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Miriam Mutambudzi, Hanna van Solinge

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Research Article

Impact of Retirement on Sleep Problems Among Older Workers and Their Partners

Miriam Mutambudzi, PhD[1,*] and Hanna van Solinge, PhD[2,3]

[1]Department of Public Health, Falk College of Sport and Human Dynamics, Syracuse University, New York, USA. [2]Netherlands Interdisciplinary Demographic Institute (NIDI-KNAW), The Hague, The Netherlands. [3]Department of Health Sciences, Community & Occupational Medicine, University Medical Center Groningen, University of Groningen, The Netherlands.

*Address correspondence to: Miriam Mutambudzi, PhD, Department of Public Health, Falk College of Sport and Human Dynamics, Syracuse University, Syracuse, NY 13210, USA. E-mail: msmutamb@syr.edu

Abstract

Background and Objectives: Sleep problems are a public health burden and have adverse health consequences in older adults. Despite sleep being a shared biological process between couples, to date, there have not been any studies that have assessed the association between retirement and sleep in older couples. The objective of this study was to examine the impact of retirement on diagnosed sleep problems in older Dutch couples.
Research Design and Methods: This study used data from 2 waves of the Netherlands Interdisciplinary Demographic Institute Pension Panel Study for older Dutch adults living with a partner ($n = 3,726$). Logistic regression models examined the strength of association between retirement and sleep problems, while accounting for the moderating role of relationship characteristics.
Results: Retirement was associated with decreased odds of sleep problems at Wave 2 (odds ratio [OR] = 0.60, 95% confidence interval [95% CI] = 0.46–0.78). Lower relationship quality was associated with increased odds of sleep problems in the fully adjusted model (OR = 1.81, 95% CI = 1.32–2.49). Having a partner with sleep problems was associated with an increased risk of sleep problems as well (OR = 1.51, 95% CI = 1.07–2.13). There was evidence of effect modification by relationship quality (OR = 1.87, 95% CI = 1.05–3.31).
Discussion and Implications: Retirement and sleep do not occur in a social vacuum and have implications beyond the individual level. More research is therefore needed to understand the impact of sleep and its health consequences on older coupled workers. Such research may provide valuable insights for the management and treatment of sleep problems and may have implications for the public health of aging communities.

Keywords: Aging workforce, Couples sleep outcomes, Retirement, Sleep disorders

Background

Poor sleep quality is a public health problem that increases with age and is highly prevalent in older adults (Alessi & Vitiello, 2015; Yaremchuk, 2018). For example, 45% of older adults report insomnia, and 25%–35% of adults older than the age of 60 years report obstructive sleep apnea (Alessi & Vitiello, 2015; Yaremchuk, 2018). Sleep disorders, inadequate sleep duration, and poor quality of sleep have been associated with adverse health outcomes (Zee & Turek, 2006).

In working adults, sleep problems have been associated with increased work stress, decreased work performance, poor attention to tasks and decision making, and mental and physical fatigue (Johannessen & Sterud, 2017; Mutambudzi

& Henkens, 2020; Van Laethem et al., 2015). This association between sleep and work is bidirectional (Buxton & Shea, 2020). Similarly, sleep and health have a bidirectional association (Stewart et al., 2020; Zee & Turek, 2006), which may negatively affect workers. Sleep problems not only increase the risk of various chronic diseases (Zee & Turek, 2006), but they often cooccur with chronic conditions such as cardiovascular disease, diabetes, arthritis, respiratory diseases, and gastrointestinal disorders (Aurora & Punjabi, 2013; Kasai et al., 2012; Lindam et al., 2016; Min et al., 2016; Stewart et al., 2020; Taylor-Gjevre et al., 2011; Zee & Turek, 2006). This comorbidity can affect the severity or progression of diseases, while these same disorders can in turn result in the onset or increased severity of sleep problems (Aurora & Punjabi, 2013; Kasai et al., 2012; Lindam et al., 2016; Min et al., 2016; Stewart et al., 2020; Taylor-Gjevre et al., 2011; Zee & Turek, 2006).

Improvements in sleep following retirement are postulated to be in part driven by the removal of work stressors (Myllyntausta & Stenholm, 2018). This notion is supported by longitudinal studies that have reported that adverse sleep outcomes are mitigated postretirement in individuals (Hagen et al., 2016; Marquiáe et al., 2012; Myllyntausta et al., 2018; Myllyntausta & Stenholm, 2018; Vahtera et al., 2009). Evidence from longitudinal studies in France, Finland, and the United States has shown decreased sleep disturbances, premature awakenings, and other adverse sleep outcomes, as well as increased sleep duration in older workers after retirement (Hagen et al., 2016; Marquiáe et al., 2012; Myllyntausta et al., 2018; Myllyntausta & Stenholm, 2018; Vahtera et al., 2009).

The foundation of the current study lies within the interdependence theory. Interdependence theory posits that interacting individuals within a social system influence each other (Hasler & Troxel, 2010; Rusbult & Van Lange, 2003; Van Lange & Balliet, 2015). The social exchange between these individuals, for example, spouses or partners, results in the actions, choices, and experiences of one partner affecting the other partner (Otto et al., 2019; Van Lange & Balliet, 2015). This is particularly evident in couples who are highly dependent on each other. While most of the above-mentioned studies highlight the benefits of retirement on sleep, they conceptualize and measure sleep as a purely individual behavior, despite evidence that it is a shared process between couples. Couples often have interdependent sleep patterns and synchronized sleep stages, partially developed due to similar sleep schedules or movement patterns associated with bed sharing (Meadows et al., 2009; Richter et al., 2016). A few studies have indicated that due to the interdependent nature of sleep among couples, sleep problems may arise as a consequence of the quality of their relationship, a lack of concordance in activities and sleep schedules, and experiencing sleep disturbances (Gunn et al., 2015; Troxel et al., 2009).

Relationship quality affects sleep (Gunn et al., 2015; Troxel et al., 2009) with evidence of greater sleep problems in couples who are unhappy (Hasler & Troxel, 2010; Strawbridge et al., 2004; Troxel et al., 2009). Further, unhappy couples are more likely to have conflict in their relationship, which is associated with discordant sleep patterns (Driver et al., 2012; Gunn et al., 2015). Discordant sleep patterns may also be a product of life-course transitions including retirement which can modify daily activities and routines, and sleep schedules of older couples (Andel et al., 2016). Discordance in bedtime and waking schedules may also result from different work schedules and become more pronounced after one partner transitions to retirement while the other continues to work. This discordance may lead to sleep disturbances (Chen, 2017). Sleep disturbances may also result from sharing a bed with a partner who has sleep disorders such as sleep apnea or insomnia (Parish & Lyng, 2003; Strawbridge et al., 2004). These sleep problems in couples may induce stress, which can further impair sleep, and affect mental and physiological health outcomes (Chen, 2017; Parish & Lyng, 2003; Strawbridge et al., 2004).

Sleep problems are not only a predictor of adverse health in individuals, they have also been associated with negative health outcomes in a partner (Shih et al., 2019). Current literature has established a positive effect of retirement on sleep problems; however, despite sleep being a shared, intimate biological process between couples (Gunn et al., 2015), to the best of our knowledge, there have not been any studies that have considered the interdependent nature of sleep in couples in the relationship between retirement and sleep problems. This limits our ability to better understand whether retirement congruently affects sleep in older couples. Examining associations between major life-course transitions, such as retirement, and sleep among couples can contribute to our understanding of the mechanisms by which relationships contribute to health outcomes at key stages of life.

Given this gap in the literature, the goal of this study was to build upon the interdependence theory and examine the impact of retirement on diagnosed sleep problems in older Dutch couples. To better understand how retirement might affect sleep from a couple's perspective, we considered seven hypotheses. Specifically, we hypothesized that within the context of couples living together, (a) retirement would be beneficial to an older worker's sleep, (b) partner's work status (an indication of different schedules), (c) partner's sleep problems (an indication of discordance), and (d) lower relationship quality would be interdependent factors associated with sleep problems. We further hypothesized that relationship characteristics including (e) partner's work status, (f) partner's sleep problems, and (g) lower relationship quality would each moderate the beneficial effect of retirement on sleep.

Research Design and Methods

Study Design and Sample

The Netherlands Interdisciplinary Demographic Institute Pension Panel Survey (NPPS) is a Dutch prospective cohort

study of employed older workers between the ages of 60–65 years and their (married or unmarried) partners (Henkens et al., 2017). This study used data from the first and second waves of the NPPS, conducted in 2015 and 2018. The NPPS has a stratified random design. First, a sample of organizations was drawn based on size and sector from the files of three large pension funds in the Netherlands (ABP, PfZW, and bpfBOUW), which represent approximately 49% of the wage-employed workers in the Netherlands. Second, older workers aged between 60 and 65 years (birth cohorts 1950–1955) who worked at least 12 h a week were randomly sampled from the selected organizations. At baseline, 6,793 out of 15,470 mailed questionnaires were completed and returned (net response rate of 44% and partner response rate of 81%). At the follow-up wave, 5,312 participants from the baseline wave responded (net response rate of 81% and 79% for partners). Of these individuals, who were all in the workforce at baseline, 46% retired between Waves 1 and 2.

Inclusion/Exclusion Criteria

Couples who lived together at both study waves were included in the study. Older workers who at baseline received a shortened version of the questionnaire that did not include all relevant study variables (*N* = 333) were excluded from the sample. Missing information on all four items used to measure marital quality led to the exclusion of 21 individuals. Missing data on all other explanatory variables were dealt with by single stochastic regression imputation (Enders, 2010). The final analytical sample consisted of 3,705 older couples. The sample size to test Hypothesis 2 (sleep disturbance) was smaller (*N* = 3,022), as we used data from the Wave 2 partner questionnaire, which has available data for only 83% of the cohabiting partners.

Measures

Dependent variable

Sleeping problems at baseline and follow-up were measured using a modified version of the Limiting Long-Standing Illnesses (LLSI) measure used in the Netherlands Labor Force Survey (Koppes et al., 2010). The LLSI asks respondents: "Do you have any of the following longstanding diseases (as diagnosed by a doctor)?" which is followed by a list of chronic health conditions including sleep problems. We created a dichotomized sleeping problems variable for which a confirmatory response to physician diagnoses of sleeping problems was coded 1.

Independent variables

Retirement was defined as the complete exit from the workforce, identified by whether the older worker worked any number of hours for pay. Transition into retirement between baseline and follow-up was ascertained by responses

("I work for pay" or "I am fully retired") to the question: "Which situation applies to you?" at Wave 2. The variable was dichotomized to reflect those working full-time, in bridge employment, part-time, or doing short-term work (0), and those who were retired (1). In the Netherlands, labor contracts or collective labor agreements have a mandatory retirement applied, and working contracts are usually terminated by default once the older worker has reached the statutory retirement age (Organisation for Economic Co-operation and Development [OECD], 2014; Oude Mulders, 2019). Due to pension reform, the retirement age has been gradually rising since 2013, from age 65 and will be 67 by 2024. Early retirement is not common, and the majority of older workers work up to the statutory pension age. This is in part due to reforms that have made early retirement undesirable through negative impacts on pension income, and alternative routes to prematurely exit the workforce, such as disability pension, have more restricted accessibility (Oude Mulders, 2019).

Variables capturing interdependent couple characteristics, such as discordance (work status of partner at Wave 2), disturbance (partner's sleep problems at Wave 2), and relationship quality at baseline, were also included in the analyses. In our context, *discordance* refers to having a working partner while the respondent is retired. The partner's labor market status at Wave 2 was assessed by the question: "Which of the following situations applies to your wife/husband/partner?" The responses, *works as an employee*, *self-employed*, *retired*, and *unemployed, disabled, home keeper*, were dichotomized to reflect whether the partner was *working (0)* or *not working (1)* as follows: works as an employee, and self-employed (1), retired, disabled, and home keeper (0).

Disturbance refers to how a partner's sleeping problems may disrupt one's sleep. Partner's sleeping problems were assessed as described above at Wave 2 only.

Relationship quality was assessed at baseline with four items selected from the Netherlands Kinship Panel Study (Rijken & Thomson, 2011). Older workers were asked to use a 5-point Likert-type scale to rate the extent to which they agreed with a series of items regarding their relationship: "The relationship with my wife/husband/partner makes me happy; My wife/husband/partner and I have a good relationship; The relationship with my wife/husband/partner is very stable; My wife/husband/partner and I do not have much conflict" (five answer categories: 1 *completely agree* to 5 *completely disagree*). Cronbach's alpha for the four-item relationship quality scale was 0.87. The scale was recoded to have higher scores reflect higher relationship quality and subsequently dichotomized with values 4 and 5 indicating high relationship quality (0), and values 1, 2, and 3 indicating lower relationship quality (1) (Eismann et al., 2017; Rijken & Thomson, 2011).

Control variables

We controlled for baseline demographic factors (age, gender [male and female]). We also controlled for

baseline chronic health conditions associated with poor sleep outcomes (Lima et al., 2012; Stein et al., 2008; Wallander et al., 2007) by creating a comorbidity variable defined as one or more of cardiovascular disease, diabetes, arthritis, respiratory disorders, and gastrointestinal disorders. These conditions have a bidirectional association with sleep and often cooccur with sleep problems (Aurora & Punjabi, 2013; Cho, 2020; Kasai et al., 2012; Lindam et al., 2016; Min et al., 2016; Taylor-Gjevre et al., 2011). Night work (yes/no) in the past 30 days was also controlled for in the analysis. Given that previous studies have shown a clear link between work-related stress and disturbed sleep (Myllyntausta et al., 2018; Vahtera et al., 2009), we controlled for variables that capture different aspects of stress in the workplace. Job pressure was measured using three items with responses on a 5-point Likert scale (from 1 = *completely agree* to 5 = *completely disagree*; Van Solinge, 2007). A sample item included the statement: "At times, there is so much work to be done that I'm unable to do everything." Cronbach's alpha for the three-item scale was 0.79, and the scale was recoded so that higher scores reflect higher job pressure. Participants were also asked whether they experienced (a) "stress" and (b) physical demands in their work, with response options on a 4-point Likert scale. These measures were adopted from the Study on Transitions in Employment, Ability and Motivation survey (Van Vegchel et al., 2004). All job-related variables were assessed at baseline.

Analytic Approach

Descriptive statistics were computed using Pearson correlations and means. To examine the effect of retirement and relationship characteristics on sleeping problems at Wave 2, we conducted logistic conditional change regression analyses and accounted for sleep problems at baseline (Aickin, 2009). Conditional change models allow for adjustments of initial (Wave 1) health status (in this case, sleep problems) that reduces concerns of confounding effects and provides more sound results (Aickin, 2009; Ferrarini et al., 2014; Patte et al., 2020). We regressed sleeping problems at Wave 2 against the baseline value, retirement status at follow-up, relationship characteristics, and the above-mentioned covariates. By ensuring that our analysis included the baseline-dependent variable measure, we were also able to control for the differences in baseline sleeping problems between retirees and workers.

We estimated three models. First, work–retirement status, demographic factors, and work-related variables were entered into the equation (Model 1). Relationship characteristics (partner's work status, partner's sleeping problems, and relationship quality) were then included in the model (Model 2). In Model 3, we further added three interaction terms between participant's retirement status and (a) partner's work status, (b) partner's sleeping problems, and (c) relationship quality. We tested for gender differences; however, as we did not find significant interactions, no further stratification was conducted by gender. For all blocks entered into the regression models, chi-square difference tests were used to assess improvements in model fit across hierarchical levels. Tests of statistical significance were two-sided with significance at $p \leq .05$. All analyses were performed using Stata15 MP Software (Stata, College Station, TX).

Results

Of the 3,726 participants working at baseline, 1,868 (50.1%) were retired by Wave 2. Table 1 presents the results of Pearson correlations, mean scores, and standard deviations for all the study explanatory variables. Sleep problems at Wave 2 were positively and significantly correlated with comorbidities, job pressure, physically demanding, stressful work, partner's sleep problems, and lower relationship quality ($p < .05$). Sleep problems were, however, negatively correlated with retirement ($p < .05$).

Table 2 presents the results of the logistic regression models for the association between retirement and sleep problems. Model 1 confirmed the hypotheses that relative to working, retirement was significantly associated with decreased odds of sleep problems (odds ratio [OR] = 0.61, 95% confidence interval [95% CI] = 0.47–0.79, $p < .001$). This association was not attenuated by the inclusion of relationship characteristics in Model 2. A working partner at Wave 2 was not associated with sleep problems; however, as posited by Hypothesis 3, having a partner with sleeping problems was associated with a 50% (95% CI = 1.06–2.13, $p < .05$) increased risk of sleeping problems among respondents. Hypothesis 4 was confirmed with results indicating that lower relationship quality was associated with an 83% (95% CI = 1.34–2.50, $p < .001$) increased risk of diagnosed sleeping problems for respondents.

In Model 3a–c, we tested for effect modification by including in the adjusted models, independent interactions between retirement and (a) partner's work status at Wave 2 (Hypothesis 5), (b) partner's sleep problems at Wave 2 (Hypothesis 6), and (c) relationship quality (Hypothesis 7). We found evidence of effect modification by relationship quality (OR = 1.87, 95% CI = 1.05–3.31, $p < .05$). As demonstrated in Figure 1, among those with high relationship quality, there was a notable decrease in the likelihood of reporting sleep problems after retirement; however, it remained unchanged among those with lower relationship quality. There were no significant interactions between retirement and partner's work status or partner's sleep problems.

Discussion

Our study is the first to date to assess the association between retirement and sleep problems within the context of older couples. Previous research has been focused on the impact of retirement on an individual's sleep; however, retirement does not take place in a social vacuum. Many older adults live with a partner and have interdependent lives; therefore,

Table 1. Pearson Product Moment Correlations, Means, and Standard Deviations for All Explanatory Variables (*N* = 3,705)

Variable	1	2	3	4	5	6	7	8	9	10	11	12	13
1. Sleep problems worker t2 (yes = 1)	—												
2. Sleep problems worker t1 (yes = 1)	0.43*	—											
3. Age t1	−0.06*	−0.04*	—										
4. Gender t1 (male = 1)	−0.09*	−0.11*	0.05*	—									
5. Comorbidity t1 (yes = 1)	0.10*	0.16*	0.03	−0.02	—								
6. Job pressure t1	0.10*	0.20*	−0.12*	−0.08*	0.13*	—							
7. Night shiftwork t1 (yes = 1)	0.03	0.03	−0.04*	−0.03	0.01	−0.01	—						
8. Physically demanding work t1	0.08*	0.09*	−0.08*	−0.02	0.13*	0.23*	0.14*	—					
9. Stressful work t1	0.09*	0.16*	−0.12*	0.01	0.07*	0.57*	0.02	0.15*	—				
10. Retired between t1t2 (yes = 1)	−0.06*	0.02	0.51*	−0.01	0.08*	0.04*	−0.05*	0.03	0.01	—			
11. Partner at work t2 (yes = 1)	0.02	−0.01	−0.21*	0.17*	−0.03	0	0.02	−0.04*	0	−0.22*	—		
12. Sleep problems partner t2 (yes = 1)[a]	0.04*	0.02	0.03	0.13*	0	0.03	0.01	0.02	0.03	−0.01	−0.01	—	
13. Low relationship quality t1 (yes = 1)	0.07*	0.05*	0.02	−0.02	0.05*	0.05*	−0.01	−0.01	0	−0.02	0	0	—
Mean	0.12	0.14	62	0.62	0.58	2.97	0.04	1.92	2.67	0.5	0.37	0.13	0.15
SD	0.32	0.34	1.57	0.49	0.49	0.85	0.2	0.99	0.87	0.5	0.48	0.34	0.35

[a]*N* = 3,074.

*p < .05.

examining retirement and associated health outcomes from an individual perspective provides only a partial understanding of the dynamics between retirement and health. Similarly, most research has regarded sleep as an individual process, and treatment therapies for adverse sleep outcomes predominantly focus on the individual, despite evidence that sleep is symbiotic in couples (Drews et al., 2017; Meadows et al., 2009; Richter et al., 2016). Building upon the interdependent theory and prior work that examined the relationship between sleep and retirement within the context of an individual (Hagen et al., 2016; Marquiáe et al., 2012; Myllyntausta et al., 2018; Myllyntausta & Stenholm, 2018; Vahtera et al., 2009), we take into account the moderating effects of having a partner who still works (discordance/different schedules), a partner's sleep problems (sleep disturbances), and relationship quality. Our findings supported several of our hypotheses with evidence that within the context of cohabiting couples, older workers' sleep profits from retirement, a partner's sleep problems are associated with sleep problems, and relationship quality moderates the association between retirement and sleep problems. Though previous studies have reported gender differences in the prevalence of sleeping problems (Quan et al., 2016; van de Straat & Bracke, 2015), our findings suggest that the impact of retirement on sleeping problems, as well as the impact of relationship characteristics on the retirement–sleep relationship, is not different for older Dutch male and female workers.

The finding of an association between retirement and decreased sleep problems is corroborated by several previous studies (Hagen et al., 2016; Marquiáe et al., 2012; Myllyntausta et al., 2018; Myllyntausta & Stenholm, 2018; Vahtera et al., 2009). One occupational cohort study examined changes in sleep before and after retirement over a 15-year follow-up period and concluded that older French utility workers had a 26% lower odds of sleep disturbance postretirement (Vahtera et al., 2009). Another French study examined the effects of retirement on perceived sleep problems in a cohort of workers over a 10-year period and found that retirement was associated with decreased sleep problems (Marquiáe et al., 2012). A third cohort study of U.S. participants reported that transitioning to retirement affected sleep due to changes in the sleep schedule such as going to bed later and waking up later. In addition, participants reported increased sleep duration postretirement (Hagen et al., 2016). The results of these studies were supported by Myllyntausta et al., who examined the impact of retirement transitions on sleep in Finnish older adults in a series of studies that spanned 4 years. Their findings showed an increase in sleep duration (Myllyntausta et al., 2017) and a decrease in the prevalence of sleep complaints that included premature awakenings and nonrestorative sleep after retirement (risk ratio [RR] = 0.89, 95% CI = 0.85–0.94; Myllyntausta et al., 2018).

The association between relationship quality and sleep problems we observed has also been previously reported in the literature (Gunn et al., 2015; Hasler & Troxel, 2010; Strawbridge et al., 2004; Troxel et al., 2009). Several studies have indicated that relationship quality affects sleep through

Table 2. Logistic Regression Results for the Association of Sleep Problems and Retirement at Wave 2

Explanatory variables	Model 1 OR (95% CI)	Model 2 OR (95% CI)	Models 3: Interaction		
			A: Discordance OR (95% CI)	B: Disturbance OR (95% CI)	C: Relationship quality OR (95% CI)
Sleeping problems t1 (yes = 1)	11.41 (8.97–14.52)***	12.32 (9.44–16.09)***	11.43 (8.99–14.55)***	12.32 (9.45–16.06)***	11.44 (8.99–14.57)***
Gender t1 (male = 1)	0.80 (0.61–1.05)	0.80 (0.58–1.09)	0.76 (0.58–1.01)	0.84 (0.62–1.14)	0.80 (0.61–1.05)
Age t1	0.98 (0.90–1.07)	0.96 (0.87–1.05)	0.99 (0.91–1.08)	0.95 (0.87–1.05)	0.98 (0.90–1.06)
Comorbidity t1 (yes = 1)	1.41 (1.10–1.81)**	1.42 (1.08–1.87)*	1.41 (1.10–1.81)**	1.47 (1.12–1.93)**	1.39 (1.09–1.78)**
Job characteristics at t1					
Job pressure	0.96 (0.81–1.13)	0.95 (0.79–1.14)	0.96 (0.81–1.13)	0.97 (0.81–1.16)	0.95 (0.80–1.12)
Night work (yes = 1)	1.14 (0.68–1.90)	1.39 (0.81–2.40)	1.14 (0.68–1.91)	1.39 (0.81–2.40)	1.16 (0.69–1.94)
Physically demanding work	1.14 (1.01–1.28)*	1.17 (1.02–1.33)*	1.14 (1.02–1.29)*	1.15 (1.00–1.31)*	1.15 (1.02–1.30)*
Stressful work	1.12 (0.96–1.31)	1.08 (0.90–1.28)	1.12 (0.96–1.32)	1.07 (0.90–1.27)	1.13 (0.96–1.32)
Retired (yes = 1)	0.61 (0.47–0.79)***	0.64 (0.48–0.86)**	0.63 (0.46–0.86)**	0.60 (0.44–0.82)***	0.55 (0.41–0.73)***
Relationship characteristics					
Partner at work at t2		1.27 (0.97–1.65)	1.24 (0.91–1.68)		
Partner has diagnosed sleeping problems at t2		1.50 (1.06–2.13)*		1.42 (0.91–2.23)	
Lower relationship quality at t1		1.83 (1.34–2.50)***			1.16 (0.79–1.71)
Interactions					
Partner at work at t2 by retirement			0.97 (0.60–1.57)		
Partner has sleep problems at t2 by retirement				1.09 (0.55–2.19)	
Lower relationship quality at t1 by retirement					1.87 (1.05–3.31)*
N	3,705	3,074	3,705	3,074	3,705
Log likelihood	−1,083.50	−882.19	−1,082.15	−890.41	−1,077.18
−2 log likelihood	2,167.01	1,764.38	2,164.30	1,780.82	2,154.36
Δdf		3	2	2	2
Δ −2 log likelihood (Δχ²)		402.63***	2.71	386.19***	12.65***
Pseudo R^2	0.196	0.218	0.197	0.211	0.201

Notes: OR = odd ratio; CI = confidence interval. All models control for sector.
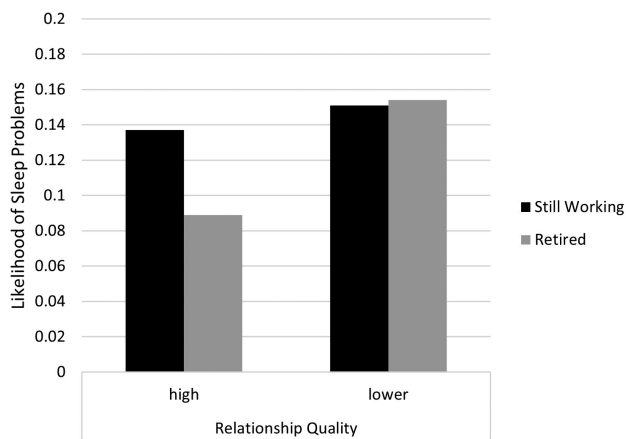
*$p < .05$, **$p < .01$, ***$p < .001$.

Figure 1. Moderating role of relationship quality on the association between retirement and older adults' sleeping problems at Wave 2.

various mechanisms (Gunn et al., 2015; Troxel et al., 2009) with evidence of greater sleep problems in unhappy couples (Hasler & Troxel, 2010; Strawbridge et al., 2004; Troxel et al., 2009). There is further evidence that through interdependence, higher relationship quality provides a sense of security and belonging that reduces stress and anxiety and is more likely to encourage health-promoting behavior, factors which are all linked to reduced sleep problems (Troxel et al., 2007). The association between relationship quality and sleep is however bidirectional, and studies have found that a partner's sleep problems are associated with higher levels of marital unhappiness, even after controlling for one's own sleep problems (Strawbridge et al., 2004; Troxel et al., 2009). Unhappy couples in turn report more conflict in their relationship (Driver et al., 2012), which is linked to discordant sleep patterns (Gunn et al., 2015).

Discordance in bedtime and waking schedules may result from different work schedules and become more pronounced after one partner transitions to retirement, while the other continues to work (Parish & Lyng, 2003; Strawbridge et al., 2004). While we found that a partner's sleep problems were associated with increased odds of sleep problems in the retiree, we did not find significant associations between partners who are still working and sleep problems. This may be in part due to the fact that we were not able to determine whether the differences in employment status translated into differences in bedtime and waking routines. Though previous literature has indicated that life transitions such as retirement bring along changes to daily routines, schedules, and activities, which may result in asynchronous sleep patterns in partners (Andel et al., 2016; Chen, 2017), data on daily routines and bedtime schedules before and after retirement were not available for use in our study. This additional information may have allowed for more robust findings.

Our findings should be taken in light of several limitations. First, our study used a single-item sleep measure in lieu of more established and validated measures such as the Pittsburgh Sleep Quality Index or the Karolinska Sleep Questionnaire.

Our sleep variable, though based on physician-diagnosed conditions, does not specifically measure sleep quality, severity, or duration, nor does it indicate a specific diagnosis. Despite finding a 50% and 83% increased risk of sleeping problems among respondents with a partner with sleeping problems and lower relationship quality, respectively, the correlations in Table 1 produced modest associations. This may partially be due to our sleep measure. A more detailed index for sleep problems may have provided more robust results. These findings should therefore be interpreted with caution. Second, there are different types of sleeping problems with differing consequences. For example, sleep apnea and insomnia are likely to have different risk factors and subsequent effects on health and well-being. It is therefore quite possible that retirement may affect them differently. We were unable to assess differences in specific sleep problems in our study. Third, partner sleep measures were only available for Wave 2, and there was no information collected regarding bed sharing or sleep schedules. Fourth, our response rate of 44% was low and may have introduced nonresponse bias to our study. This nonresponse bias may underestimate the associations examined, as previous research has indicated that individuals with poor health, health behaviors, and life experiences are less likely to participate in surveys (Cheung et al., 2017). The response rates of partners, however, were high. An additional limitation to our study is that we did not account for additional health conditions such as pain or depression, whose associations with sleep problems are well established. These variables were not available in the data set for use in the current study. Finally, we did not have information on all partner measures in both waves. Despite these shortcomings, our findings were robust and strengthened by the use of a large data set of older Dutch adults approaching or transitioning into retirement.

Conclusions

Through our research, we demonstrated that relationship characteristics are associated with sleep problems, and despite the observed benefits of retirement on sleep, older workers with lower relationship quality do not benefit from retirement. These findings potentially have implications for practice and support the notion that practitioners should also consider the interdependent effects of bed sharing for patients with sleep problems. More research is needed to understand the impact of retirement on different types of sleep problems and subsequent health consequences on bed-sharing older adults. Future research should focus on validated sleep measures, account for additional relevant factors such as pain and depressive symptoms, and further explore changes in relationship quality with retirement, focusing on how all these factors may affect quality, duration of sleep, and severity of sleep problems. Stress factors outside of the workplace, which may affect retirees, should also be considered. Such research may provide valuable insights for the management and treatment of sleep problems and for the public health of aging communities.

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Conflict of Interest

None declared.

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