employment continued without reducing working hours |
| <b>Menopausal transition between age 50 to age 55</b>           |  |  |  |  |
| Premenopause both ages (ref)                                    |  |  |  |  |
| Normal transition from pre to post menopause                    | 1.06 (0.79 to 1.43)  | 1.02 (0.68 to 1.52)  | 1.05 (0.78 to 1.42)  | 1.02 (0.68 to 1.52)  |
| Post menopause both ages  | 0.99 (0.72 to 1.37)  | 1.10 (0.71 to 1.69)  | 1.00 (0.71 to 1.37)  | 1.10 (0.71 to 1.69)  |
| Operations/medical conditions                                   | 1.22 (0.89 to 1.68)  | 1.03 (0.67 to 1.59)  | 1.24 (0.89 to 1.68)  | 1.03 (0.67 to 1.59)  |
| <b>Severe menopausal symptoms age 50 (categorical variable)</b> |  |  |  |  |
| No (ref)  |  |  |  |  |
| At least one  | <b>1.23 (1.02 to 1.48)*</b>  | <b>1.43 (1.11 to 1.84)**</b>   | 1.14 (0.91 to 1.44)  | <b>1.67 (1.21 to 2.31)**</b>   |
| <b>Marital status</b>   |  |  |  |  |
| Single/never married (ref)                                      |  |  |  |  |
| Married/civil partner   | 1.07 (0.74 to 1.56)  | 0.99 (0.60 to 1.63)  | 1.08 (0.74 to 1.57)  | 0.99 (0.61 to 1.63)  |
| Divorced/separated/widowed                                      | 0.98 (0.69 to 1.40)  | 0.82 (0.51 to 1.29)  | 0.98 (0.69 to 1.40)  | 0.82 (0.52 to 1.29)  |
| <b>Partner's economic activities</b>                            |  |  |  |  |
| Full-time job (ref)   |  |  |  |  |
| Part-time job   | 1.63 (1.07 to 2.47)  | 1.48 (0.86 to 2.55)  | 1.63 (0.87 to 3.12)  | 2.09 (0.92 to 4.78)  |
| Not working   | 0.97 (0.70 to 1.33)  | 0.93 (0.61 to 1.43)  | 0.76 (0.46 to 1.31)  | 1.58 (0.85 to 2.91)  |
| No partners   | 0.92 (0.66 to 1.29)  | 0.99 (0.63 to 1.57)  | 1.00 (0.66 to 1.52)  | 1.10 (0.60 to 2.02)  |
| <b>NS-SEC</b>   |  |  |  |  |
| Higher managerial and professional occupations (ref)            |  |  |  |  |
| Lower managerial and professional occupations                   | 0.96 (0.70 to 1.30)  | 0.94 (0.60 to 1.48)  | 0.95 (0.70 to 1.31)  | 0.95 (0.60 to 1.49)  |
| Intermediate occupations  | <b>0.59 (0.40 to 0.85)**</b>   | 1.03 (0.62 to 1.71)  | <b>0.58 (0.40 to 0.85)**</b>   | 1.03 (0.62 to 1.72)  |
| Lower supervisory and technical occupations                     | 0.95 (0.60 to 1.49)  | 0.79 (0.40 to 1.56)  | 0.95 (0.61 to 1.50)  | 0.79 (0.40 to 1.55)  |
| Semi-routine occupations  | 0.90 (0.62 to 1.33)  | 1.15 (0.68 to 1.96)  | 0.90 (0.62 to 1.32)  | 1.15 (0.68 to 1.95)  |
| Routine occupations   | 0.86 (0.51 to 1.45)  | 1.45 (0.76 to 2.77)  | 0.86 (0.51 to 1.45)  | 1.45 (0.76 to 2.77)  |
| <b>Education</b>  |  |  |  |  |
| O-level or lower (ref)  |  |  |  |  |
| High O-level  | 0.96 (0.77 to 1.21)  | 0.80 (0.59 to 1.09)  | 0.95 (0.76 to 1.21)  | 0.81 (0.60 to 1.10)  |
| A-level or higher   | 0.87 (0.67 to 1.12)  | 1.10 (0.79 to 1.55)  | 0.86 (0.66 to 1.11)  | 1.12 (0.80 to 1.56)  |
| <b>Housing tenure</b>   |  |  |  |  |
| Own outright (ref)  |  |  |  |  |
| Own with mortgage   | 0.92 (0.75 to 1.14)  | 0.77 (0.59 to 1.01)  | 0.92 (0.75 to 1.14)  | 0.78 (0.59 to 1.02)  |
| Rent and other arrangements                                     | 1.21 (0.88 to 1.65)  | 1.23 (0.83 to 1.84)  | 1.19 (0.87 to 1.64)  | 1.24 (0.83 to 1.85)  |
| <b>Long lasting illness</b>                                     |  |  |  |  |
| No (ref)  |  |  |  |  |
| Yes   | 0.93 (0.74 to 1.17)  | 1.07 (0.80 to 1.43)  | 0.93 (0.74 to 1.18)  | 1.07 (0.80 to 1.43)  |
| <b>Health limits daily activities</b>                           |  |  |  |  |
| No (ref)  |  |  |  |  |
| Yes   | 0.90 (0.66 to 1.23)  | <b>2.01 (1.45 to 2.81)***</b>  | 0.89 (0.65 to 1.22)  | <b>2.02 (1.45 to 2.81)***</b>  |
| <b>HRT users</b>  |  |  |  |  |
| No (ref)  |  |  |  |  |
| Yes   | 0.95 (0.73 to 1.22)  | <b>1.49 (1.10 to 2.03)*</b>  | <b>0.58 (0.34 to 0.98)*</b>  | 1.62 (0.89 to 1.43)  |
| <b>Job satisfaction</b>   |  |  |  |  |
| Very or somewhat satisfied (ref)                                |  |  |  |  |
| Somewhat satisfied  | 0.91 (0.75 to 1.10)  | 1.23 (0.94 to 1.61)  | 0.90 (0.75 to 1.10)  | 1.24 (0.94 to 1.62)  |
| Neither satisfied nor dissatisfied                              | 0.79 (0.56 to 1.09)  | 1.40 (0.94 to 2.10)  | 0.78 (0.57 to 1.08)  | 1.40 (0.94 to 2.10)  |
| Dissatisfied  | 1.02 (0.71 to 1.46)  | 1.73 (1.12 to 2.67)  | 1.02 (0.71 to 1.47)  | <b>1.76 (1.14 to 2.71)*</b>  |
| <b>Job security</b>   |  |  |  |  |
| Very secure (ref)   |  |  |  |  |
| Fairly secure   | 1.02 (0.85 to 1.23)  | 0.99 (0.77 to 1.28)  | 1.02 (0.85 to 1.23)  | 0.99 (0.77 to 1.28)  |
| Not very secure   | <b>1.45 (1.03 to 2.03)*</b>  | 1.44 (0.95 to 2.18)  | 1.44 (1.02 to 2.01)  | 1.44 (0.95 to 2.19)  |
| <b>Job interfere with family life</b>                           |  |  |  |  |
| No (ref)  |  |  |  |  |
| Yes   | <b>1.75 (1.44 to 2.12)***</b>  | <b>1.51 (1.16 to 1.96)**</b>   | <b>1.75 (1.45 to 2.13)***</b>  | <b>1.49 (1.15 to 1.94)**</b>   |
| <b>Employment feature at age 50</b>                             |  |  |  |  |
| Full-time employed (ref)  |  |  |  |  |
| Part-time employed  | <b>0.65 (0.53 to 0.81)***</b>  | 1.03 (0.79 to 1.33)  | <b>0.66 (0.54 to 0.80)***</b>  | 1.02 (0.79 to 1.33)  |

<sup>2</sup> These two multinomial logistic regression models compare women with at least one severe menopausal symptom and women with no severe menopausal symptoms (including no symptom or symptom not bothered or bothered a little). The reference group of employment outcomes was employment continued without reducing working hours. Model 1 assess the main effect. Model 2 added interaction terms between at least one severe menopausal symptom and partner's economic activities; and at least one severe menopausal symptom and HRT users.

|  |  |  |                              |                             |
|--|--|--|------------------------------|-----------------------------|
| <b>Interaction between severe symptoms and partner's economic activities</b> |  |  |                              |                             |
| At least one symptom # part-time job   |  |  | 0.96 (0.41 to 2.22)          | 0.56 (0.19 to 1.68)         |
| At least one symptom # Not working   |  |  | 1.44 (0.74 to 2.79)          | <b>0.41 (0.18 to 0.96)*</b> |
| At least one symptom # no partner  |  |  | 0.86 (0.55 to 1.35)          | 0.84 (0.45 to 1.57)         |
| <b>Interaction between severe symptoms and HRT users</b>                     |  |  |                              |                             |
| At least one symptom # HRT users   |  |  | <b>1.94 (1.07 to 3.52) *</b> | 0.93 (0.47 to 1.83)         |

Source: Authors' analysis of the National Child Development Study Wave 8 (2008/09) and Wave 9 (2013/14).

\*\*\*p<0.001; \*\*p<0.01; \*p<0.05

Appendix Table 1. Percentage of single menopausal related symptoms and degree of being affected at age 50.

| <b>Symptoms</b>                     | <b>Reported</b> | <b>Not bothered</b> | <b>Bothered a little</b> | <b>Bothered a lot</b> | <b>Total respondents</b> |
|-------------------------------------|-----------------|---------------------|--------------------------|-----------------------|--------------------------|
| Trouble sleeping                    | 59.6            | 5.5                 | 36.7                     | 17.4                  | 3109                     |
| Joint aches and pains               | 66.6            | 7.9                 | 45.4                     | 13.3                  | 3109                     |
| Breast tenderness                   | 37.0            | 8.0                 | 25.0                     | 4.0                   | 3109                     |
| Hot flushes                         | 63.5            | 8.6                 | 36.5                     | 18.5                  | 3109                     |
| Palpitations                        | 29.3            | 6.2                 | 19.4                     | 3.7                   | 3109                     |
| Dizziness                           | 26.2            | 4.7                 | 18.4                     | 3.1                   | 3109                     |
| Pins & needles in hands, foot       | 32.7            | 9.0                 | 20.0                     | 3.7                   | 3109                     |
| Skin crawling sensations            | 13.6            | 3.0                 | 9.3                      | 1.4                   | 3109                     |
| Irritability                        | 59.6            | 10.5                | 39.6                     | 9.6                   | 3109                     |
| Anxiety, depression                 | 40.1            | 2.5                 | 24.5                     | 13.1                  | 3109                     |
| Tearfulness                         | 54.8            | 10.0                | 33.5                     | 11.3                  | 3109                     |
| Feelings of panic                   | 21.8            | 1.5                 | 14.8                     | 5.5                   | 3109                     |
| Forgetfulness                       | 59.2            | 13.6                | 37.1                     | 8.3                   | 3109                     |
| Cold, night sweats                  | 51.0            | 6.8                 | 31.7                     | 12.5                  | 3109                     |
| Vaginal dryness                     | 25.4            | 5.0                 | 16.1                     | 4.3                   | 3109                     |
| Difficulties intercourse            | 11.6            | 0.7                 | 6.2                      | 4.6                   | 3109                     |
| More frequent passing of urine      | 32.4            | 9.0                 | 18.9                     | 4.5                   | 3109                     |
| Lost urine when didn't mean to      | 36.5            | 4.4                 | 23.8                     | 8.3                   | 3109                     |
| Pain passing urine                  | 4.4             | 0.5                 | 2.8                      | 1.2                   | 3109                     |
| Frequent severe headaches, migraine | 23.9            | 1.6                 | 15.3                     | 6.9                   | 3109                     |

Source: Authors' analysis of the National Child Development Study Wave 8 (2008/09) and Wave 9 (2013/14).

Appendix Table 2. Employment outcomes by women's characteristics at age 50.

|  | Employment continued without reducing working hours | Employment continued reducing working hours | Exit employment | P value | Number of respondents | %     |
|--|---|---|-----------------|---------|-----------------------|-------|
| Total  | 65.6  | 23.2  | 11.2            |         | 3109                  | 100.0 |
| <b>Marital status</b>                          |   |   |                 | 0.870   |                       |       |
| Single never married                           | 64.1  | 23.1  | 12.8            |         | 273                   | 8.8   |
| Married/civil partner                          | 65.5  | 23.3  | 11.3            |         | 2184                  | 70.2  |
| Divorced/separated/widowed                     | 66.7  | 22.9  | 10.4            |         | 652                   | 21.0  |
| <b>Partner's economic activity</b>             |   |   |                 | 0.149   |                       |       |
| Full-time job                                  | 66.2  | 22.8  | 11.0            |         | 2116                  | 68.1  |
| Part-time job                                  | 53.2  | 31.7  | 15.1            |         | 126                   | 4.1   |
| Not working                                    | 64.5  | 23.8  | 11.7            |         | 256                   | 8.2   |
| No partner                                     | 66.6  | 22.3  | 11.1            |         | 611                   | 19.7  |
| <b>NS-SEC</b>                                  |   |   |                 | <0.001  |                       |       |
| Higher managerial and professional occupations | 59.8  | 28.8  | 11.4            |         | 264                   | 8.5   |
| Lower managerial and professional occupations  | 63.4  | 26.4  | 10.1            |         | 1225                  | 39.4  |
| Intermediate occupations                       | 72.2  | 16.0  | 11.8            |         | 626                   | 20.1  |
| Lower supervisory and technical occupations    | 64.0  | 27.1  | 8.9             |         | 203                   | 6.5   |
| Semi-routine occupations                       | 66.6  | 21.3  | 12.1            |         | 614                   | 19.7  |
| Routine occupations                            | 64.4  | 10.2  | 16.4            |         | 177                   | 5.7   |
| <b>Education</b>                               |   |   |                 | 0.264   |                       |       |
| O-level or lower                               | 64.9  | 22.7  | 12.4            |         | 815                   | 26.2  |
| High O-level                                   | 67.4  | 22.9  | 9.7             |         | 1202                  | 38.7  |
| A-level or higher                              | 64.2  | 23.8  | 12.0            |         | 1092                  | 35.1  |
| <b>Housing tenure</b>                          |   |   |                 | 0.052   |                       |       |
| Own outright                                   | 65.2  | 22.7  | 12.1            |         | 820                   | 26.4  |
| Own with mortgage                              | 66.8  | 23.0  | 10.2            |         | 1938                  | 62.3  |
| Rent and other arrangements                    | 59.8  | 25.4  | 14.8            |         | 351                   | 11.3  |
| <b>Long lasting illness</b>                    |   |   |                 | 0.011   |                       |       |
| Yes  | 63.6  | 21.8  | 14.6            |         | 615                   | 19.8  |
| No   | 66.1  | 23.5  | 10.4            |         | 2494                  | 80.2  |
| <b>Health limits daily activities</b>          |   |   |                 | <0.001  |                       |       |
| Yes  | 57.3  | 20.4  | 22.3            |         | 328                   | 10.6  |
| No   | 66.6  | 23.5  | 9.9             |         | 2781                  | 89.4  |
| <b>HRT user</b>                                |   |   |                 | 0.003   |                       |       |
| Yes  | 61.3  | 22.8  | 15.9            |         | 460                   | 14.8  |
| No   | 66.4  | 23.2  | 10.4            |         | 2649                  | 85.2  |

Source: Authors' analysis of the National Child Development Study Wave 8 (2008/09) and Wave 9 (2013/14).