



# Long-term Sickness Absence Among Professionals: Investigating Gender, Socioeconomic Position and Care Work<sup>1</sup>

■ **Aleksander Å. Madsen<sup>2</sup>**

*PhD Candidate, Centre for the Study of Professions, OsloMet – Oslo Metropolitan University, Norway*

## ABSTRACT

*This study investigates whether the risk of long-term sickness absence among professionals depends upon their socioeconomic position and whether they do caring work. It also explores whether the variation in risk can be attributed to sociodemographic and labor market factors. The event history analysis is based on longitudinal register data from the entire population of Norwegian professionals from 2003 to 2013. The results showed that both low socioeconomic position and being a care worker was associated with long-term sickness absence. The group with the highest risk was professionals of lower socioeconomic position doing caring work. While the results were similar for men and women, the relative risk of sickness absence was higher for male professionals. Sociodemographic and labor market factors partly explained the observed association, and even more so for men. Several candidate explanations for the remaining association as well as potential implications for social policy are discussed.*

## KEYWORDS

*Care work / health inequalities / interpersonal work / long-term sickness absence / professionals / socioeconomic position / welfare professions*

## Introduction

Professionals are a vital part of the modern welfare state and are invaluable for the functioning of the educational, health and legal system. Concerns over shortages of teachers and health care professionals in several European countries (European Commission 2014), including Norway (Gunnes & Knudsen 2015; Roksvaag & Texmon 2012), highlight the importance of minimizing attrition. A high rate of long-term sickness absence (LTSA) may impede this effort. Norway has the highest rate of sickness absence among the OECD countries (OECD 2013: 36), and this is associated with undesirable outcomes such as dependence on disability pensions (Kivimäki et al. 2004) and mortality (Vahtera et al. 2004).

This study explores differences in the risk of LTSA between professionals and test a classification of professions along two dimensions. Joining two strands of research on health outcomes, the classification captures a vertical division of socioeconomic position

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<sup>2</sup> Correspondence: Aleksander Å. Madsen, Centre for the Study of Professions, OsloMet – Oslo Metropolitan University, P.O. Box 4, St. Olavs plass, 0130 Oslo, Norway. E-mail: [aleksander.madsen@oslomet.no](mailto:aleksander.madsen@oslomet.no)



(SEP), and a horizontal division of whether the primary function of the professional is to care for the welfare of others. While the socioeconomic gradient in sickness absence is well documented (Allebeck & Mastekaasa 2004), the classifications are often crude and one-dimensional. Studies of care providers argue that caring work is stressful (Hochschild 2003; Maslach 2003). However, there is a lack of comparative studies of care professionals and research linking care work to LTSA. The novel contribution of this study is the investigation of whether SEP and doing care work is associated with LTSA among professionals, and whether sociodemographic and labor market factors explain the differences in risk, using longitudinal population data. By supplementing the common emphasis on differences between levels with the inclusion of a caring dimension, and by focusing specifically on professionals, it expands the research on occupational differences in the risk of LTSA.

The article is organized as follows. First, the Nordic context is outlined with an emphasis on social insurance policies and the role of professionals. Second, a classification of professionals according to SEP and care work is presented. Next, previous research on predictors of LTSA is reviewed. On the basis of the review, three hypotheses are proposed in addition to important sociodemographic and labor-market explanatory factors. Then, the data, method and results are presented. Finally, the results of the analyses are discussed in light of previous studies and their implications for social policy.

## Professionals in a Nordic welfare state

The Nordic welfare states are characterized by their generous and universal policies known to promote population health (Bambra 2011). While the Nordic welfare regimes share many similarities, there are also several international differences (Bambra 2013). Concerns over budgets and demographic changes during the past two decades led to a number of reforms aiming to reduce costs and beneficiaries, weakening Nordic welfare state exceptionalism (Hvinden 2004). As a consequence, there has been an increase in conditionality, and only Norway has remained unique in universalism and generosity (Kangas & Kvist 2013). For example, the Norwegian sickness benefit provides full compensation for loss of income due to sickness for up to one year, whereas several reforms have lowered the wage replacement levels and tightened the conditions in Sweden (Hagelund & Bryngelson 2014). Moreover, a means-tested benefit and weaker employment protection during sick leave (Brage 2007) separates the flexicurity in Denmark from the protectionism of Sweden and Norway (Bambra 2013).

Professionals are central to the process of transforming welfare states. They are the frontline staff facing the challenge of population aging. Especially in the Nordic countries where the tasks of the family have been assumed by the state (Esping-Andersen 1999). For example, the global nursing shortage implies an aging nursing workforce caring for increasing numbers of elderly people (Oulton 2006). Furthermore, the question of a transforming and sustainable welfare state is intertwined with gender. Since women constitute a large share of welfare state professionals, demographic shifts (e.g., global aging) will increase the demand for their labor. The increase in female labor market participation of the last decades also means that more women qualifies for income replacement benefits (Hvinden 2004). This emphasizes the need to upheld labor market participation, knowing that women have a high and increasing level of sickness absence

(Dale-Olsen & Markussen 2010). Hence, there is potentially a shortage of supply and a challenge of retaining a professional workforce key to future welfare state functioning, and thus a need for knowledge of determinants associated with risk of LTSA for these groups.

## Theoretical framework: a classification of professionals

There has been a call for novel and more detailed analyses of the relationship between the division of labor and individual-level outcomes in the wake of the educational expansion and the increasingly growing and heterogeneous salaried middle class (Oesch 2006). The ‘occupationalization’ of the labor market (Grusky 2005) has put the study of occupations on the agenda, of which professions are the most well organized (Freidson 2001). There is much debate about what defines professions. However, most agree that they are exclusive occupations occupying a distinctive segment of the occupational structure owing to processes of jurisdiction (Abbott 1988), closure (Murphy 1988), shelter (Freidson 2001) or monopoly (Larson 1977). Their exclusive labor market position grants them autonomy over work. Through their mandatory and particular higher educational training, professionals acquire their profession’s abstract and complex body of formal knowledge, which they apply to particular cases (Abbott 1988). Thus, professionals differ from the crafts in their abstract academic knowledge and from academic generalists in their exclusive practical application of this specialized knowledge.

The study of the relative risk of LTSA among professionals is interesting for several reasons. First, professionals constitute a large part of the labor force in general and the middle-class in particular, and are vital to welfare state services. Second, it is well established that individuals working in the lower strata of the occupational structure have a higher risk of LTSA than those at the top (Allebeck & Mastekaasa 2004). This calls for a more detailed analysis of different segments of the occupational structure. Comparing the risk among professionals contribute to nuancing our knowledge of occupational differences. Finally, it is more reasonable to study occupational differences in risk of sickness absence among professionals than other middle-class workers. The close connection between their specialized knowledge and practical application implies more homogeneity across workplaces compared to other occupations consisting of academic generalists and firm specific trainees. Therefore, it can be reasonable to attribute differences in risk of LTSA between professionals to some intrinsic traits of professional practice in general rather than just workplace-specific characteristics.

In addition to study the relative risk among all groups of professionals, I classify them along two dimensions common in the sociology of professions. First, I separate professionals according to their SEP. A professional’s SEP refers to the social and material resources available to them through their position in the social hierarchy and is related to numerous health determinants (Galobardes et al. 2006a). According to Freidson (2001), several professions are in a subordinate position in the division of labor since they have not established sufficient cognitive and cultural authority to dominate their jurisdiction. These are often called semi- or para-professions (e.g., nurses and teachers) and are in contrast to ideal-type professions (e.g., physicians and architects). The former has often (but not necessarily) a shorter university college education, lower entry requirements, a less specialized and a more interdisciplinary education, a weaker



knowledge base, less autonomy and control over work, more routine tasks, and more females (Brante et al. 2015; Etzioni 1969). I separate between professionals with high and low SEP to explore whether professionals with a lower position have a higher risk of LTSA.

Second, professionals are classified according to whether caring for the welfare of others is the main professional concern. The dichotomy employed here is frequently applied under different names where caring (Abbott & Wallace 1990), personal service (Halmos 1967), personal (Larson 1977), and relational (Moos, 2004) professionals are contrasted to professionals who do not work in close contact with clients with personal needs. Caring professionals have a ‘primary commitment to care for their clients; personalized care is central to their practice as professionals. The needs of clients are said to take precedence in their work’ (Abbott & Wallace 1990: 1). The interpersonal relation between client and caring professional entails helping the client to overcome some personal challenge, which often requires emotional and personal involvement. Many have argued that caring work implies health harming physical and mental strain (e.g., emotional labor or burnout) that can in turn heighten the risk of LTSA.

### Previous research on predictors of LTSA and hypotheses

LTSA is associated with numerous factors (see Allebeck & Mastekaasa 2004 for a comprehensive review). In the classification of professionals, I put forward SEP and caring work as important for explaining interprofessional differences in risk of LTSA.

The SEP of professionals may reflect health behavior (i.e., lifestyle factors), psychosocial processes (e.g., control and autonomy), and physical exposures (e.g., heavy lifting) (Galobardes et al. 2006a). Among these factors, previous studies indicate that physical work conditions are the main explanatory factor for occupational disparities in sickness absence (Christensen et al. 2008; Löve et al. 2013). While physical factors seem more important than psychosocial ones for explaining the social gradient, the latter has also gained support (Melchior et al. 2005; Niedhammer et al. 2008). According to stress theories (e.g., Karasek 1979), mismatch between demands and control cause strain, and control over work seems especially important (Michie & Williams 2003). Professionals with a lower SEP may experience heavier physical and psychosocial demands (e.g., lifting or work-based stress) and have fewer resources (e.g., autonomy or control) to cope with these demands than professionals with a higher SEP. As prior research suggests, I expect there to be a difference in risk of LTSA according to the professional’s SEP. The first hypothesis is:

**Hypothesis 1:** Professionals with a lower SEP will have a higher risk of long-term sickness absence relative to professionals with a higher SEP.

The argument for a distinction between caring and noncaring professionals is that the handling of clients with personal needs implies a heightened risk of LTSA. Workers in health care and social services have a high risk (Lund et al. 2007), and a recent study found that awkward lifting, threats of violence, actual violence, and emotional demands explained a substantial part of the difference in the risk of LTSA for women in these services compared with women in the general working population (Aagestad et al. 2016).

While comparative research on whether care providers have a higher risk of LTSA is scarce, the hazards of caring work have been highlighted by studies of burnout (Maslach 2003) and emotional labor (Hochschild 2003). Research on burnout has found that caring work results in stress and exhaustion (Barron & West 2007; Wieclaw et al. 2006), and burnout is associated with sickness absence (Ahola et al. 2008; Borritz et al. 2010). Emotional labor is also associated with sickness absence, both in the general working population (Aagestad, Johannessen et al. 2014; Lund et al. 2006) and in human service work (Indregard et al. 2017; Rugulies et al., 2007). In addition to the psychosocial factors associated with burnout and emotional labor, threats of violence and actual violence (Aagestad, Tyssen, et al. 2014; Michélsen et al. 2014; Rugulies et al. 2007) as well as physical strain (Andersen et al. 2012) have been found to predict sickness absence among workers caring for clients. In summary, there is evidence that interpersonal caring work increases the risk of sickness absence, but comparative studies are scarce. An ambition of this study is to explore whether caring professionals experience a higher risk of LTSA than other professionals. The second hypothesis is:

**Hypothesis 2:** Caring professionals have a higher risk of long-term sickness absence than non-caring professionals.

The two previous hypotheses imply that both the SEP and client orientation of a professional affect the risk of LTSA. However, the strain of interpersonal work may be contingent upon the professional's SEP, and either enhances or moderates it. Low SEP professionals constitutes the lower middle class and have less autonomy and are under greater supervision (Brante 2013), which could entail greater exposure to physical and psychosocial risks (Galobardes et al. 2006a). According to Wharton (1993), workers with less autonomy are more exposed to the negative consequences of emotional labor, while those with sufficient autonomy profit from interpersonal work. Moreover, recent reforms of standardization are believed to be in conflict with caring work resulting in straining working conditions (Trydegård 2012). Loss of professional discretion and autonomy following these reforms might be more prevalent among caring professionals of low SEP (Kamp & Dybbroe 2016). Finally, low SEP professionals are frontline staff with frequent contact with clients with severe problems, such as the threats and violence experienced in nursing (Spector et al. 2014), whereas professionals with a high SEP may be spared the most straining client relationships because of their position. The final hypothesis is of an interaction effect of SEP and caring:

**Hypothesis 3:** The effect of doing interpersonal caring work on risk of long-term sickness absence is contingent upon the SEP of the professional. Low SEP caring professionals have the highest risk of LTSA.

Additionally, I will explore whether the risk of LTSA among professionals can be attributed to sociodemographic and labor market factors. First, the risk of LTSA might vary by gender since the labor market in Norway is highly gender segregated and women have higher rates of LTSA than men (Dale-Olsen & Markussen 2010). Some studies have shown that physical working conditions explain more of the social gradient in sickness absence for women than for men (Christensen et al. 2008; Löve et al. 2013), implying an interaction between gender and SEP. Moreover, caring work might be more



straining for men, as the relationship between emotional demands and sickness absence has been found to be stronger for them (Aagestad, Johannessen, et al. 2014; Lund et al. 2005). Hence, the association between LTSA and SEP and caring work could be dependent on gender.

Second, factors outside work, such as those related to the family, can confound the association between professionals and LTSA. Previous research has found that both divorce/separation (Dahl et al. 2015) and pregnancy (Rieck & Telle 2013) entail a higher risk, while having children primarily implies a lower risk of sickness absence (Mastekaasa 2012). If family-related characteristics are unequally distributed among professionals, the differences in risk of LTSA can reflect this. In addition, since nonwestern immigrants are both overrepresented in some professional groups and have a higher risk of LTSA (Dahl et al. 2010), the analyses must take immigration background into consideration.

Finally, the variation in risk of LTSA could reflect several labor market factors. For instance, income is an indicator of SEP, which measures material resources available to improve health (Galobardes et al. 2006a) and is interrelated with education and occupation as determinants of sickness absence (Piha et al. 2010). A relationship between the SEP of professionals and LTSA could be the result of differences in pay levels. Furthermore, working-time arrangements could also be of importance. Higher levels of absence are associated with the shift work of healthcare professionals (Merkus et al. 2012) and some use part-time work as a coping strategy (Ingstad & Kvande 2011). Workplace gender composition is another relevant factor since elevated levels of LTSA are found in both extremely male-dominated and female-dominated workplaces (Bryngelson et al. 2011). Lastly, professionals are distributed differently among the public and private sector, which might be of importance because of the lower levels of absence in the private sector (Mastekaasa 2016).

## Data and methods

### Data and study population

This study uses administrative register data provided by Statistics Norway and consists of official registers on welfare benefits, employment, income, and education for the entire Norwegian population. The strengths of register data are long panels, no self-report bias, and practically no missing information. The population under study consists of all individuals born between 1950 and 1987 who, after receiving professional diplomas, were employed as professionals during the period of January 2003 until December 2013. Self-employed individuals were excluded owing to a lack of data.

I used information on both education and occupation to identify professionals, reflecting formal training as mandatory before qualifying for professional practice. The Norwegian Standard Classification of Education (NUS2000) and the International Standard Classification of Occupation (ISCO-88) provide detailed information on education and occupation. Table 1 summarizes the 25 groups of professionals identified based on the existence of some form of closure or jurisdiction through legislation or credentials. The concept of professions is contested and the occupational structure is ever changing. Thus, the list in Table 1 is not meant to be exhaustive but contains most professions

**Table 1** Classification of professions

	Caring	Noncaring
High socioeconomic position	Clergyman	Architect
	Dentist	Economist (MBA/MPhil)
	Physician	Civil engineer
	Psychologist (cand. psychol.)	Lawyer
	Veterinary surgeon	Pharmacist
Low socioeconomic position		State authorized public accountant
	Dental hygienist/technician	Bioengineer
	General teacher	Journalist
	Physiotherapist/ergonomist	Librarian
	Preschool teacher	Optician
	Radiographer/audiometrist	Pharmacy technician
	Registered nurse	Registered public accountant
	Social worker	Undergraduate engineer

Note: Social workers consist of social workers, social educators, and child welfare officers. General teachers include both general teachers and subject teachers. Economists holding a Master of Business and Administration (MBA) or Master of Philosophy (MPhil) in economics qualify for a statutory regulated title as 'civil' or 'social' economist. The two titles are not directly transferable to countries outside of Scandinavia.

and semi-professions and is consistent with previous research (Mastekaasa 2008; Tufte 2013). Close to all groups of professionals can be identified with one ISCO-88 code. It is primarily economists and engineers who are identified using several ISCO-88 codes since economists often work as business executives and there are several subcategories of engineering. Furthermore, only individuals who had a professional education as their highest and latest registered level of education were included. The yearly information on occupation means that professionals can move in and out of the dataset. They were considered to be under risk of LTSA only when working in an occupation identified as a profession and holding a matching professional education.

On the basis of these selection criteria, the population consisted of 2,274,229 person-rows.

**Dependent variable: LTSA**

The data provide information on all physician-certified LTSAs (> 16 days) in the period from January 1, 2003, until December 31, 2013. Sickness absence was operationalized as a combination of two factors. The first of these is a dummy variable indicating the onset of absence. The variable indicates whether an observation (individual professional employment spell) ended in failure (LTSA). Each individual can have multiple failures, which would indicate that sickness absence is a recurrent event. Second, there is a variable containing time elapsed in days employed after either being registered as a professional or most recent failure to either failure (absence) or right censoring (end of professional employment or data period). The analyses did not distinguish between different grades of LTSA.



## Professions and a typology of professions

All professional groups as shown in Table 1 were included in the analysis as dummy variables with civil engineers as the reference category. Furthermore, Table 1 shows the classification of professionals according to SEP and orientation toward interpersonal caring work. In the analyses, the dimensions were included as dummy variables with professionals of high SEP not doing caring work as baseline.

I separated professionals into high and low SEP in a two-stage process. First, I identified professions based on whether they hold a subordinate position in the professional division of labor (e.g., nurses) or lack authority to dominate their jurisdiction (e.g., journalists). Second, to verify this classification and to help determine borderline cases (e.g., economists), I used two well-known indicators of SEP. Several occupational-based measures of SEP exist (Galobardes et al. 2006b). Both subjective evaluations of occupational standing and measures of employment relations and resources are commonly used. Both aspects were covered by using the Standard International Occupational prestige Scale (SIOPS) and the Erikson-Goldthorpe-Portocarero (EGP) class scheme (Ganzeboom & Treiman 1996). Only clergy were not in accordance with these indicators but were classified as having a high SEP since they belong to classic ideal type professions and require a long university education.

Second, caring professionals were identified according to whether the basic premise of the professional practice is to care for the welfare of others and whether they involve a high degree of interpersonal encounters. The remaining noncaring professionals belong to the spheres of technology, architecture, economy, pharmacy, and law. The classification is in accordance with the categories of health professionals, teaching professionals, and social and elderly care workers in Wieclaw et al. (2006) and life professionals in Tufte (2013).

The classification could be sensitive to the inclusion and exclusion of particular professions. Appendix Figure S1 and S2 shows robustness checks of excluding each of the 25 professions from the classification in the analyses. The results remained robust.

## Sociodemographic and labor market factors

The analyses were conducted separately by gender. Other sociodemographic factors included marital status [unmarried, married/cohabitating, divorced/separated, and widow(er)], number of children under 18 (none, 1, 2, and  $\geq 3$ ), pregnancy (yes/no), and immigration status (Norwegian, first generation western, second-generation western, first-generation nonwestern, and second-generation nonwestern). Labor market factors were the log transformed yearly income (inflation adjusted to 2011), part-time work ( $\leq 30$  hours a week), percent of females at the workplace, and sector (public/private).

## Control variables

Dummy variables for year of birth were included to control for unmeasured heterogeneity between age cohorts. I controlled for number of prior spells of sick leave before the

observation period (2003) or first registration of working as a professional ( $0, \leq 3, \geq 4$ ) to take sickness absence history into consideration. I also controlled for the distance of workplace from regional centers (urban/rural).

## Statistics

The data are structured as individual professional employment spells. Each spell can end in either LTSA (temporary or permanent) exit from professional employment or right censoring. Subjects not in professional employment or already listed as long-term sickness absentees at a particular point in time cannot be at risk of another spell of LTSA at that time. Survival analysis is appropriate to model the risk of LTSA because time to event is of interest and the data are right censored (Allison 2014).

An extension of Cox proportional hazards regression was used to model the effect of working as a professional while controlling for other covariates. Conditional gap time models are appropriate because LTSA is an ordered repeatable event, and are the preferred solution for variance-corrected models in multiple failure data (Box-Steffensmeier & Zorn 2002). In a conditional gap time model, time to LTSA is reset after each event. The analyses were clustered on individuals and stratified on order of events to account for the repeated nature of the data. This means that individuals were not at risk of a later event until they had experienced all previous events, and baseline hazards were allowed to vary by number of events experienced.

The primary advantage of the semiparametric Cox model is that it makes no assumption about the distributional form of the baseline hazard rate. However, it assumes that the effect of each variable is the same at all points in time (proportional). Violation of the proportionality assumption (the effect of type of profession is dependent on time) can cause biased estimates. Nonproportionality was examined using the tests recommended by Box-Steffensmeier and Jones (2004), and the results remained robust across various model specifications.

## Results

The descriptive statistics in Table 2 shows the proportion of person-rows with spells of long-term sickness absence and the proportion or mean values of family related and labor market factors by type of professional. It also shows the total number of person-rows and individuals. The average number of sickness absence spells per person-row was 17%; however, it varied by type of professional. Professionals with high SEP not doing caring work had an average of 7%, while professionals with low SEP doing caring work had 21%. Other noteworthy differences between the different types is that professionals with low SEP doing caring work had a much larger stock of women, the lowest mean income, more often worked part-time, worked more often in the public sector, and were by far the most numerous.

Table 2 reveals that the professionals belonging to the different types of professions varied by several characteristics. In Table 3, the relative risk [hazard ratio (HR)] of long-term sickness absence according to type of professional is estimated using Cox regression. The analyses are separated by gender. Model 1 shows the unadjusted HRs,

**Table 2** Descriptive statistics (mean values)

	High SEP noncaring	Low SEP noncaring	High SEP caring	Low SEP caring	Total
Long-term sickness absence	0.07	0.10	0.11	0.21	0.17
Women	0.35	0.46	0.57	0.89	0.75
Marital status					
Unmarried	0.37	0.46	0.33	0.38	0.38
Married/Cohabitation	0.56	0.47	0.58	0.51	0.52
Divorced/separated	0.06	0.07	0.08	0.11	0.10
Widow(er)	0.00	0.00	0.00	0.01	0.01
Women pregnant	0.14	0.12	0.15	0.11	0.12
Number of children under 18					
0	0.38	0.43	0.38	0.37	0.38
1	0.21	0.21	0.22	0.23	0.22
2	0.29	0.26	0.26	0.27	0.27
≥3	0.12	0.11	0.14	0.13	0.13
Immigration status					
Norwegian	0.97	0.95	0.85	0.95	0.95
First-generation western	0.01	0.01	0.07	0.02	0.02
Second-generation western	0.00	0.00	0.00	0.00	0.00
First-generation nonwestern	0.02	0.04	0.08	0.03	0.03
Second-generation nonwestern	0.00	0.01	0.01	0.00	0.00
Part-time work	0.02	0.08	0.16	0.32	0.24
Income (NOK)	787 559	500 701	618 201	370 847	458 689
Women at workplace	0.40	0.44	0.75	0.83	0.73
Public sector	0.25	0.33	0.84	0.88	0.74
Year of birth (median)	1970	1972	1971	1971	1971
Urban workplace	0.87	0.77	0.72	0.65	0.70
Number of prior sick leaves					
None	0.72	0.62	0.68	0.40	0.49
≤ 3	0.24	0.30	0.26	0.40	0.36
≥ 4	0.04	0.08	0.06	0.20	0.15
Individuals (n)	44 722	34 172	26 133	182 211	287 238
Observations (n)	290 048	226 906	199 883	1 557 392	2 274 229

Note: Observations are person-rows; SEP = Socioeconomic position; Norway, 2003-2013.

model 2 adjusts for family related factors, immigration status, birth cohort, prior sick leaves, and distance from regional centers, and model 3 further adjusts for labor market factors.

The conditional gap time models show that low SEP and doing caring work was associated with a higher relative risk of LTSA. However, the magnitude varied by gender and was reduced after the introduction of relevant determinants. For men, compared to professionals with high SEP not doing caring work, which is the reference category, the unadjusted relative risk of LTSA at any point in time was 48% higher for professionals

**Table 3** Relative risk (hazard ratio) of long-term sickness absence according to type of professional (95% CI in brackets)

	Men			Women		
	Model 1	Model 2	Model 3	Model 1	Model 2	Model 3
Type of professional (baseline = high SEP noncaring)						
Low SEP noncaring	1.48*** [1.41, 1.55]	1.39*** [1.33, 1.46]	1.37*** [1.30, 1.43]	1.35*** [1.31, 1.40]	1.32*** [1.28, 1.37]	1.30*** [1.25, 1.34]
High SEP caring	1.65*** [1.57, 1.74]	1.52*** [1.44, 1.60]	1.26*** [1.19, 1.34]	1.31*** [1.27, 1.36]	1.26*** [1.22, 1.30]	1.10*** [1.06, 1.14]
Low SEP caring	3.79*** [3.65, 3.94]	2.75*** [2.65, 2.86]	2.08*** [1.97, 2.20]	1.96*** [1.91, 2.01]	1.79*** [1.74, 1.83]	1.61*** [1.57, 1.66]
Marital status (baseline = unmarried)						
Married/Cohabitation		0.90*** [0.87, 0.93]	0.90*** [0.87, 0.93]		0.94*** [0.93, 0.95]	0.94*** [0.93, 0.95]
Divorced/Separated		1.07* [1.01, 1.12]	1.07** [1.02, 1.13]		1.21*** [1.19, 1.24]	1.20*** [1.18, 1.23]
Widow(er)		0.85 [0.68, 1.07]	0.84 [0.67, 1.05]		1.04 [0.98, 1.10]	1.04 [0.99, 1.11]
Pregnant					7.82*** [7.73, 7.91]	7.82*** [7.73, 7.90]
Number of children under 18 (baseline = none)						
1		1.01 [0.97, 1.04]	1.01 [0.97, 1.05]		1.01* [1.00, 1.03]	1.02*** [1.01, 1.04]
2		0.99 [0.95, 1.03]	0.99 [0.95, 1.03]		0.89*** [0.88, 0.90]	0.91*** [0.90, 0.92]
≥ 3		0.94* [0.89, 0.99]	0.95* [0.90, 0.99]		0.78*** [0.77, 0.79]	0.81*** [0.79, 0.82]
Immigration status (baseline = Norwegian)						
First-generation western		1.16*** [1.06, 1.27]	1.16*** [1.06, 1.26]		1.07*** [1.03, 1.11]	1.07*** [1.04, 1.11]
Second-generation western		0.85 [0.45, 1.57]	0.85 [0.46, 1.58]		0.93 [0.79, 1.09]	0.92 [0.78, 1.09]
First-generation nonwestern		1.36*** [1.27, 1.45]	1.34*** [1.25, 1.44]		1.31*** [1.28, 1.35]	1.29*** [1.25, 1.32]
Second-generation nonwestern		1.33* [1.01, 1.75]	1.31* [1.00, 1.73]		1.35*** [1.23, 1.48]	1.33*** [1.22, 1.46]
Part-time			0.69*** [0.66, 0.73]			0.88*** [0.87, 0.89]
Ln(income)			0.85*** [0.82, 0.87]			1.09*** [1.07, 1.10]
Percent of females at workplace			1.04*** [1.03, 1.04]			1.03*** [1.03, 1.04]
Public sector			1.15*** [1.10, 1.19]			1.15*** [1.14, 1.17]

(Continued)



(Continued)

	Men			Women		
	Model 1	Model 2	Model 3	Model 1	Model 2	Model 3
Year of birth fixed-effects	No	Yes	Yes	No	Yes	Yes
Controls <sup>†</sup>	No	Yes	Yes	No	Yes	Yes
Individuals (n)	87 176	87 176	87 176	200 062	200 062	200 062
Observations (n)	562 028	562 028	562 028	1 712 201	1 712 201	1 712 201

Note: Significance probabilities: \*  $p < 0.05$ , \*\*  $p < 0.01$ , \*\*\*  $p < 0.001$ ; CI = confidence interval, SEP = Socioeconomic position, ref. = reference category; Stratified by order of events; † = control for number of prior sick leaves and distance of workplace from regional centers; Cox proportional hazard regression model; Norway, 2003–2013, N = 2,274,229.

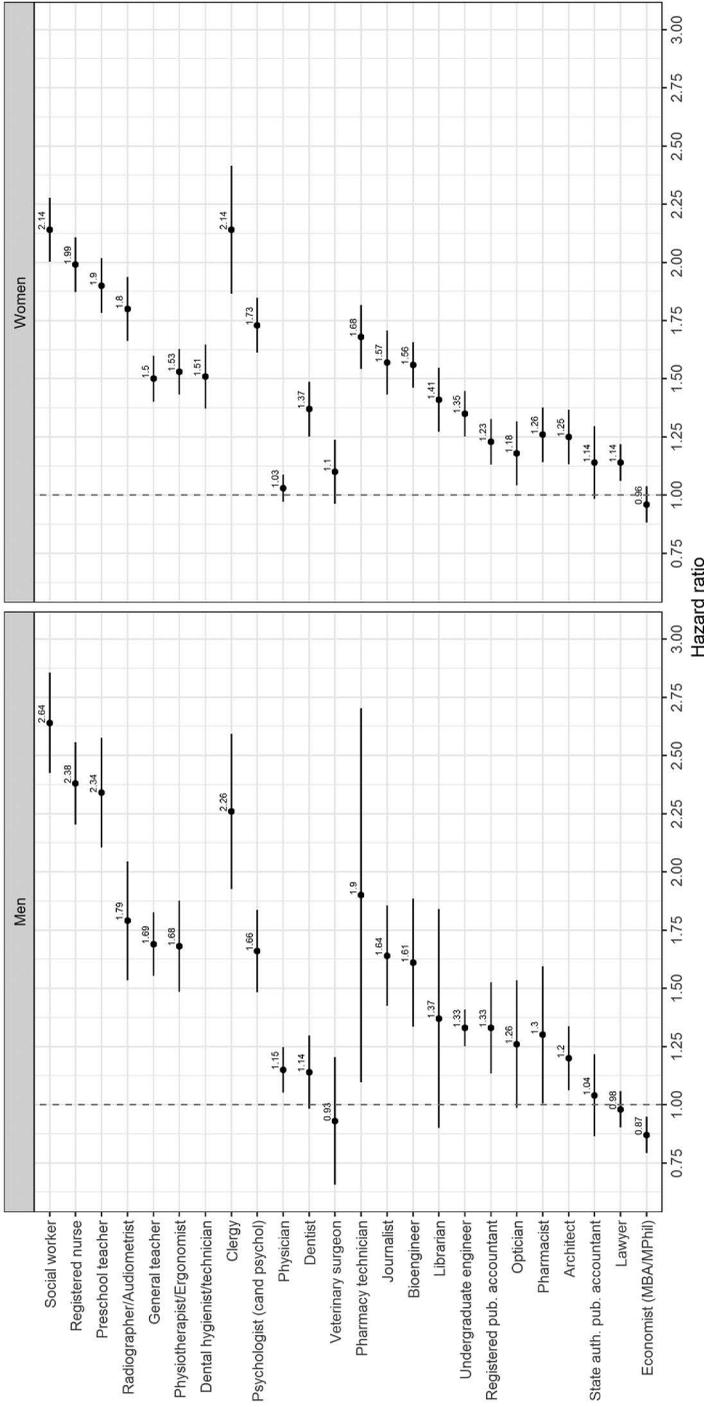
with low SEP not doing caring work (HR 1.48), 65% higher for professionals with high SEP doing caring work (HR 1.65), and 279% higher for professionals with low SEP doing caring work (HR 3.79). Differences in the unadjusted relative risk of LTSA were comparatively lower for women: low SEP noncaring professionals had 35% (HR 1.35), high SEP caring professionals had 31% (HR 1.31), and low SEP caring professionals had 96% (HR 1.96) higher risk of LTSA compared to high SEP noncaring professionals. Hence, the unadjusted results support all three hypotheses and shows that (H1) SEP, (H2) caring work, and especially (H3) a combination of both implies a higher risk of LTSA for men than for women.

The introduction of family-related factors and the control variables in model 2 results in lower relative risk of LTSA according to type of professional, particularly for male low SEP caring professionals. Thus, the higher risk of LTSA for these professionals can partly be attributed to differences in age, prior sick leaves, marital status, pregnancy, number of children, and immigration status. In line with previous research, divorce/separation heightens the risk of LTSA while having more than one child lowers the risk. These associations were stronger for female than for male professionals. Nonwestern immigrants have a higher risk of LTSA, both for men and women, also in line with previous research.

The added labor markets factors in model 3 reduce the differences in risk of LTSA further for both types of caring professionals but, as in model 2, not significantly for low SEP noncaring professionals. For caring professionals, the higher risk of LTSA compared to high SEP noncaring professionals can partly be attributed to differences in work-time, income, workplace gender composition, sector, and distance of workplace from regional centers. In the fully adjusted model, men have a higher relative risk of LTSA than women. Male low SEP noncaring professionals have 37% (HR 1.37), high SEP caring professionals have 26% (HR 1.26), and low SEP caring professionals have 96% (HR 1.96) higher risk of LTSA compared to male high SEP noncaring professionals, while the corresponding results for women are 30% (HR 1.30), 10% (HR 1.10), and 61% (HR 1.61), respectively. Part-time work reduces the risk of LTSA for both genders, supporting the notion of part-time work as a protection against absence. Increasing income decreases the risk of LTSA for men, while it, surprisingly, increases the risk for women. Public sector professionals of both genders have a higher rate of LTSA, and the rate increases with an increasing share of females at the workplace for men and women.

The classification of professionals could hide important interoccupational

**Figure 1.** Relative risk (hazard ratio) with 95% CI of long-term sickness absence among professionals, by gender.



Note: CI = confidence interval; reference category = civil engineer; adjusted for marital status, pregnancy, number of children under 18, immigration status, part-time work, income, sector; percent of women at workplace, centrality of workplace, prior sickness absence; year of birth fixed effects; stratified by order of events; Cox proportional regression model; male dental hygienist/technicians were excluded due to low n; Norway, 2003–2013, N = 2,274,229.



differences in risk of LTSA. Figure 1 shows the relative risk of professionals compared to civil engineers (baseline) adjusted for the same factors as in model 3 in Table 3 (see appendix figure S3 for unadjusted HRs). The figure shows that the two dimensions of the classification capture the variation in risk between professionals well for both genders, despite some overlap, and seems to follow a gradient. The most diverging results were among high SEP caring professionals. Furthermore, the magnitude of the relative risk compared to civil engineers seems substantial.

Professionals of low SEP doing caring work had all a higher risk of LTSA than civil engineers and other professionals of high SEP not doing caring work, for both genders. This was especially evident for healthcare professionals. The least consistent results were found for high SEP caring professionals. Clergy and psychologists, both male and female, had a high prevalence of LTSA comparable to low SEP caring professionals. These professionals have in common that they work with straining human troubles, which could possibly explain the high relative risk of LTSA. Physicians, dentists, and veterinary surgeons, on the other hand, had a comparatively lower risk of LTSA. Physicians are known for their high prevalence of sickness presenteeism (Aronsson et al. 2000), which could perhaps explain their low relative risk of LTSA. Among professionals not doing caring work, there was a distinct gradient from pharmacy technicians to economists. However, there were some overlap with caring professionals. Especially pharmacy technicians, journalists, and bioengineers had HRs of the same magnitude as teachers, physiotherapists/ergonomists, and radiographers/audiometrists. This similarity in risk of LTSA is perhaps due to these professions being borderline cases, as their work has a strong relational component comparable to caring professionals. For instance, pharmacy technicians and bioengineers deal with patients and clients in healthcare.

## Discussion

The aims of this study were to investigate whether the risk of LTSA among professionals was dependent on their SEP and whether they were primarily oriented toward caring for the needs of others, and whether variation in risk could be due to sociodemographic and labor market factors. The analyses confirmed all three hypotheses: (*H1*) professionals of lower SEP had a higher risk of LTSA compared to professionals of higher SEP, (*H2*) professionals doing caring work had a higher risk compared to professionals not doing caring work, and (*H3*) a combination of low SEP and caring work entailed the highest relative risk of LTSA. While the two dimensions of the typology capture the differences in risk well, there were variations within the four types.

Overall, the results were similar for men and women. However, male caring professionals had a higher relative risk of LTSA, which was particularly evident for those of low SEP. This is in line with previous studies that have found that men are more vulnerable to the psychosocial risks of caring work, such as emotional demands (Aagestad, Johannessen, et al. 2014; Lund et al. 2005; Wieclaw et al. 2006). The higher risk for men in these female-dominated professions could also be the result of differential assignment of work tasks (Messing et al. 2003) or a specific job culture in female-dominated professions (Evans & Steptoe 2002).

The differences in relative risk of LTSA between professionals due to SEP and caring work could partly be attributed to sociodemographic and labor market factors.

They accounted for more of the relationship for men than for women since there was a more pronounced reduction in the HRs for men with the introduction of these factors, particularly for male low SEP caring professionals. Regarding the independent association between these factors and LTSA, family-related factors seemed more important for female professionals, and as found in other studies (Dahl et al. 2015; Mastekaasa 2012; Rieck & Telle 2013), married/cohabitating women had a lower and divorced/separated had a higher risk, pregnancy multiplied the risk, and having more than one child under 18 were associated with a lower risk of LTSA. Moreover, first- and second-generation nonwestern immigrants of both genders had higher levels of LTSA, in line with previous research (Dahl et al. 2010). Labor market factors seemed equally important for men and women: Part-time work was associated with a lower risk of LTSA, which is perhaps due to less exposure to the straining effects of work. A study has found that part-time was used to reduce the strains of work among nurses (Ingstad & Kvande 2011). Income is inversely related to LTSA (Piha et al. 2010), as found for men in this study. However, surprisingly, this was not the case for women. The fact that higher income was associated with a higher risk of LTSA for female professionals warrants further research. Finally, both the proportion of female coworkers and working in the public sector were positively associated with LTSA, as previously found (Bryngelson et al. 2011; Mastekaasa 2016).

Significant interprofessional differences in risk of LTSA for both men and women remained even after taking several important sociodemographic and labor market factors into account. While the results indicate correlations and any causal inferences must be made with caution, there are several plausible mechanisms that may explain the observed variation in LTSA between professionals. Firstly, low SEP and caring work may be associated with health hazards at work. While physical work conditions are the most likely explanations for the socioeconomic gradient in LTSA (Christensen et al. 2008; Löve et al. 2013), also psychosocial factors are pertinent (Melchior et al. 2005; Niedhammer et al. 2008). Similarly, certain physical and psychosocial hazards have also been linked to heightened risk of LTSA for caring work (Aagestad et al. 2016) and researchers have particularly emphasized the emotional demands as straining (Indregard et al. 2017; Rugulies et al. 2007).

Second, Tufte (2013) suggests that the value orientation or professional ethics of caring professionals may make them more prone to absence. The altruistic mindset, instilled through their education, urges care providers to involve themselves in helping others. Too much involvement can lead to emotional exhaustion and burnout, especially when facing clients with severe problems (e.g., cancer). A recent study found that nurses with high levels of altruistic prosocial motivation were more likely to report burnout than nurses with lower levels (Dill et al. 2016). Furthermore, prioritizing the needs of clients may lead to disregard of one's own health resulting in accumulated strain and sickness presenteeism, which is known to be high among caring professionals (Aronsson et al. 2000). Sickness presenteeism is associated with sickness absence (Gustafsson & Marklund 2011).

Third, differences in risk of LTSA could be due to selection into occupations. A recent study found that the heightened risk of LTSA in female-dominated occupations (e.g., nursing) could be attributed to unobserved heterogeneity rather than occupation-specific characteristics (e.g., working conditions) (Melsom & Mastekaasa 2017). Thus, it is likely that both men and women more inclined to be on sick leave are sorted into



caring professions indicating that sorting mechanisms as opposed to work environment mechanisms are present. Likewise, there is evidence of selection being the most plausible explanation for the association between SEP and health (Foverskov & Holm 2015). While this study considered several important determinants of LTSA, a limitation is the lack of control for unobserved heterogeneity.

Finally, the observed pattern may not be a result of differences in occupational hazards per se, but rather depends on whether the professional practice allows for minor sicknesses. It may be that professionals performing physically stressful tasks or caring for the sick have fewer opportunities to work when sick, whereas the flexibility often associated with high SEP jobs allows them to manage. The results of this study may reflect these conditions.

In addition to the suggested mechanisms, others are possible. This underscores the main limitation of this study—a lack of a causal design and explanatory variables accounting for the aggregated patterns of risk outlined by the typology. More research is needed to investigate the underlying mechanisms producing variation in risk between professionals. The strengths of this study, on the other hand, are the novel focus on types of professionals, and the typology employed provides a synthetization of two strains of research on work and health. The high-quality longitudinal population data following professional labor market careers for up to 11 years, and the treatment of LTSA as a recurrent event, thus avoid the underestimation of the risk that characterizes many studies (Christensen et al. 2007), gives a robust description of the relative prevalence of LTSA.

The present findings have implications for social policy. Policies aiming to combat the shortage of care workers can be summarized as those whose aim is to improve the conditions and attractiveness of caring work and those whose aim is to recruit new pools of workers (Hussein & Manthorpe 2005). A high rate of absence among caring professionals can have consequences for the retention and recruitment of workers, and a high-risk low-staffed work environment can jeopardize the quality of care (Halbesleben et al. 2008). To begin with, besides temporarily weakening the workforce, sickness absence may have long-term effects on retention by weakening future labor market attachment (Bryngelson 2009; Gustafsson & Marklund 2011). Moreover, a straining physical and psychosocial work environment, as indicated by high rates of LTSA, in addition to low wages (England et al. 2002), can be detrimental to the attractiveness of caring work for both current and potential workers. For men, improving the conditions and appeal of caring work seems particularly important. They represent a new pool of workers to recruit from. However, both recruitment and retention of male workers can be impeded by the conditions of care work (Warming 2013), as highlighted by the higher relative risk of LTSA among male caring professionals in the present study.

The policy implications of a high rate of LTSA among caring professionals depend on institutional specificities. Compared to other developed countries, the Nordic welfare states manage the emerging care deficit primarily by public services (Anttonen & Zechner 2011). A large public sector and generous universal policies can be advantageous for the retention and recruitment of caring professionals, as it provides better conditions for care workers in terms of relative wage levels (Hussein & Manthorpe 2005) and reduces the individual consequences of becoming sick listed from working in a hazardous environment. However, a very high reliance on public spending can make these welfare states vulnerable to high levels of LTSA among care workers. It entails a large strain on budgets, especially as the care deficit urges expansion of the workforce and stresses

the need to reduce absence rates. Reforms have been introduced to reduce costs, especially in Sweden and Denmark; however, the reduction in redistributive policies has not been replaced sufficiently by regulatory policies. Implementation of regulatory policies could both compensate for tightening the income maintenance system and contribute to reduce costs (Hvinden 2004). Moreover, as almost all women are working in the Nordic countries, there are nearly no spare labor force in this category (Hussein & Manthorpe 2005). If recruitment from new pools of workers fail and high rates of LTSA among caring professionals prevail, Nordic countries are lacking work-family facilitating policies, which could compensate for a lack of workers. This could, in turn, coupled with declining coverage levels, endanger the high female labor market participation (Martens 2018) of which many are caring professionals.

## Conclusion

The present study contributes to the literature by providing a nuanced and detailed analysis of inter-professional differences in risk of LTSA using longitudinal population data following professional careers for up to 11 years. By exploring the intersection between SEP, caring work, and gender, the study assesses the importance of sociodemographic and labor market factors and offers a reliable account of the relative prevalence of LTSA among professionals. Both low SEP and caring work were associated with a higher risk of LTSA, and especially a combination of both. While the two dimensions captured the differences in risk well, there was some overlap between professional groups. Moreover, although the association was partly explained by differences in sociodemographic and labor market characteristics, there were still substantial differences in risk of LTSA after accounting for these factors. Regarding gender, the pattern was similar for men and women with the relative risk of LTSA to some extent higher for male caring professionals. Considering the emerging shortage of care workers, the higher prevalence of LTSA among low SEP caring professionals, as found in this study, highlights the importance of investigating the determinants and consequences of absence among this group.

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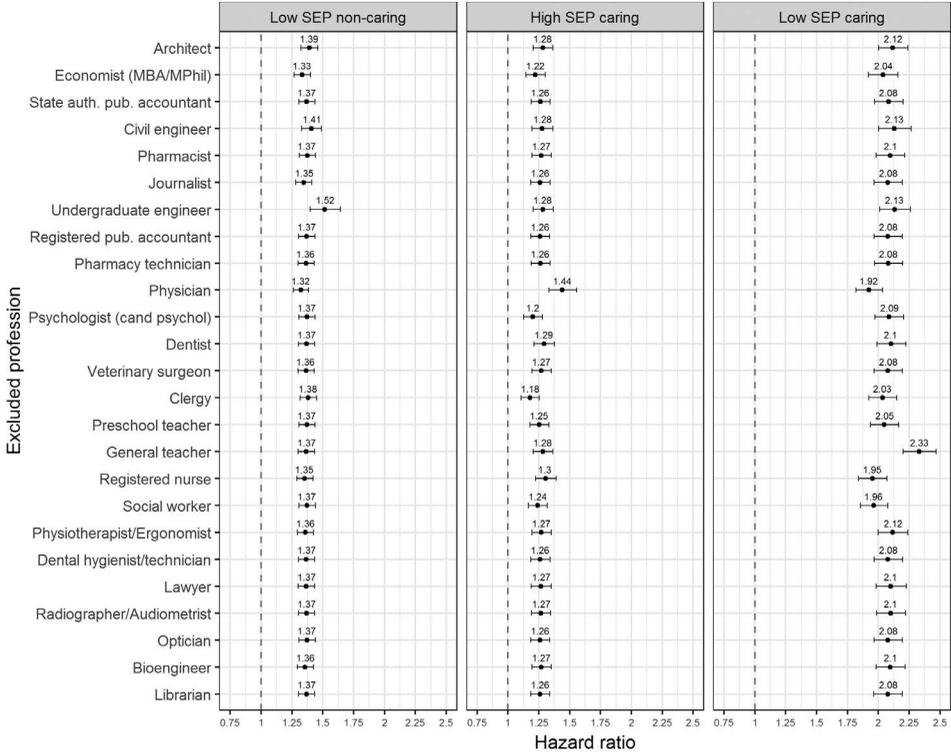
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## Appendix

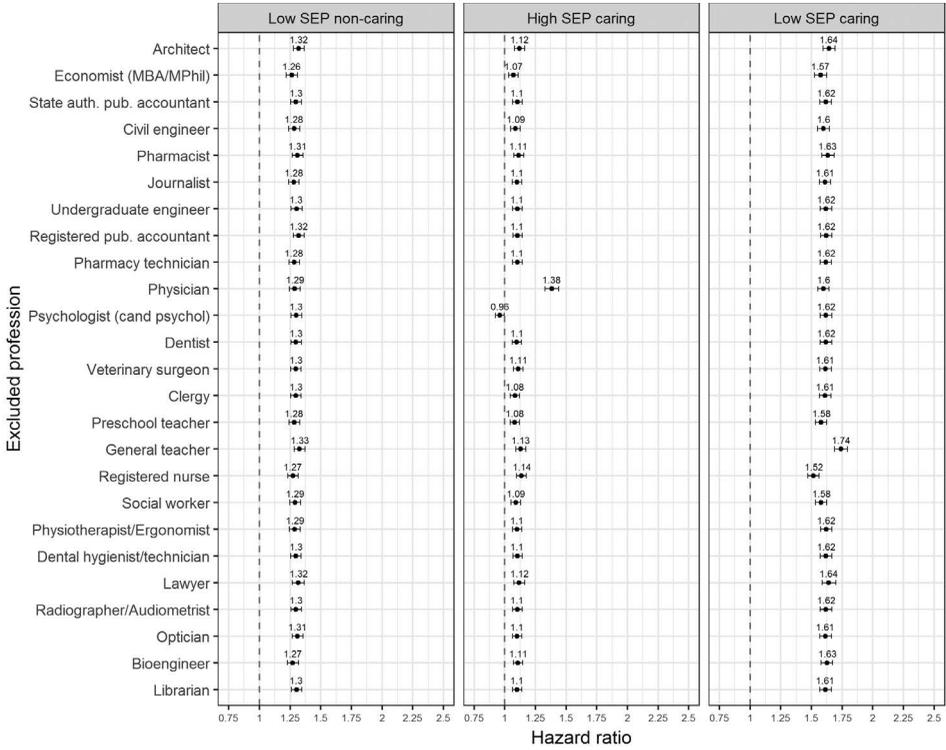
**Figure A1.** Relative risk (hazard ratio) of long-term sickness absence for men according to type of professional. Robustness check of impact of omitted professionals on estimate for type of profession.



Note: Reference category = High SEP non-caring professionals; adjusted for marital status, pregnancy, number of children under 18, immigration status, part-time work, income, sector; percent of women at workplace, centrality of workplace, prior sickness absence; year of birth fixed effects; stratified by order of events; Cox proportional regression model: Norway 2003-2013.

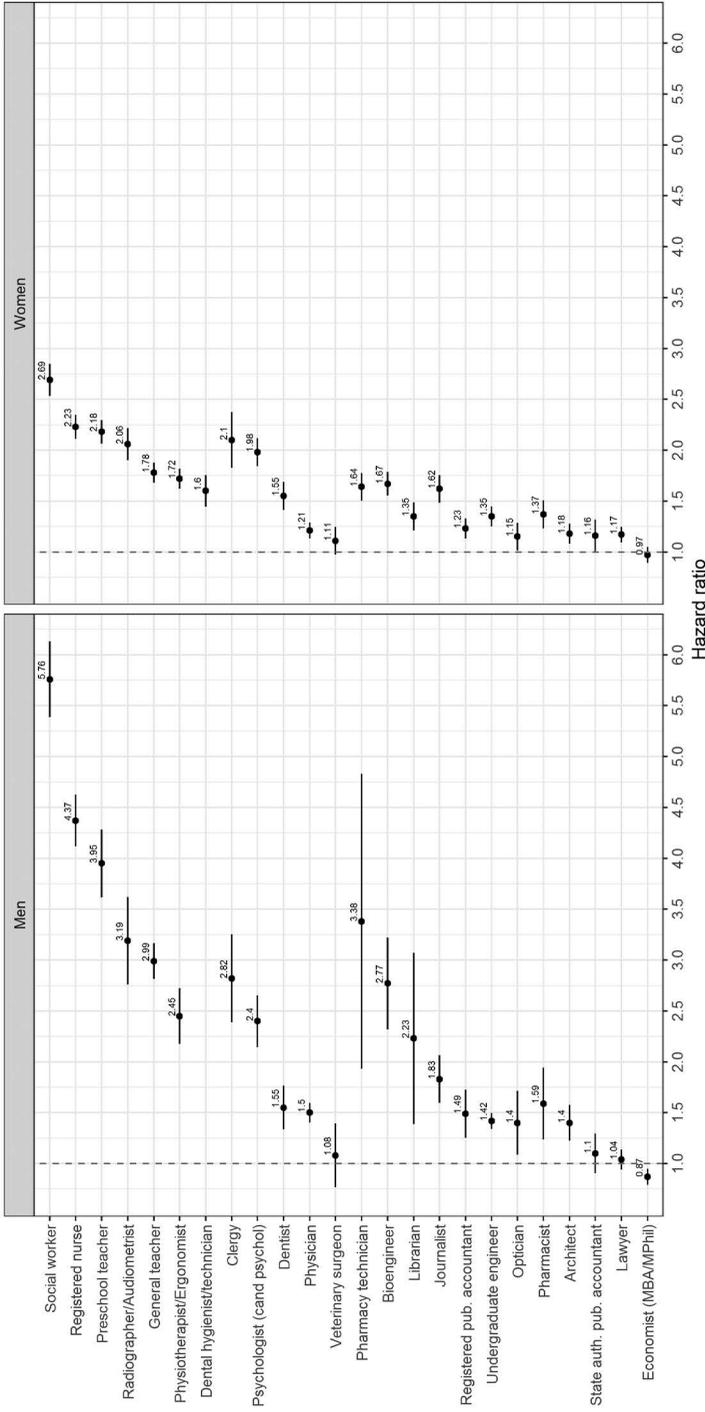


**Figure A2.** Relative risk (hazard ratio) of long-term sickness absence for women according to type of professional. Robustness check of impact of omitted professionals on estimate for type of profession.



Note: Reference category = High SEP non-caring professionals; adjusted for marital status, pregnancy, number of children under 18, immigration status, part-time work, income, sector; percent of women at workplace, centrality of workplace, prior sickness absence; year of birth fixed effects; stratified by order of events; Cox proportional regression model: Norway 2003-2013.

**Figure A3.** Unadjusted relative risk (hazard ratio) of long-term sickness absence among professionals, by gender.



Note: Reference category = civil engineer; stratified by order of events; Cox proportional regression model; Norway, 2003–2013; N = 2,274,229.