How do existing and newly diagnosed chronic health conditions affect older workers’ vitality and worries about functional ability?
Abstract

Objective. With increasing pension ages, older workers are working longer while experiencing chronic health conditions (CHCs). Our knowledge on how CHCs influence older workers’ vitality and worries is limited. We examine how four existing and newly diagnosed CHCs influence older workers’ vitality and worries about physical and mental functional ability.

Methods. We used data from a Dutch pension panel survey. A sample of 1,894 older workers (60-62 years at baseline) was analyzed using conditional change OLS regression models.

Results. Having CHCs decreased vitality and increased worries. This effect was worser for older workers newly diagnosed with CHCs. Being newly diagnosed with physically disabling conditions increased worries about physical functioning, while being newly diagnosed with mentally disabling conditions increased worries about mental functioning.

Implications. These findings aid the identification of vulnerable groups of older workers, thereby informing interventions that could improve their quality of life, while promoting healthy ageing at work.

Keywords: diagnosis time, wellbeing, work ability, healthy ageing
How do existing and newly diagnosed chronic health conditions affect older workers’ vitality and worries about functional ability?

Statutory pension ages are increasing in Europe (Henkens et al., 2018). This, together with the discouragement of work exit strategies (such as disability pensions and early retirement schemes), are forcing older workers to extend their careers and work into old age (van Solinge & Henkens, 2016). Older workers, especially those over the age of 60 years, may struggle with a multitude of changes while they adjust to their recently extended working lives, manage their workload and cope with possible health issues. Past studies have associated these changes with low levels of vitality, a measure of overall health, among older workers (Vanajan, Bültmann, & Henkens, 2020; Vanajan, Bültmann, & Henkens, 2020a). Moreover, these changes have psychological consequences, as they have led older workers to worry more and more about their physical and mental functional ability at work until they reach the newly increased retirement age (van Solinge & Henkens, 2017). Nevertheless, how older workers experience their health and functional ability in this tumultuous period in their late careers is largely unstudied. This study aims to do so using panel data that specifically focus on older workers between 60-65 years of age.

Given that ageing is associated with an increase in the likelihood of being diagnosed with chronic health conditions (CHCs) (McMahan & Sturz, 2006), older workers, especially those over the age of 60 years, are probably dealing with the challenges of working longer while managing CHCs. CHCs are the leading cause of morbidity, mortality and burden of diseases in Europe (Busse & Blümel, 2010): this is especially true for older populations (Harbers & Achterberg, 2012; McMahan & Sturz, 2006). Earlier research shows that the experience of CHCs is largely detrimental to older individuals’ quality of life, social relationships, financial resources, work productivity and work ability, while simultaneously increasing the likelihood of early exit from work (Golics, Basra, Finlay, & Salek, 2013; Leijten et al., 2014; Vanajan et
al., 2020, 2020a). However, the severity and size of these detrimental effects may depend on when the CHCs have been diagnosed. While having a CHC is itself challenging in many fronts, older individuals who were diagnosed earlier in life (existing CHCs) might know how to manage their CHCs. In contrast, older workers who may have gotten newly diagnosed with CHCs (newly diagnosed CHCs) are challenged to manage their CHC, which may (negatively) affect their wellbeing and work functioning. While many studies examine the effect of existing CHCs on a wide range of wellbeing measures and work outcomes (Leijten et al., 2014; Vanajan et al., 2020a; Vanajan, Bültmann, & Henkens, 2020b), very few examine how newly diagnosed CHCs may contribute to and exaggerate these effect (Guymer, Littlejohn, Brand, & Kwiatek, 2016). Moreover, none of the previous studies has separately studied the effects of both existing and newly diagnosed CHCs on older individuals’ wellbeing and functional ability. To gain insight into the effects of existing and newly diagnosed CHCs on wellbeing and functional ability, this study will investigate how the existence and new diagnosis of four CHCs influences older workers’ 1) vitality, 2) worries about physical functional ability until retirement age and 3) worries about mental functional ability until retirement age. We will study the effects of existing and newly diagnosed arthritis, cardiovascular disease, sleep disorders and psychological disorders. We chose these specific conditions as they are highly prevalent and burdensome among older adults, and for older workers who are still working, these CHCs cause severe work limitations (Vanajan et al., 2020b). These were also the most prevalence CHCs in your study sample.

Vitality is the feeling of aliveness, both in a physical (feeling healthy, capable and energetic) and a mental sense (feeling like one’s actions have meaning and purpose). Vitality provides a holistic picture on older workers’ perception of their health (Hennekam, 2016). On an individual level, vitality is associated with good health (Aleksandra Basinska, Wiciak, & Maria Dåderman, 2014; Kumbzansky & Thurston, 2007). In organizations, vital employees are
known to be productive, satisfied and successful at their jobs (Carmeli, 2009; Kark & Carmeli, 2009; van Scheppingen et al., 2014). On a larger scale, vital individuals benefit the society by contributing to economic growth and social participation (van Steenbergen, van Dongen, Wendel-Vos, Hildebrandt, & Strijk, 2016). Taken together, past research depicts that it is highly beneficial to keep individuals, especially older workers, vital. Previous studies have demonstrated the negative effect of existing CHCs on vitality of older workers (Vanajan et al., 2020a). However, the effect of newly diagnosed CHCs on vitality has not been studied. We hypothesize that while existing and newly diagnosed CHCs will negatively affect vitality of older workers, newly diagnosed CHCs will have a larger detrimental effect on vitality (newly diagnosed CHCs-vitality hypothesis). As vitality is an overall measure of health, it might be influenced by all four CHCs similarly. However, past studies have shown sleep and psychological disorders (the more mentally disabling CHCs) to be more detrimental to vitality than arthritis and cardiovascular diseases (the more physically disabling CHCs) (Vanajan et al., 2020a). Based on this we hypothesize that the more mentally disabling CHCs will have a larger detrimental effect on vitality compared to the more physically disabling CHCs (mental CHC-vitality hypothesis).

Emotions, such as worry, are reactions to events that carry importance to the individual (Lazarus & Lazarus, 1991). Before reacting through emotions, individuals evaluate these events based on their goals, values, and beliefs, taking also their ability to cope with the consequences of the event into account (Lazarus & Lazarus, 1991). This means that individuals will vary in the way they react to events. Past studies have also shown that ‘normal’ ageing changes the capacity of older individuals to appraise, respond to (both physiologically and psychologically) and adapt to stressors (Hansson, Robson, & Limas, 2001). Reaching a 60th birthday, retirement, policy changes about statutory pension age and being diagnosed of a CHC/s are examples of events that could cause strong emotional reactions, such as the worry
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about physical and mental functional ability at work (Hansson et al., 2001; Hanna van Solinge & Henkens, 2017), which in turn may affect their well-being and performance at work (Fisher, Ryan, Sonnega, & Naudé, 2016). To sustainably extend working lives in today’s changing labor market context, it is important to gain insight into the antecedents of the negative psychological experiences of older workers. This study aims to investigate whether four existing and newly diagnosed CHCs are associated with an increase in worries about physical and mental functional ability while working until retirement age. Considering the differences in how the symptoms of physically and mentally disabling CHCs affect functional ability, we hypothesize that more physically disabling CHCs that are newly diagnosed would lead to worries about physical functional ability (newly diagnosed physical CHC-worries hypothesis), while more mentally disabling CHCs that are newly diagnosed would lead to worries about mental functional ability (newly diagnosed mental CHC-worries hypothesis) until retirement age.

This study contributes to the literature in four ways. First, this study is among the first to examine the impact of existing and newly diagnosed CHCs on older workers vitality and worries. We study the impact of four highly burdensome CHCs - arthritis, cardiovascular disease, sleep disorders and psychological disorders. By separately studying the effects of each of these CHCs, we could identify groups of older workers who are most vulnerable. Second, we study the effects of CHCs on a set of comprehensive measures of health and functional ability. While vitality provides a holistic picture on older workers’ perceptions of how healthy and alive they feel (Hennekam, 2016), worries about physical and mental functional ability give insight into older workers’ perceptions on their functional ability. These health-related concepts can also be subject to change, making them targets for health interventions such as the Vital@Work intervention, cognitive behavioral therapy (CBT) and/or mindfulness-based interventions (Querstret & Cropley, 2013; Strijk, Proper, van der Beek, & Van Mechelen,
2012). Lastly, our three-year follow up panel data offer the unique opportunity to study whether existing and newly diagnosed CHCs influence changes in vitality and worries on a representative sample of older workers between the ages of 60-65 years who are burdened by the obligation to work longer while dealing with the consequences of an existing or newly diagnosed CHC.

**Methods**

**Study design and sample**

We used data from the first and second waves of the Netherlands Interdisciplinary Demographic Institution’s (NIDI) Pension Panel Survey (NPPS), conducted in 2015 and 2018 in the Netherlands. The NPPS follows a cohort of employed older workers between the ages of 60-65 years (Henkens, Van Solinge, Damman, & Dingemans, 2017), recruited using a stratified approach. Initially, a sample of organizations was drawn from the files of three pension funds in the Netherlands (ABP, PZW and BpBouw) along the dimensions of organizational size and sector. These pension funds together represent 49% of wage employed workers in the Netherlands (DNB, 2015). Following this, older workers aged between 60-65 years who worked at least 12 hours a week, were randomly sampled from the selected organizations. Of the 15,470 questionnaires that were sent out to older workers at wave 1, a total of 6,793 older workers responded to the questionnaire (net response rate of 44%). Between the two waves attrition led to the reduction of the sample by 98 respondents. A total of 6,695 questionnaires were sent out by the second wave, to which 5,312 older workers responded (net response rate of 79.3%). The statutory pension age in the Netherlands currently stands at 66 years and 4 months: this is the mandatory age of retirement. Once workers reach this age, working contracts are usually terminated. To ensure that all respondents in our sample have not reached statutory pension age by wave 2, we included 3,269 workers who were 60-62 years
old at wave 1. From those, we excluded 221 responders who received a shorter version of the questionnaire that did not include all relevant variables. Additionally, 292 workers who did not respond to the questions on vitality and worries about physical and mental functional ability at both waves, 1 respondent who had a missing value in which organization he/she belonged to and 861 respondents who retired between wave 1 and wave 2 were excluded from the analyses. Our final sample consisted of 1,894 older workers between the ages of 60-62 years at wave 1.

**Measurements**

**Outcome variables.**

**Vitality.** We measured vitality using the 36-item Short Form Health Survey’s 4-item question “How much of the time during the past 30 days did you feel: a. full of energy, b. tired, c. worn out, and d. full of pep” (Ware, 1993). Each item was answered on a six-point scale, ranging from *constantly (1)* to *never (6)*. After reverse coding items a. and d., we summed up all items to construct a single continuous measure of vitality that ranged from 1 to 6. Higher values indicated higher levels of vitality. This measure of vitality demonstrated high reliability at wave 1 (Cronbach’s alpha = 0.80) and at wave 2 (Cronbach’s alpha=0.84).

**Worries about physical and mental functional ability.** Worries about physical functional ability was evaluated using the self-formulated question “To what extent do you experience the following issues because of higher retirement ages: insecurity whether I can physically maintain”. Similarly, worries about mental functional ability was evaluated using the question “To what extent do you experience the following issues because of higher retirement ages: insecurity whether I can mentally maintain”. Respondents answered by choosing one of five response options which ranged from *not at all (1)* to *very much (5)*. We treated both variables as continuous measures, with higher values indicating high levels of worries about physical or mental functional ability.
**Primary explanatory variables.** We used the first item of the Limiting Long-standing Illnesses (LLSI) measure (Bajekal, Harries, Breman, & Woodfield, 2004) to measure the existence and the new diagnosis of the four specific CHCs: arthritis, cardiovascular diseases, sleep disorders, and psychological disorders. At both waves, respondents were asked “Do you have one or more of the following longstanding doctor-diagnosed diseases?” which was followed by a list of CHCs (Bajekal et al., 2004). Older workers answered this question by indicating whether they had the particular CHC/s. Based on their responses to this question at wave 1, we created four dichotomized variables that represent existing CHCs (1 = I have this CHC, 0 = I do not have this CHC). Based on the responses to the LLSI at both waves, we created four dichotomized variables that represent newly diagnosed CHCs. If respondents confirmed the diagnosis of a CHC at wave 2 in the absence of an affirmative diagnosis at wave 1, the variable was coded 1 (1 = I have been newly diagnosed with this CHC, 0 = I have had this CHC for the last 3 or more years or I do not have this CHC).

**Covariates.** We controlled for age (continuous, measured in years), sex (dichotomized, 1=male), presence of partner (dichotomized, 1=partner present) and education attainment (3 dichotomized variables: low (1=low), moderate (1=moderate) and high (1=high)). Additionally, we controlled for manual work, supervisory position, and full-time employment, all of which were dichotomized. If respondents’ jobs were associated with manual work based on the international standard classification of occupation (Ganzeboom, 2010), manual work was coded 1. If respondents answered affirmatively to the question “Do you have a supervisory position?”, supervisory position as coded 1. If older workers were employed for 36 hours or more per week, full-time employment was coded 1. Moreover, we controlled for organizational sector, a variable with three categories: government and education, construction and health and welfare. Each category was treated as a separate dichotomized variable. Descriptive statistics
and details on the survey questions and coding as well as relevant psychometric properties of all variables are presented in Supplementary Table 1.

Analyses

To study the effects of existing and newly diagnosed CHCs on the change in 1) vitality (model 1), 2) worries about physical functional ability (model 2) and 3) worries about mental functional ability (model 3) from wave 1 to wave 2, three conditional change ordinal least square regression models were run. We regressed the dependent variable at wave 2 on the dependent variable at wave 1, independent variables and controls (Aickin, 2009). The inclusion of the dependent variable at wave 1 as a covariate controls for a possible ceiling effect. In our models, the wave 2 measures of vitality, worries about physical functional ability and worries about mental functional ability were dependent variables. These variables were regressed against their measures at wave 1, existing CHCs and newly diagnosed CHCs. The results of the three models were interpreted as change effects from wave 1 to wave 2.

In these conditional change models, we only observed vitality and worries of older workers who did not exit the workforce through early retirement during the study period. Whether respondents younger than statutory pension age continued to work or retire could be a result of a selective process. To prevent this selection bias, we estimated Heckman maximum likelihood selection models. Initially, selection into the sample (i.e. whether the older worker is working or retired) was estimated based on all explanatory and control variables and three additional variables, namely wealth, caregiving responsibility and experience of comorbidity of CHCs. Wealth was measured with three dichotomized variables: low (1=low, less than €50,000), moderate (1=moderate, between €50,000 - €250,000) and high (1=high, more than €250,000). Caregiving responsibilities was a dichotomized variable coded 1 if respondents replied affirmatively to the question “Do you provide help to family members or friends who are ill or in need of help?”. The experience of comorbidity at wave 1 was represented using a
dichotomized variable coded 1 if older workers stated that they were diagnosed with more than one CHC in the LLSI measure at wave 1. These three variables were assumed to not only affect vitality and worries but also the working/retirement status. Thereafter, the probability of remaining in the panel - converted to Lambda - was calculated using parameter estimates of the first model. This Lambda value was then included in the models predicting the change in vitality and worries. Even though correcting for selection did not lead to any significant changes in our main findings, Table 2 presents the results of the conditional change models corrected for sample selection.

All dependent variables were standardized prior to regression analysis. This allowed for the interpretation of dichotomized variables, especially the existing and newly diagnosed CHCs, as Cohen’s d effect sizes (Cohen, 2013). We used robust standard errors clustered on organizational belonging to account for the multilevel structure of the data (older workers were nested within organizations). Item non-response was less than 5% in all our variables. This permitted the use of a less vigorous missing data imputation method (Little, Jorgensen, Lang, & Moore, 2014). As a result, all missing data (except those of the dependent variables) were imputed using single stochastic regression imputation (Enders, 2010).

**Results**

At wave 1, 39.6% of older workers reported experiencing arthritis, 12.3% reported cardiovascular diseases, 14.2% reported sleep problems and 4.3% reported psychological disorders (Figure 1). Between wave 1 and 2, 13.4% of older workers were newly diagnosed with arthritis, 5.0% with cardiovascular disease, 8.1% with sleep problems and 3.5% with psychological disorders (Figure 1).

Also, at wave 1, 18.7% older workers reported low levels of vitality, 41.2% of older workers were worried much or very much about their physical functional ability, while 34.9%
of older workers were worried much or very much about their mental functional ability until retirement age.

**The effects of existing and newly diagnosed CHCs on the change in vitality and worries**

The results of the conditional change regression analyses are presented in Table 1. Model 1 examined the effects of existing and newly diagnosed CHCs on the change in vitality. The results show that the existence of arthritis (Cohen’s $d=-0.16$, $p<0.001$), cardiovascular diseases (Cohen’s $d=-0.12$, $p<0.05$) and sleep disorders (Cohen’s $d=-0.14$, $p<0.05$) at wave 1 had a small negative effect on the change in vitality from wave 1 to 2. Compared to the effects of existing CHCs, newly diagnosed CHCs between wave 1 and wave 2 had a larger detrimental effect on vitality, thereby confirming our newly diagnosed CHCs-vitality hypothesis. Older workers who were newly diagnosed with psychological disorders (Cohen’s $d=-0.70$, $p<0.001$), sleep disorders (Cohen’s $d=-0.34$, $p<0.001$) and arthritis (Cohen’s $d=-0.22$, $p<0.001$) reported the largest declines in vitality between wave 1 and wave 2 compared to those who experienced CHCs already at wave 1. Considering the effect sizes, our results support our mental CHC-vitality hypothesis.

Model 2 demonstrated that existing and newly diagnosed CHCs are associated with a general increase in older workers’ worries about physical functional ability. Older workers who experienced arthritis, cardiovascular diseases, sleep disorders or psychological disorders at wave 1 increasingly worried about their physical functional ability by wave 2. The sizes of these effects, however, were small. Newly diagnosed physical health conditions - arthritis (Cohen’s $d=0.29$, $p<0.001$) and cardiovascular diseases (Cohen’s $d=0.16$, $p<0.05$) - showed an increase in worries about physical functional ability by wave 2. This effect was not evident for the newly diagnosed mental health conditions. This confirms our that are newly diagnosed physical CHC-worries hypothesis.
Similarly, model 3 revealed that in general existing and newly diagnosed of CHCs are associated with an increase in worries about mental functional ability. Experiencing arthritis (Cohen’s $d=0.13$, $p<0.05$), cardiovascular diseases (Cohen’s $d=0.16$, $p<0.05$) and sleep disorders (Cohen’s $d=0.18$, $p<0.05$) at wave 1 had a small yet significant effect on the increase in worries about mental functional ability from wave 1 to wave 2. Moreover, our findings show that older workers who were newly diagnosed with the two mental health conditions, sleep disorders (Cohen’s $d=0.23$, $p<0.05$) and psychological disorders (Cohen’s $d=0.50$, $p<0.001$), reported greater increases in their worries about their mental functional ability, thereby confirming our newly diagnosed mental CHC-worries hypothesis. This effect was not evident for the newly diagnosed physical health conditions.

**Discussion**

This study is to the best of our knowledge the first to longitudinally demonstrate how existing and newly diagnosed CHCs affect older workers’ vitality and worries about physical and mental functional ability until retirement. While many older workers report experiencing a CHC (for example, almost half of the sample experience arthritis and cardiovascular diseases), a considerable amount of older workers are being newly diagnosed with CHCs (for instance, around 13% of our sample was newly diagnosed with arthritis). In general, existing CHCs at wave 1 (i.e. the experience of CHCs for more than 3 years) was associated with decreased vitality and increased worries about physical and mental functional ability at wave 2. In comparison, newly diagnosed CHCs (i.e. a new diagnosis of a CHC in the 3 years between wave 1 and 2) was associated with a larger detrimental effect on vitality and steeper incremental effects on worries. Interestingly, newly diagnosed physical CHCs increased worries about physical functional ability, while newly diagnosed mental CHCs increased worries about mental functional ability.
We initially assumed that older workers who have had CHCs for a longer time may accept their limitations and adjust to life and work with their CHC, resulting in levels of vitality and worries that is comparable to that of the average population of older workers. However, we observed that existing CHCs continued to have a modest negative impact on vitality and a modest positive impact on worries. These findings may indicate that older workers experience a worsening of their exiting CHC over the study period. This worsening could possibly lead to a deterioration of their health and difficulties in managing their symptoms, thereby reducing their vitality and increasing their worries about functional ability. Nearing the prospect of retirement should provide older workers, especially those with CHCs, a feeling of relief and a lessening of worries. Our results, however, suggests that levels of worry among older workers with existing CHCs do not decline as they approach the retirement age. This goes to show that older workers who have had long standing CHCs should not be neglected in the provision of care and accommodations, just because they seem to be experienced in managing their conditions.

By separating the effects of existing and newly diagnosed CHCs, we provided insights into how and when CHCs influences vitality and worries. Although both existing and newly diagnosed CHCs influence vitality and worries about functional ability, newly diagnosed CHCs had a stronger detrimental effect on both measures. Older workers newly diagnosed with a CHC could still be accepting, grieving and adjusting to the symptoms and limitations posed by their condition/s. This demonstrates the importance of paying extra attention to assist older workers who are newly diagnosed with CHCs to adjust in their workplaces until they find stable strategies to manage their CHC/s and/or to accommodate their work. Older workers newly diagnosed with CHCs may find it difficult to disclose their conditions to colleagues or supervisors. They might face issues in adapting their work patterns and work environment based on the limitations imposed by CHCs. Previous research has shown that an organizational
climate that ensures psychological safety is associated with low health-related work limitations among older workers with CHCs (Vanajan et al., 2020b). If older workers feel safe and have confidence in their organization they are more inclined to disclose their difficulties and ask for the work accommodations they need (Gignac & Cao, 2009; Vanajan et al., 2020b). This calls for organizational-level interventions that focuses on improving psychological safety climate, open communication and collegiality. Conversations built on open communication could lead to older workers with CHCs obtaining flexible work arrangements, such as flexibility in deciding one’s working times, that has also been shown to be associated with low health-related work limitations (Vanajan et al., 2020b).

Intriguingly, newly diagnosed CHCs with more physically disabling symptoms - arthritis and cardiovascular disease - increased older workers’ worries about their physical functional ability at work. Arthritis and cardiovascular disease manifests in symptoms such as chronic pain, restricted movements and exertion which can extensively limit the range of physical activities older workers can perform at the workplace (Vanajan et al., 2020b). Older workers with work limitations due to arthritis and cardiovascular disease are also known to prefer early retirement (Vanajan et al., 2020a). This may explain our results: in a public pension system that mandates older workers to work until retirement age despite health-related work limitations, older workers with existing and newly diagnosed arthritis and cardiovascular disease and the resulting limitations in physical abilities will continue to work while worrying about their physical functional ability at work.

Similarly, older workers who were newly diagnosed with sleep and psychological disorders worried most about their mental functional ability at work. These conditions are characterized by fatigue, muted enthusiasm, depression, inability to cope with stress and impaired cognitive performance. Moreover, sleep and psychological disorders are strongly
associated with low vitality, low quality of life (Reimer & Flemons, 2003; Vanajan et al., 2020a) and diminished work performance (Knebelmann & Prinz, 2016): all of which could lead to increased worries among older workers’ about their mental functional ability at work.

The core strength of this study lies in its ability to provide novel and comprehensive knowledge to the current literature by simultaneously distinguishing the effects of the existence and new diagnosis of four highly burdensome CHCs on holistic measures health and functional ability. Moreover, we use data from a large panel dataset on an unique yet representative sample of older workers between the ages of 60-62 years, who are not only burdened by the requirement to work in to old age, but also the need to do so while coping with existing or newly diagnosed CHCs. The panel data also allows us to make longitudinal associations and captures the dynamic nature of the CHCs, vitality and worries.

This study is not without limitations. We do not have information on the severity of CHCs that are experienced by older workers. Severity could play a role in determining the size of the effect of CHCs on vitality and worries. Future research could examine how severity of the existing or newly diagnosed CHC could influence older workers’ vitality and worries as they strive to remain in the workforce. Moreover, we measure worries about physical and mental functional ability using a single-item measure of unknown reliability. Future studies could benefit from a multi-item measure of worries. Furthermore, the results of our study might not be generalizable to populations in other countries with different pension systems that may offer more options for early retirement. It would be interesting to study the different ways older workers experience and manage existing and newly diagnosed CHCs within different country contexts. Future studies could also study how the exact time since diagnosis may influence vitality, functional ability and general well-being of older workers.
By studying the effects of the different CHCs individually and the timing of their diagnosis, this study makes identification of vulnerable groups of older workers possible. This gives organizations and policy makers direction on whom they should target for the provision of suitable interventions. For example older workers who are newly diagnosed with psychological conditions also experience declines in vitality: they could be provided with worksite vitality interventions, such as the Vital@Work intervention (Strijk, Proper, van der Beek, & van Mechelen, 2009). Similarly, older workers who are newly diagnosed with arthritis seem to worry greatly about their physical functional ability. Organizations could provide them with workspaces that are adapted to their needs or with flexible work arrangements that give them the freedom to choose when and from where they would like to work (Vanajan et al., 2020b). In general, older workers with high levels of worry could be encouraged to attend mindfulness-based interventions and/or cognitive behavioral therapy (Querstret & Cropley, 2013). In severe cases, managers could think of changing older workers’ job roles to accommodate their functional limitations. The timely identification of vulnerable groups of older workers who suffer from the double burden of CHCs and longer working lives and the efficient provision of effective interventions will improve both the quality and length of sustainable working lives.
References


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Figure 1. Percentage of older workers with existing CHCs (diagnosed before wave 1) and newly diagnosed CHCs (diagnosed between wave 1 and wave 2)
Table 1.

Results of multivariate regression analysis (second stage output of a two-step Heckman model) to explain the effects of existing of chronic health conditions at wave 1 and the new diagnosis of chronic health conditions between wave 1 and wave 2 on vitality, worries about physical functional ability and worries about mental functional ability at wave 2

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<th>Worries about mental functional ability w2</th>
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<th>Existing</th>
<th>Newly diagnosed</th>
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<td>Supervisory position (reference = supervisor)</td>
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<td>Manual work (reference = manual worker)</td>
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<td>0.07</td>
<td>0.22**</td>
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<td>Organizational sector (reference = government and education)</td>
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## EXISTING AND NEW CHCS ON VITALITY AND WORRIES

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<td>Constant</td>
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<td>Wald X²</td>
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*Note.* **p<0.001, * p<0.05, Coef. = coefficient, SE = standard error, w1 = wave 1, w2 = wave 2