



# A 'Balanced' Life: Work-Life Balance and Sickness Absence in Four Nordic Countries

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## Abstract

**Background:** Little attention has been given to the relationship between work-life balance and sickness absence.

**Objective:** To investigate the association between poor work-life balance and sickness absence in 4 Nordic welfare states.

**Methods:** Multivariable logistic regression analysis was performed on pooled cross-sectional data of workers aged 15–65 years from Denmark, Finland, Sweden, and Norway (n=4186) obtained from the 2010 European Working Conditions Survey (EWCS). Poor work-life balance was defined based on the fit between working hours and family or social commitments outside work. Self-reported sickness absence was measured as absence for  $\geq 7$  days from work for health reasons.

**Results:** Poor work-life balance was associated with elevated odds (OR 1.38, 95% CI 1.06 to 1.80) of self-reported sickness absence and more health problems in the 4 Nordic countries, even after adjusting for several important confounding factors. Work-related characteristics, *ie*, no determination over schedule (OR 1.26, 95% CI 1.04 to 1.53), and job insecurity (OR 1.56, 95% CI 1.21 to 2.02) increased the likelihood of sickness absence, and household characteristics, *ie*, cohabitation status (OR 0.75, 95% CI 0.58 to 0.96) reduced this likelihood. The associations were non-significant when performed separately for women and men.

**Conclusion:** Sickness absence is predicted by poor work-life balance. Findings suggest the need for implementation of measures that prevent employee difficulties in combining work and family life.

**Keywords:** Sick leave; Workplace; Family; Denmark; Finland; Sweden; Health planning; Norway; Scandinavian and Nordic countries

## Introduction

Sickness absence is a complex phenomenon influenced by personal, social, demographic and organizational factors<sup>1</sup> including work factors within and outside the work environment, and family responsibilities. Changes in the work environment within the past decades have led

to steady increases in work intensity and job demands.<sup>2</sup> Coupled with the increase in dual-career couples and single-parent households, and the associated decrease in traditional, single-earner households imply that responsibilities for work, household, and childcare are no longer limited to traditional gender roles. Employees increasingly find themselves struggling

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to balance the competing demands of work and family life; the resulting pressures have increased interest in achieving work-life balance, both for women as wage earners/home carers, and greater involvement in family responsibilities for men. The term “work-life” is used in this paper hereon as it is more comprehensive than the term work-family; however, the terms work-life and work-family are used according to the citations of the referenced scholars. The underlying mechanism linking poor work-life balance with absenteeism remains unclear; however, several studies propose reasons besides a person's health or disease status, *eg*, absence as a coping strategy during stressful roles at work and at home.<sup>3</sup> While the relation between physical and psychosocial work conditions with sickness absence is well-documented,<sup>4,5</sup> evidence of the combined effect of work and non-work domains on sickness absence are however less researched.

Work-life balance is a concept still lacking consensus in its definition. Proposed definitions include “a state wherein an individual's work and family lives experience little conflict while enjoying substantial facilitation.”<sup>6</sup> Defined as “the accomplishment of role-related expectations that are negotiated and shared between an individual and his/her role-related partners in the work and family domains,”<sup>7</sup> work-life balance is suggested as being attainable in spite of short-term experiences of work-family conflict, and shifts the construct from the psychological into the social domain, reflecting the dynamic and complex realities of daily work and family life.<sup>7</sup> Consequences of poor work-life balance (or the absence thereof), such as burnout,<sup>8</sup> and depression,<sup>9</sup> have been reported, fewer still have focused on the association with sickness absence.<sup>6,10-12</sup> Differences in work-life balance across countries are often due to variations in the implementation of policies that reconcile work and family

life,<sup>13</sup> including family-friendly policies, *eg*, childcare services, extended and flexible parental leave schemes, and generous support to single parent;<sup>13</sup> the best overall work-life balance being reported among Nordic men and women.<sup>14</sup>

### Antecedents of Work-life Balance

Work and family characteristics are to be distinct domains of a person's life, and conceptualized as antecedents of work-family balance since they impact role performance and subsequently impact role pressures.<sup>15</sup> As such, achieving a better understanding of the dynamics of good work-life balance requires a description of the multiple possible antecedents or predictors of work-life balance,<sup>16</sup> as this may facilitate the implementation of organizational policies for improved work-life balance.<sup>15</sup> These antecedents can be classified into three categories: work domain variables, non-work or household domain variables, and individual and demographic variables.

Work domain variables consider the effect of job and workplace or work-related characteristics and include type of contract, which is a reflection of the extent of certainty of continuing work; fixed-term or short contracts increase the risk of unemployment and job insecurity,<sup>17</sup> and may result in poor work-life balance. Job tenure (the length of time [in years] a worker has been in the current workplace), is known to increase job security, and the likelihood of good work-life balance.<sup>18</sup> Weekly working hours (excessive work demands assessed by intensive or long working hours of more than 48 hours a week), is reported to be the most consistent predictor of poor work-life balance,<sup>19</sup> and is linked with psychological ill-health, and adverse physical effects such as occupational injuries and accidents, musculoskeletal disorders and unhealthy behaviors.<sup>20</sup> Determination over schedule (practices that reflect the erosion

of the power of organized labor and employer-determined employment relations) has been linked with constant variations in work schedule, which predisposes employees to work-life balance.<sup>21</sup> Job insecurity, which reflects concerns about future job loss, is regarded among the most important sources of work stress. Job insecurity is suggested to affect work-life balance through employees' fear of losing their jobs pressurizing them to perform in excess of explicit work demands. Job insecurity may also create anxiety about uncertain income and working hours.<sup>22</sup> Company size is an important predictor of the presence of work-life balance policies in the workplace. A company's size affects the extent and type of work-life balance policies an organization can provide; large companies tend to offer longer and paid parental leave and flexible working hours.<sup>23</sup>

Household or non-work domain variables characteristics include cohabitation status, *ie*, having a spouse or partner in the household generates responsibilities that can create competing demands for work- and family-related roles.<sup>24</sup> However, some studies find higher levels of interference among married and partnered individuals.<sup>25</sup> Childcare studies have shown that employees with multiple roles of childcare and job responsibilities tend to have reduced job satisfaction with increased work-family life interference.<sup>26</sup> Contributing to household earnings is important to work-family life balance, given that employees in low-wage jobs have limited control over their work hours and schedules.<sup>27</sup> Low-income employees are reported to be predisposed to poor work-family life balance as a result of reduced access to leave, income replacement, greater care-giving responsibilities and inability to benefit from childcare services.<sup>28</sup>

Work-life balance can be investigated over three dimensions: time balance (*ie*, equal time devoted), involvement balance

(*ie*, equal psychological effort and presence invested), and satisfaction balance (*ie*, equal satisfaction expressed across work and family roles).<sup>29</sup> Large-scale survey data like the EWCS allows two main contemporary approaches to assessing work-life balance: (1) the overall appraisal approach (an individual's general assessment of their overall life situation), which measures work-life balance using general questions, *eg*, "all in all, how successful do you feel in balancing your work and personal/family life?";<sup>30</sup> and (2) components approach that uses work-life enrichment and work-life conflict scales as a construct consisting of multiple facets, which antecede balance, expressing individuals' perception of how well they meet shared and negotiated role-related responsibilities.<sup>7</sup> Using the overall appraisal approach, the present study examined (1) the association between a poor work-life balance and sickness absence in four Nordic countries; and (2) possible sex-differences in this association.

## Materials and Methods

### Data and Study Sample

Data from the 2010 European Working Conditions Survey (EWCS) were used in this study. The fifth in the series of periodical surveys conducted by Eurofound, this survey monitored working conditions, demographics, household characteristics, socioeconomic indicators and work-related health in all 27 EU member countries, plus 7 other countries in Europe. Briefly described, multistage, stratified random sampling was used to retrieve a sample from the working population aged  $\geq 15$  years within these countries. Analyses in the present study were conducted on a pooled sub-sample of 4186 participants in Denmark, Finland, Norway, and Sweden. The data were anonymized directly dur-

ing the process of data collection. Detailed survey design and sampling are reported elsewhere.<sup>31</sup>

### Measures

Sickness absence, the outcome of interest, was assessed by the annual number of self-reported sickness absence days, and derived from the question: “Over the past 12 months, how many days in total were you absent from work for reasons of health problems?” Responses were dichotomized by grouping absence from work of seven days or more due to illness to indicate sickness absence. Self-reported sickness absence measure has been shown to be a useful and comparable alternative to registers-based sickness absence when data are unavailable, which is considered most accurate<sup>12</sup> with good agreement between these measures.

Work-life balance, the primary exposure of interest, was assessed by a single question: “In general, do your working hours fit in with your family or social commitments outside work?” Respondents’ rating of their work-life fit was dichotomized as good (“very well,” and “well”), and poor (“not very well,” and “not at all well”).

Other exposures included (1) work-related characteristics, measured with indicators that capture job flexibility and time commitment: (i) type of contract (temporary, and permanent); (ii) job tenure (years at the current workplace), measured as work experience (<1 year, 1–4 years and ≥5 years); (iii) weekly working hours (non-intensive, *ie*, <48 hrs, and intensive, *ie*, working ≥48 hrs and in free time); and (iv) determination over schedule (“yes,” *ie*, working time arrangements set by employee, and “no,” *ie*, working time arrangements set by the company, with no possibility for changes); (v) work intensity was measured using two questions: “Does your job involve working: at very high speed?, and working to tight deadlines?” A dichotomized variable (responses of “yes” to one or both questions, and “no”) was created. The Cronbach’s  $\alpha$  was 0.69. Work intensity manifests itself either as longer hours spent at work or by exerting greater work effort during a working day or given period of time, and comes with increased pressure to complete more tasks within one working day; (vi) job insecurity, measured using the question: “How much do you agree or disagree with statements describing some aspects of your job: I might lose my job in 6 months?” (“yes,” and “no”); and (vii) training paid for by employee (“yes,” and “no”).

(2) Household characteristics were measured with: (i) cohabitation status (“yes,” and “no”); (ii) childcare (“yes,” and “no”); (iii) contribution to household earnings (sole earner, dual earner, all equally); (iv) income, based on employees’ net monthly earnings from main job, categorized by cut-off points of 25<sup>th</sup>, 50<sup>th</sup>, and 75<sup>th</sup> percentiles; values above the 75<sup>th</sup> percentile were the reference group.

(3) Demographic characteristics includ-

### TAKE-HOME MESSAGE

- Poor work-life balance is a significant predictor of self-reported sickness absence in the four Nordic countries.
- Work-related characteristics accounted for two predictors (“determination of work schedule by employer,” and job insecurity) of sickness absence.
- The household characteristic (cohabitation status) was negatively associated with sickness absence.
- Women were more likely than men to report sickness absence.
- Implementation of intervention measures that empower workers negotiate reasonable and acceptable role-related expectations are needed to facilitate employees combining their roles in the work and family domains.

ed: (i) age group (corresponding with three main periods in a working career: lift-off (15–29 years), a mid-career period (30–49 years), and the end-of-career period (50–65 years); (ii) sex (female, and male); (iii) ethnicity, assessed by the question: “Were you and both of your parents born in this country?” (“yes,” and “no”); respondents’ who reported country of birth in a country outside Denmark, Finland, Norway, and Sweden, with two non-Nordic-born parents were classified as migrants.

(4) Socio-economic characteristics included: (i) educational attainment, measured by the highest level completed according to International Standard Classification of Education [ISCED-97] standard (no education/primary, secondary, post-secondary, and tertiary education); (ii) occupation was measured by three variables: (a) occupational class, based on the International Standard Classification of Occupations [ISCO], was categorized into three groups to enable sufficient respondents in the different categories as legislators, senior officials and managers, professionals/technicians and associate professionals, clerks/service workers, shop and market sales workers, skilled agricultural and fishery workers, craft and related trades workers, plant and machine operators and assemblers, and elementary occupations); (b) labor market branch, using the standard industrial classification; NACE (agriculture, forestry, fishing/industry/services/public administration and defence/other services); and (c) company sector (private, public or other sector).

(5) Health status and psychosocial work conditions examined the work effect on health status using two measures of psychosocial problems: (a) stress, measured using the question: “Does work affect your health or not?” (“yes,” and “no”); and (b) psychosocial distress, defined as having one or more of the following symptoms: general fatigue, sleep problems, anxiety,

and irritability (Cronbach's  $\alpha$  of 0.6). Job satisfaction, measured with a dichotomized variable: satisfaction (“very satisfied,” and “satisfied”), and low satisfaction (“not very satisfied,” and “not satisfied”) derived from a question regarding satisfaction with the working conditions in one's main paid job.

### Statistical Analysis

Analyses were conducted on a pooled dataset of the four countries to create large sample of indicators. Initially, Pearson  $\chi^2$  test was performed to identify differences in the distribution of sickness absence and exposure variables. A p value  $<0.05$  was considered statistically significance. Odds ratios (ORs) with accompanying confidence intervals (95% CIs) were computed for univariate, and multivariate logistic regression analyses (total samples, and separately for women and men). Predictors were entered into the multivariate analyses in six models to tease out the independent effects of each group of variables and ease the interpretation of results: Model 1: work-life balance only; Model 2: work-life balance + work-related factors; Model 3: work-life balance + household characteristics; Model 4: work-life balance + work-related factors, and household characteristics; Model 5: work-life balance + work-related factors, household characteristics + sex, age, occupational class, education attainment, labor market sector, and company sector. Non-significant confounders were excluded from the multivariate analysis. All analyses were performed using the Stata 12.0 statistical software (STATA, College Station, TX).

## Results

### Distribution of the Sample Characteristics

Table 1 presents a description of the study sample. A higher proportion of workers

**Table 1:** Distribution and univariate associations of sample characteristics with sickness absence

Characteristics	Sickness absence n (%)		p value	Univariate association OR (95% CI)
	No	Yes		
<b>Work-family balance</b>				
Poor	333 (10)	119 (13)	0.030	1.28 (1.02 to 1.60)
Good	2919 (90)	815 (87)		1
<b>Work-related characteristics</b>				
<i>Type of contract</i>				
Non-permanent contract	801 (25)	154 (16)	< 0.001	0.60 (0.50 to 0.73)
Permanent	2451 (75)	780 (84)		1
<i>Job tenure (years at the current workplace)</i>				
<1 year	282 (9)	56 (6)	0.027	0.66 (0.49 to 0.89)
1–4 years	990 (30)	285 (31)		0.96 (0.82 to 1.13)
≥5 years	1980 (61)	593 (63)		1
<i>Weekly working hours</i>				
Intensive ( <i>ie</i> , working ≥48 hrs and in free time)	365 (11)	60 (6)	<0.001	0.54 (0.41 to 0.72)
Non-intensive ( <i>ie</i> , <48 hrs)	2887 (89)	874 (94)		1
<i>Determination over schedule</i>				
No (schedule set by company)	2004 (62)	460 (49)	< 0.001	1.65 (1.43 to 1.92)
Yes (schedule set by employee)	1248 (38)	474 (51)		1
<i>Job insecurity</i>				
Yes	443 (14)	155 (16)	0.022	1.26 (1.03 to 1.54)
No	2809 (86)	779 (84)		1
<i>Work intensity</i>				
Yes	2681 (82)	787 (84)	0.194	1.14 (0.93 to 1.39)
No	571 (18)	147 (16)		1
<i>Company size</i>				
Worked alone	218 (7)	48 (5)	0.033	1
2–4 workers	295 (9)	75 (8)		1.15 (0.77 to 1.73)
5–9 workers	403 (13)	119 (13)		1.34 (0.92 to 1.95)

*Continued*

**Table 1:** Distribution and univariate associations of sample characteristics with sickness absence

Characteristics	Sickness absence n (%)		p value	Univariate association OR (95% CI)
	No	Yes		
10–49 workers	1139 (36)	380 (41)		1.51 (1.09 to 2.11)
50–499 workers	910 (3)	243 (26)		1.21 (0.86 to 1.71)
500+ workers	253 (8)	63 (7)		1.13 (0.74 to 1.72)
<i>Training paid</i>				
No	2187 (67)	619 (66)	0.576	0.96 (0.82 to 1.12)
Yes	1065 (33)	315 (34)		1
<i>Job satisfaction</i>				
Low satisfaction	223 (7)	161 (17)	< 0.001	2.83 (2.28 to 3.52)
Satisfaction	3029 (93)	773 (83)		1
<b>Household characteristics</b>				
<i>Cohabitation status</i>				
Yes	2184 (85)	137 (19)	0.009	0.75 (0.61 to 0.93)
No	383 (15)	587 (81)		1
<i>Childcare</i>				
Yes	1908 (59)	588 (63)	0.026	1.19 (1.02 to 1.38)
No	1344 (41)	348 (37)		1
<i>Contribution to household earnings</i>				
Sole earner	2057 (63)	587 (63)	0.863	0.93 (0.71 to 1.21)
Dual earner	931 (29)	266 (28)		0.93 (0.70 to 1.24)
All equally	262 (8)	81 (9)		1
<i>Income</i>				
Lowest	776 (24)	268 (29)	< 0.001	1.65 (1.33 to 2.04)
Lower	756 (23)	277 (30)		1.75 (1.42 to 2.16)
Higher	855 (26)	208 (22)		1.16 (0.93 to 1.45)
Highest	865 (27)	181 (19)		1

*Continued*

**Table 1:** Distribution and univariate associations of sample characteristics with sickness absence

Characteristics	Sickness absence n (%)		p value	Univariate association OR (95% CI)
	No	Yes		
<b>Demographic characteristics</b>				
<i>Sex of respondent</i>				
Female	1633 (50)	570 (61)	< 0.001	1.55 (1.34 to 1.80)
Male	1619 (50)	364 (39)		1
<i>Age of respondent</i>				
15–29	492 (15)	111 (12)	0.033	0.74 (0.58 to 0.94)
30–49	1487 (47)	448 (49)		0.99 (0.84 to 1.16)
50–65	1186 (38)	360 (39)		1
<i>Ethnicity</i>				
Foreign-born	385 (12)	119 (13)	0.455	1.08 (0.87 to 1.350)
Native	2867 (88)	815 (87)		1
<b>Socio-economic characteristics</b>				
<i>Education of respondent (ISCED)</i>				
Primary or less education	82 (3)	34 (4)	0.064	1.59 (1.05 to 2.41)
Secondary education	1508 (46)	454 (49)		1.15 (0.99 to 1.35)
Post-secondary education	218 (7)	69 (7)		1.21 (0.90 to 1.63)
Tertiary education	1444 (44)	377 (40)		1
<i>Occupational class (ISCO)</i>				
Legislators, senior officials, managers, professionals	1219 (38)	260 (28)	< 0.001	1
Technicians, associate professionals, clerks	838 (26)	234 (25)		1.31 (1.07 to 1.59)
Service workers <sup>†</sup>	1183 (36)	439 (47)		1.74 (1.46 to 2.07)
<i>Labor market sector</i>				
Agriculture, forestry, fishing	73 (3)	15 (2)	0.002	0.59 (0.34 to 1.04)
Industry	647 (20)	175 (19)		0.78 (0.64 to 0.95)
Services	1159 (36)	288 (31)		0.72 (0.60 to 0.85)
Public administration and defence	196 (6)	58 (6)		0.85 (0.62 to 1.17)
Other services	1127 (35)	391 (42)		1



*Continued*

**Table 1:** Distribution and univariate associations of sample characteristics with sickness absence

Characteristics	Sickness absence n (%)		p value	Univariate association OR (95% CI)
	No	Yes		
<i>Company sector</i>				
Private	1853 (57)	426 (46)		0.60 (0.52 to 0.70)
Public	1216 (38)	464 (50)	< 0.001	1
Other sector	174 (5)	42 (4)		0.63 (0.44 to 0.90)
<b>Health status and psychosocial work conditions</b>				
<i>Stress</i>				
No	2506 (77)	577 (62)	< 0.001	1
Yes	746 (23)	357 (38)		2.08 (1.78 to 2.43)
<i>Psychosocial distress</i>				
No	2000 (62)	387 (41)	< 0.001	1
Yes	1252 (38)	547 (59)		2.26 (1.95 to 2.62)

<sup>†</sup>Service workers shop and market sales workers/Skilled agricultural and fishery workers/Craft and related trades workers/Plant and machine operators and assemblers/Elementary occupations  
OR: Odds ratio; CI: Confidence interval

with good work-family balance, “non-intensive working hours,” who determined their work schedule, who did not perceive job insecurity, job tenure of  $\geq 5$  years at the current workplace, older workers, and had secondary education reported poor sickness absence. In contrast, workers with non-permanent contract, and lacking of paid training opportunities reported significantly higher proportions of sickness absence. Additionally, a significant majority of respondents that reported sickness absence were not cohabiting, responsible for childcare, and in lower income quartiles, women, older (50–65 years) workers, “service” employees, in “Other services” labor market sector, and in “public-owned organizations.” “Work intensity,” “training paid by employer,” “contribution to household earnings,” and “ethnicity” were non-significant in the univariate analysis, and thus excluded from the multivariate

analysis.

**Association between a Poor Work-life Balance and Sickness Absence**

Table 2 presents results from multivariate logistic regression analyses. Poor work-family balance (crude OR 1.28, 95% CI 1.02 to 1.60) was associated with increased odds of sickness absence. Inclusion of work-related factors in Model 2 increased the odds (OR 1.31, 95% CI 1.04 to 1.66), and addition of household characteristics only in Model 3 further increased the odds (OR 1.33, 95% CI 1.03 to 1.71). Simultaneous inclusion of work-related factors, and household characteristics in Model 4 further increased the odds of sickness absence (OR 1.36, 95% CI 1.05 to 1.77), and finally Model 5 containing work-related factors, household characteristics, demographic and socio-economic characteristics increased even further the odds of sickness

**Table 2:** Odds ratios and 95% CIs for the association between work-family balance and sickness absence in the European Working Conditions Survey

Characteristics	OR (95% CI)			
	Model 1 <sup>a</sup>	Model 2 <sup>b</sup>	Model 3 <sup>c</sup>	Model 5 <sup>e</sup>
<b>Sickness absence</b>				
<i>Work-family balance</i>				
Poor work-family balance	1.28 (1.02 to 1.60)	1.31 (1.04 to 1.66)	1.33 (1.03 to 1.71)	1.38 (1.06 to 1.80)
Good work-family balance	1	1	1	1
<b>Work-related characteristics</b>				
<i>Type of contract</i>				
Non-permanent contract		0.61 (0.49 to 0.77)		0.58 (0.45 to 0.76)
Permanent	1	1	1	1
<i>Job tenure (years at the current workplace)</i>				
<1 year		0.65 (0.47 to 0.90)		0.54 (0.37 to 0.79)
1–4 years		0.95 (0.81 to 1.12)		0.94 (0.77 to 1.13)
≥5 years	1	1	1	1
<i>Weekly working hours</i>				
Intensive (ie, working ≥48 hrs)		0.65 (0.48 to 0.87)		0.67 (0.48 to 0.95)
Non-intensive (ie, <48 hrs)	1	1	1	1
<i>Determination over schedule</i>				
No (schedule set by company)		1.52 (1.31 to 1.78)		1.45 (1.21 to 1.73)
Yes (schedule set by employee)	1	1	1	1
<i>Job insecurity</i>				
Yes		1.46 (1.18 to 1.80)		1.54 (1.20 to 1.96)
No	1	1	1	1

*Continued*

**Table 2:** Odds ratios and 95% CIs for the association between work-family balance and sickness absence in the European Working Conditions Survey

Characteristics	OR (95% CI)				
	Model 1 <sup>a</sup>	Model 2 <sup>b</sup>	Model 3 <sup>c</sup>	Model 4 <sup>d</sup>	Model 5 <sup>e</sup>
<b>Company size</b>					
Worked alone	1	1	1	1	1
2–4 workers		0.82 (0.54 to 1.24)		0.65 (0.39 to 1.08)	0.59 (0.35 to 1.01)
5–9 workers		0.84 (0.56 to 1.26)		0.80 (0.50 to 1.27)	0.72 (0.44 to 1.18)
10–49 workers		0.92 (0.64 to 1.33)		0.90 (0.59 to 1.38)	0.79 (0.50 to 1.25)
50–499 workers		0.75 (0.51 to 1.09)		0.75 (0.49 to 1.17)	0.68 (0.42 to 1.09)
500+ workers		0.74 (0.47 to 1.16)		0.86 (0.52 to 1.43)	0.78 (0.46 to 1.35)
<b>Household characteristics</b>					
<b>Cohabitation status</b>					
Yes			0.78 (0.62 to 0.97)	0.72 (0.57 to 0.91)	0.75 (0.58 to 0.96)
No			1	1	1
<b>Childcare</b>					
Yes			1.24 (1.03 to 1.48)	1.19 (0.99 to 1.44)	1.08 (0.88 to 1.32)
No			1	1	1
<b>Contribution to household earnings</b>					
Sole earner			0.89 (0.67 to 1.18)	0.88 (0.66 to 1.18)	0.94 (0.70 to 1.26)
Dual earner			0.86 (0.64 to 1.15)	0.88 (0.66 to 1.19)	0.85 (0.63 to 1.15)
All equally			1	1	1
<b>Income quartile</b>					
Lowest			1.64 (1.28 to 2.12)	1.46 (1.11 to 1.91)	1.18 (0.88 to 1.58)
Lower			1.73 (1.36 to 2.20)	1.37 (1.07 to 1.77)	1.17 (0.90 to 1.53)

*Continued*

**Table 2:** Odds ratios and 95% CIs for the association between work-family balance and sickness absence in the European Working Conditions Survey

Characteristics	OR (95% CI)				
	Model 1 <sup>a</sup>	Model 2 <sup>b</sup>	Model 3 <sup>c</sup>	Model 4 <sup>d</sup>	Model 5 <sup>e</sup>
Higher			1.22 (0.96 to 1.56)	1.08 (0.84 to 1.38)	0.99 (0.77 to 1.29)
Highest			1	1	1
<b>Demographic characteristics</b>					
<i>Sex of respondent</i>					
Female					1.30 (1.05 to 1.60)
Male					1
<i>Age of respondent</i>					
15–29					0.79 (0.56 to 1.11)
30–49					1.03 (0.84 to 1.26)
50–65					1
<b>Socio-economic characteristics</b>					
<i>Education of respondent (ISCED)</i>					
Primary or less education					0.77 (0.41 to 1.42)
Secondary education					0.85 (0.67 to 1.07)
Post-secondary education					1.05 (0.74 to 1.51)
Tertiary education					1
<i>Occupational class (ISCO)</i>					
Legislators, senior officials, managers, professionals					1
Technicians, associate professionals, clerks					1.29 (0.99 to 1.66)
Service workers <sup>†</sup>					1.88 (1.43 to 2.48)

*Continued*

**Table 2:** Odds ratios and 95% CIs for the association between work-family balance and sickness absence in the European Working Conditions Survey

Characteristics	OR (95% CI)				
	Model 1 <sup>a</sup>	Model 2 <sup>b</sup>	Model 3 <sup>c</sup>	Model 4 <sup>d</sup>	Model 5 <sup>e</sup>
<i>Labour market sector</i>					
Agriculture, forestry, fishing					1.72 (0.85 to 3.45)
Industry					1.17 (0.84 to 1.63)
Services					0.98 (0.76 to 1.28)
Public administration and defence					0.99 (0.68 to 1.43)
Other services					1
<i>Company sector</i>					
Private					0.56 (0.43 to 0.72)
Public					1
Other sector					0.81 (0.52 to 1.24)

OR: Odds ratio; CI: Confidence interval  
<sup>a</sup>Work-family balance (crude analysis)  
<sup>b</sup>Adjusted for work-related factors.  
<sup>c</sup>Adjusted for household characteristics  
<sup>d</sup>Adjusted for work-related factors and household characteristics.  
<sup>e</sup>Adjusted for work-related factors and household characteristics, sex, age, occupational class, education attainment, labour market sector, company sector

absence (OR 1.38, 95% CI 1.06 to 1.80) for workers with poor work-life balance. Model 5 also showed increased likelihood of sickness absence among workers with “determination of work schedule by company” (OR 1.26, 95% CI 1.04 to 1.53), job insecurity (OR 1.56, 95% CI 1.21 to 2.02), women (OR 1.30, 95% CI 1.05 to 1.60), and service and other workers in low-status jobs (OR 1.88, 95% CI 1.43 to 2.48). The likelihood of sickness absence was lower for workers with “non-permanent contracts” (OR 0.60, 95% CI 0.46 to 0.79), who “worked <1 year at the current workplace” (OR 0.64, 95% CI 0.42 to 0.96), cohabiting (OR 0.75, 95% CI 0.58 to 0.96), and in “private-owned” organizations (OR 0.56, 95% CI 0.43 to 0.72).

### Sensitivity Analysis

Analyses including variables to capture the effect of health status and psychosocial work conditions, interactions variables (cohabitation with children), and performed separately for women and men did not enhance the explanatory power of the models in any way, and were non-significant (results not shown).

### Discussion

This study showed that poor work-life balance was a significant predictor of self-reported sickness absence in the four Nordic countries, even after adjusting for several important confounding factors. Our findings are consistent with those from cross-sectional and prospective,<sup>11</sup> and cohort studies,<sup>32</sup> documenting the positive association between poor work-life balance and sickness absence. Although the cross-sectional design of this study limits our ability to make causal and directional inferences, its design provides a vivid impression of the work-life conditions experienced by workers in the Nordic countries.

### Predictors of the Association between Work-life Balance and Sickness Absence

Several possible explanations for our findings were identified. Of the five predictor groups we analyzed, work-related characteristics accounted for two variables with significantly elevated odds of sickness absence. “Determination of work schedule by employer” was positively associated with sickness absence, supporting findings in women from previous studies,<sup>4</sup> linking greater worktime control with lower worker stress and absenteeism. Our finding is logical, given that greater control over one's own work schedule provides a greater degree of autonomy and ability to integrate their working and private lives, with positive effect on work-life balance. However, no association between flexible work schedule and sickness absence was reported by others.<sup>33</sup> Consistent with other studies, linking the association to increased stress-related physical,<sup>34</sup> psychological morbidity, increased use of health care services and decreased compliance with occupational safety regulations,<sup>35</sup> we found a positive association between job insecurity and sickness absence.

In agreement with previous studies,<sup>1,32,36</sup> women were more likely than men to report sickness absence; our findings however contrast with others.<sup>11</sup> Although this engendered effect is commonly blamed on the combination of paid work and domestic responsibilities among women with young children—the so-called “double burden hypothesis”<sup>32,36</sup>—this hypothesis has only received scanty validation.<sup>37</sup> Some authors argue that young children do not particularly predispose either female or male workers to ill-health;<sup>38</sup> rather, that being both employed and a parent actually enhances their well-being.<sup>6,37</sup> Moreover, the gap in family roles of working women and men appears to have narrowed significantly in egalitarian societies with high

gender equality, where men's involvement in family life deviates from the traditional gendered division of labor.<sup>39</sup> Increased susceptibility to poor well-being among employed women with a heavy domestic workload (not employed men) had been previously reported.<sup>10</sup> We speculate that due to the rewarding and detrimental nature of having young children and much domestic work, the effect of “dual burden” on sickness absence may be small for both sexes.

The finding of higher likelihood of sickness absence among “service” workers corroborates that in other studies,<sup>11,32</sup> which attribute this social gradient to physical and psychosocial working conditions and health-related behaviors outside of work.<sup>33</sup> As health and working conditions vary with socio-economic position and predict sickness absence, we argue that workers in “service” occupations are predisposed to greater work-life conflicts due to lower earnings, increased working hours, psychosocial exposures, and increased likelihood of sickness absence, especially among women who are over-represented in these occupations. We further speculate that since blue-collar occupations are often characterized by lack of control over work processes and low decision latitude,<sup>32</sup> their work schedules and arrangements possibly increase their susceptibility to poor work-life balance,<sup>40</sup> thus increasing their risk of sickness absence. However, others disagree, arguing that higher status white-collar occupations and work conditions increase exposure to negative work-life spill over,<sup>39</sup> since these occupations are often characterized by greater responsibility and obligation than blue-collar jobs, in spite of their high autonomy and flexibility.

Several factors were negatively associated with sickness absence, including having “non-permanent contracts,” which is most likely due to job insecurity that forms an integral part of the work experiences of

non-permanent workers, rather than an actual deterioration in health, in line with earlier studies.<sup>41</sup> Working “less than one year at the current workplace” decreased the likelihood of sickness absence, which may also be linked with self-perceived job insecurity. Employees with shorter duration of employment tend to experience relatively higher levels of job insecurity, and lower sickness absence. Increasing duration of employment increases job security, with corresponding increase in sickness absence, often due to decreased presenteeism.<sup>42</sup>

The finding that cohabitation reduced the likelihood of sickness absence, agrees with a recent study,<sup>43</sup> relating the combination of occupational and partner roles to reduction in the likelihood of poor self-rated physical health, psychologic disorder, and lower long-term sickness absence. Furthermore, the benefit of multiple roles on health outcomes is emphasized, *eg*, having paid work, a partner and children, could provide workers, especially women, with increased access to different benefits, such as economic resources, social support, and affirmation. However, this view contrasts with the “role strain” theory, which suggests that increased demands and conflicting expectations between the work and family roles might increase stress-related symptoms, and lower psychological well-being,<sup>44</sup> thus increasing sickness absence. The reduced sickness absence among those in “private-owned” organizations as oppose to the “public sector” is consistent with earlier studies,<sup>5</sup> attributing this to the higher degree of employment protection for “public sector” employees. Income quartile, age, education, and labor market sector did not show a significant association with a sickness absence.

A few limitations merit discussion. In addition to the earlier-mentioned cross-sectional nature of the study design, the use of self-reported as opposed to register-

based sickness absence data for validation issues if often criticized; however, studies have reported good agreement between both data sources.<sup>12</sup> The cross-sectional data leave open the possibility of reverse causality, as ill-health may potentially increase the likelihood of poor work-life balance. Among the strengths of this study are the novelty of being the first empirical study to investigate the association between a poor work-life balance and sickness absence in the Nordic countries; its comparison of sickness absence including the four Nordic countries; the large cross-national sample; use of similar definitions of sickness absence; and enhanced comparability of responses and results across countries.

### Methodological Considerations

Work-life balance was measured with a single item since the 2010 ESWC did not contain data on the more complex conceptually-based components approach,<sup>7</sup> which elucidates distinct (time, strain, and behavior) dimensions of work-life fit; rather, the 2010 EWCS only contains data on time-based conflict. Similar single-item measures of stress symptoms have proven to be a valid measure for drawing group-level conclusions about mental well-being.<sup>45</sup> Future research should include variables exploring the multiple dimensions of work-life balance in large-scale survey data like the EWCS. We use the more encompassing term “work-life” to describe the “non-work domain,” which better reflects the fact that whether or not an employee is married or has a partner, with or without children, they are not necessarily excluded from the stresses and pressures to attain a balance between their work and life or non-work roles, as previously expressed earlier,<sup>46</sup> rather than using the term “work-family.”

In conclusion, this pooled analysis of nationally-representative population-based

data demonstrated that poor work-life balance is associated with sickness absence across four Nordic countries, after elaborate adjustment for socio-demographic characteristics, and health status and psychosocial work conditions. Work-related factors (“determination of work schedule by employer,” and job insecurity) increased the odds of sickness absence. Findings, therefore, emphasize the need for measures that empower workers negotiate reasonable and acceptable role-related expectations, and facilitate employees combining their roles in the work and family domains, which could reduce sickness absence. Our findings may shed some light into how organizational practices impact employee health, and have important implications for occupational health practitioners as well.

**Conflicts of Interest:** None declared.

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