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Health differences between employees in human service professions and other professions

The impact of psychosocial and organizational work
environment

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Name: Vanda Aronsson
Supervisor: Susanna Toivanen
Co-supervisor: Anna Nyberg

Abstract

While recent publications indicate that employees in human service professions have higher risk of sickness absence and mental ill-health, little is known about the association with other health outcomes and possible mechanisms behind the differential risk. This study investigates differences in burnout, self-rated health and sickness absence between those in human service professions and other professions and examines whether differences in psychosocial and organizational work environment can explain possible variations. Data were derived from the Swedish Longitudinal Occupational Survey of Health (SLOSH), an approximately representative sample of the Swedish working population (n=4486). Results from binary logistic regressions suggested that those in human service professions had higher odds of burnout and sickness absence than those in other professions. Differences in burnout were explained by background variables while differences in sickness absence were explained by psychosocial and organizational work factors. Employees in human service professions had lower odds of suboptimal self-rated health than others in the fully adjusted model. Women were at higher risk of burnout, sickness absence, and all adverse psychosocial and organizational work environment factors except social support. Future studies should investigate the most crucial psychosocial and organizational work factors in human service professions with the objective to improve employee health.

Keywords: human service professions, burnout, self-rated health, sickness absence, psychosocial and organizational work environment, occupational health

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Introduction

Recently, employees within human service professions (see Appendix 1) have been identified as having an increased risk of mental ill-health and sickness absence compared with employees in other professions in Sweden (Swedish Social Insurance Agency, 2014). AFA Insurance (2015) recently released a report stressing the high risk of long-term sickness absence due to psychiatric diagnoses in human service professions compared with other professions, with those in social work (including e.g. psychologists) having the highest risk and child care personnel having the fastest increase. However, the reasons for these differences are still little explored.

AFA Insurance (2015) found that reactions to severe stress and adjustment disorders – in which burnout or *fatigue syndrome* is included – were the most common diagnoses resulting in long-term sickness absence for women in human service professions. Sickness absence has as described above been found to differ between the groups in recent reports, and is subsequently important to examine further. Another important health indicator is that of self-rated general health, which is well established to be associated with objective measures of morbidity and mortality (e.g. DeSalvo, Bloser, Reynolds, He & Muntner, 2006; Møller, Kristensen, & Hollnagel, 1996).

It has been suggested that psychosocial and organizational work environment factors possibly explain the higher risks of ill-health and sickness absence in human service professions compared with other professions, e.g. since many of those who report adverse psychosocial and organizational work environment work within the public sector (Swedish Social Insurance Agency, 2014). Subsequently, if adverse psychosocial and organizational work environment factors are more common in human service professions and adverse psychosocial and organizational work environment factors in turn are associated with ill-health, differences in health could possibly be explained by differences in psychosocial and organizational work environment. Following is a brief review of associations between well-established selected psychosocial work environment factors and burnout, self-rated health and sickness absence.

High efforts have in previous studies been associated with sickness absence (Harter Griep et al., 2010) while no association was found with suboptimal self-rated health in a study by

Darboe, Lin and Kuo (2016). Low rewards were associated with both sickness absence (Harter Griep et al., 2010; Lund et al., 2005) and suboptimal self-rated health (Darboe, Lin & Kuo, 2016). Those who experienced low social support have reported higher levels of burnout (Lindblom et al., 2006) and suboptimal self-rated health (Malinauskiene, Leisyte, Romualdas & Kirtiklyte, 2011; Niedhammer, Chastang & David, 2008). Contradictory results have been found for the association between sickness absence and low social support, with Lund et al. (2005) reporting no association and Niedhammer, Chastang and David (2008) reporting a positive association. Organizational injustice has been associated with burnout (Liljegren & Ekberg, 2009), self-rated health (Elovainio, Kivimäki & Vahtera, 2002) and sickness absence (Duijts, Kant, Swaen, van den Brandt & Zeegers, 2007; Elovainio, Kivimäki & Vahtera, 2002). Work-time control has been associated with burnout (Tucker, Bejerot, Kecklund, Aronsson & Åkerstedt, 2015) and sickness absence (Ala-Mursula et al., 2006; Duijts et al., 2007) and has also been found to buffer associations between adverse psychosocial work environment factors and sickness absence (Ala-Mursula et al., 2006; Ala-Mursula, Vahtera, Linna, Pentti & Kivimäki, 2005). Emotional work has in a number of studies been associated with burnout (Borritz et al., 2005; Bria, Băban & Dumitrașcu, 2012; van den Tooren & de Jonge (2008) as well as sickness absence (Aagestad, Tyssen & Sterud, 2016; Lund et al., 2005). No previous research was found regarding how perceived insufficient human or economic resources were associated with ill-health. Though, certain characteristics of work in human service professions mentioned below, e.g. the downsizing within the public sector, urges for more research in the field.

Human service professions

The idea to study human service professions as a group is based on an assumption that they to some extent have a shared work experience and work environment, overarching the obvious differences between the professions within the group. Work in human service professions is characterized by professional contact with other people, usually providing medical care, social services, educational services or public safety. The impact of working in close contact with other people can be a shared experience per se, e.g. since it often requires the workers to get emotionally engaged (Zapf, Vogt, Seifert, Mertini & Isic, 1999). Also there are other people specific characteristics of human service professions. E.g. many of them are place- and time dependent. Hence, you cannot decide to teach your pupils or perform a surgery between the time you eat dinner and put your children to sleep, which other professionals, certainly

highly educated, a lot of times can. It is also hard to do anything about patients, people with disabilities or inmates needing care or surveillance around the clock. Hence, shift work is a necessity in many human service professions and shift work has in turn been found to be the strongest predictor of low work-time control, particularly if including working nights (Albrecht, Kecklund, Tucker & Leineweber, 2016). Except for the people specific characteristics there are also other aspects distinguishing the human service professions from other professions. One is that human service professions are dominated by women and another that human services most often are run by municipalities and county councils/regions within the public sector. These factors will be discussed in the following sections.

A female-dominated group. First of all, the human service professions are numerically dominated by women. The Swedish labor market is characterized by high gender segregation, with only 14 and 13% of women and men respectively working in occupations with even gender distribution, defined as 40-60% of either sex (Statistics Sweden, 2014). The process associated with gender segregation in the labor market is complex and can among others be attributed to cultural and social perceptions of femininity and masculinity, and what kind of jobs that correspond with those perceptions (SOU 2014:81). The perceptions have, although not solely, in turn historical underpinnings; during the last century Swedish women went from being precluded from the labor market to entering it mainly in work assembling the unpaid work in the home, e.g. taking care of children and elderly and housekeeping (SOU 2004:43). In several other countries this work is still unpaid and typically carried out by women. Nursing jobs (considered certainly suitable for bourgeois and unmarried women) as well as working as clerks and secretaries were also occurring (SOU 2004:43).

While women's participation in paid work in Sweden started to gain acceptance in the 1960s-1970s, among others facilitated by legislation changes and the access to public childcare, the occupational gender segregation and roles on the labor market were already established (SOU 2004:43). This is referred to as horizontal gender segregation i.e. that women and men are positioned within different occupations. Apart from the horizontal gender segregation, a vertical gender segregation i.e. that men to a greater extent advance to and possess high positions on the labor market, and an internal gender segregation i.e. that women and men within the same profession are given different tasks and specializations are also present (SOU 2004:43). Occupations traditionally occupied by women generally have lower wages and status, why the opposite is true for occupations traditionally dominated by men (SOU

2014:81). This can be seen also within the human service professions where women e.g. to a greater extent occupy the lowest paid jobs (e.g. nursing aids and dental assistants) within the sector (Queneau, 2006), which may be described as an overlap between horizontal and vertical gender segregation (SOU 2014:81). There are several theories and explanations on both the individual and institutional level why these patterns persist (see e.g. SOU 2014:81), though they will not be discussed in-depth in this study.

Human service professions and the public sector. Second, the majority of the human service professions are positioned within the public sector, mainly within municipalities and county councils/regions. These organizations experienced major downsizing in Sweden during the 1990s which among others resulted in public sector workers, even more so women and in county councils/regions, reporting increased levels of loss of control over the work situation compared with workers in other sectors (Theorell, 2009). In a recent study, Albrecht et al. (2016) investigated work-time control in a representative sample of the Swedish working population and found that low levels of work-time control were more common among public sector workers. As mentioned above, the higher prevalence of shift work within the public sector is a possible explanation. One can subsequently assume differences between the public and private sector in economic and human resources due to downsizing and tax financing. AFA Insurance (2015) reported that both women and men in human service professions were at higher risk of sickness absence than those in other professions within the public sector (e.g. civil servants in the administrations, maintenance workers and gardeners) as well as those working in the private sector. Hence, one should be cautious to interpret working in the public sector as a risk factor per se. Certainly when considering that not nearly all of the tax financed education and health care institutions (to mention a few) are run by the public sector in Sweden, but by private companies, foundations etc.

The concept of (ill)-health

Ill-health is a complex phenomenon, discussed by for example Wikman, Marklund and Alexandersson (2005). They describe *illness* as the self-perceived ill-health that the individual identifies with, usually described as symptoms of either mental or physical character. Further, a *disease* is associated with a diagnosis or condition identified by a medical expert. Finally, *sickness* represent the social aspects of illness and disease, hence the assigned or self-perceived role that the previous two can result in, whereof sickness absence can be a

component. The authors emphasize that illness and disease do not necessarily result in sickness nor sickness absence, e.g. in the case of so called sickness presence. Or to use an example by the sociologist Bauman (1961; in Blaxter, 2004), not feeling well (illness) and/or a confirmed back condition (disease) does not always lead to confinement to bed (sickness).

Health on the other hand, does not per definition have to mean the absence of ill-health, but can also be defined as a condition of well-being or in which an individual is thriving (Wikman, Marklund & Alexandersson, 2005). Considering this, the authors stress their view that the different concepts should not be used interchangeably, but that one rather should assess illness, disease, sickness, sickness absence and health as separate constructs.

The outcomes in the present study can be discussed in relation to the different aspects mentioned above. All are self-reported which intuitively position them within the concept of illness. Though, while symptoms of burnout are reported in this study, it can also be diagnosed as a disease, in the present paradigm within the scope of fatigue syndrome. As mentioned above, sickness absence is included in the sickness concept; hence one could argue that whether or not self-reported, it could be perceived as sickness rather than illness. Hence, the outcomes in the present study can be perceived as complementary rather than co-dependent and it is not unlikely that different mechanisms lay behind the different outcomes. Although, for the sake of readability of this work they will at times be mentioned within the broad umbrella of ‘health’. In the following section, a brief description of the outcomes will be presented.

Burnout

Burnout can be defined as “a prolonged response to chronic emotional and interpersonal stressors on the job” (Maslach, Schaufeli & Leiter, 2001:397). One of the pioneers studying the phenomenon was Christina Maslach, who in the 1970s defined three dimensions of burnout: emotional exhaustion, cynicism and inefficacy (Maslach, Schaufeli & Leiter, 2001). She first studied the occurrence in human service professions – where the relationship between a provider and a recipient was central – but in the 1980s the concept was broadened to also include other occupational groups. Subsequently, the concept of burnout is originally evidence based rather than theory based (Borritz et al., 2005). The demanding characteristics of working as a provider were thought to contribute to emotional exhaustion while cynicism –

or depersonalization – was seen as a coping mechanism in which one distanced oneself from the client as a protection of one's own emotional reactions as well as of one's ability to be an effective worker (Maslach, Schaufeli & Leiter, 2001). Additionally to exhaustion and cynicism, a decreased ability to perform one's job – inefficacy – was found in those suffering from burnout, developed either along with or as a consequence of the prior two.

Self-rated health

Self-rated health is a global measure of individual health, usually measured by a single item. It has been found to be associated with e.g. physical symptoms (Singh-Manoux et al., 2006) and predictive of mortality (DeSalvo et al., 2006) and coronary heart disease (Møller, Kristensen, & Hollnagel, 1996). Blaxter (2004) point out that while it is a widely used measure of health, it is impossible to know what factors individuals consider and how they weigh them when they make the global assessment. For example, symptoms or disabilities do not necessarily predict lower self-rated health while others will report poor health despite the lack of obvious signs of illness or disease.

Sickness absence

Sickness absence is not a health outcome per se, but rather an indirect indicator of worker well-being (Harter Griep, Rotenberg, Chor, Toivanen & Landsbergis, 2010), also described as a work related outcome (Swedish Work Environment Authority, 2016). Aiming at a workplace with no sickness absence at all is not realistic nor desirable, rather excess sickness absence caused by poor psychosocial work environment ought to be prevented to the extent possible (Nielsen, Rugulies, Smith-Hansen, Christensen & Kristensen, 2006). Short and long sickness spells as well as frequencies of sickness spells have been discussed to measure different phenomena and to have different underlying causes (Wang, 2015). For example, taking short sickness spells might be a means to cope with a suboptimal work environment, as discussed by Ala-Mursula et al. (2006). Hence, one should be cautious when comparing studies using different measures of sickness absence (Wang, 2015).

To summarize, those in human service professions have in recent publications been found to have an increased risk of sickness absence compared to those in other professions. Whereas severe stress and adjustment disorders, including burnout, have been identified as the leading cause of long-term sickness absence for women, little is known about the general health of

those working in human service professions compared with those working in other professions. There is an extensive body of research in which those working in human service professions are studied, though they are to my knowledge seldom compared with those in other professions. Subsequently, research regarding why those in human service professions are at higher risk than others is scarce. As a consequence of that, little is also known about what psychosocial and organizational work environment factors that are more common in human service professions than other professions. While one based on the certain characteristics of work in human service professions can expect emotional demands, low work-time control and insufficient human and economic resources to be more prevalent in human service professions, differences regarding the other psychosocial work environment factors are to me unknown. Nevertheless, they are included based on previous research on their association with health related outcomes. To investigate if and why those in human service professions are at greater risk of ill-health than those in other professions is an important step towards decreasing societal health differences as well as creating work environments promoting employee well-being. Since the majority of those working in human service professions are women, it could also contribute to knowledge regarding gender differences in morbidity.

Aim

The aim of this study is to investigate differences in risk of burnout, self-rated health and sickness absence between those in human services professions and those in other professions and to explore whether psychosocial and organizational work environment factors can explain possible differences.

Specific research questions.

- To what extent do burnout, self-rated health and sickness absence differ between employees in human service professions and other professions?
- Do psychosocial and organizational working conditions differ between employees in human service professions and other professions?
- Can differences in burnout, self-rated health or sickness absence be explained by differences in psychosocial and organizational working conditions between the groups?
- Do the associations above differ by sex?

Methods

Subjects and data collection

Data from the Swedish Longitudinal Occupational Survey of Health (SLOSH) was used in the present study. It is a survey on an approximately nationally representative sample of the Swedish working population, with subsequent follow-ups every second year since 2006, based on the participants in the Swedish Work Environment Survey (SWES) 2003 and 2005. SLOSH contains questions on various work and health related conditions and can also be connected to data in the Swedish national registers, e.g. on income. There are two versions of the survey, one for those who currently work equal to or more than 30% of full time and one for those who permanently or temporarily work less or not at all. For the purpose of this study only those who currently worked 30% or more were included. Self-completion questionnaires were distributed by mail. For the sake of this study data from 2012 and 2014 were used, which allowed a prospective design with the measure of the exposures preceding the measure of the outcomes. Hence, type of profession, the psychosocial and organizational work environment factors and the background variables were based on the survey from 2012 and the outcome variables were based on the survey from 2014. The response rates were 57% and 53% for 2012 and 2014 respectively, and those included were more likely to be women, older, have high education and be born in a Scandinavian country (www.slosh.se; C. Leineweber, personal correspondence, May 9, 2016). The study population was 5560 individuals who completed the survey at both time points. Those with missing data on the included variables were excluded, which resulted in an analytical sample of 4486 individuals, with a mean age of 51.1 years ($SD = 9.56$).

Ethical considerations. Submitting a response and returning the survey suggested informed consent for participation in the study (Nyberg, Hanson, Leineweber & Johansson, 2015). Since the survey data can be coupled with register data, there is a substantial amount of data for each participant, which can entail a risk for the integrity of the participant. Though, the data is de-identified by Statistics Sweden and any researcher handling the data will subsequently not be able to identify a participant. Furthermore, the data analysis could only be performed at the Stress Research Institute, Stockholm University.

Outcome variables

Burnout was assessed with a subscale consisting of eight items from the Shirom-Melamed Burnout Questionnaire (SMBQ), measuring physical fatigue and emotional exhaustion: “I feel tired”, “I feel alert” (reverse scored), “I feel physically exhausted”, “I’m fed up”, “My batteries are empty”, “I’m burned out”, “I’m mentally tired” and “I don’t have the energy to get up in the morning”. They were scored on a 7-point grading scale reflecting to what extent one experienced above mentioned during the majority of the day, ranging from 1 “Almost never” to 7 “Almost always”. The total score was divided by the number of items to create an average for each subject. The mean score in the sample was 2.45 (SD=1.21) and Cronbach’s alpha .85. Several cut points have been used in previous studies containing SMBQ, e.g. the upper quartile (Glise, Hadzibajramovic, Jonsdottir, & Ahlborg, 2010; Grossi, Perski, Evengård, Blomkvist & Orth-Gomér, 2003) and ≥ 4 (e.g. Norlund et al., 2010; Soares, Grossi & Sundin, 2007). In the current study the cut point for severe burnout was set at 4.4 in accordance with Lundgren-Nilsson, Jonsdottir, Pallant and Ahlborg (2012) based on the intersection of distributions from a clinical and a general population. This put eight percent of the sample in the current study above the cut. While the scale was not developed for clinical diagnosis, high scores can often predict fulfillment of reaction to severe stress, and adjustment disorders in the International Classification of Diseases (ICD-10) system (Lundgren-Nilsson et al., 2012).

Sickness absence was assessed with a question regarding how many days in total during the past 12 months one reported sick, i.e. accumulated sickness absence days. There were five response options: No days, 1-7 days, 8-30 days, 31-90 days and 91 days or more. The responses were thereafter dichotomized into low sickness absence (0-30 days) and high sickness absence (31 days or more) as in e.g. Nyberg, Westerlund, Hanson and Theorell (2008) and Bergström, Bodin, Hagberg, Aronsson and Josephson (2009), which put six percent of the sample above the cut. Self-reported sickness absence has been found to correspond well with employers’ records by e.g. Voss, Stark, Alfredsson, Vingard and Josephson (2008), certainly so when not using a count of days as outcome.

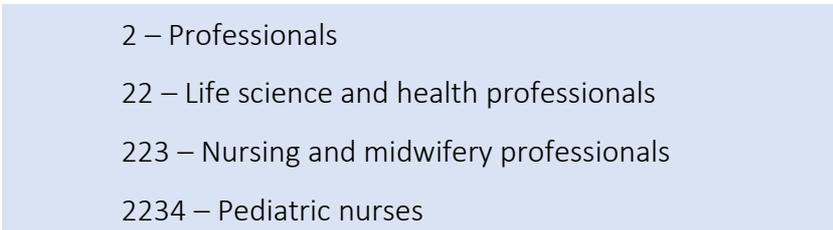
Self-rated health was assessed with the question “How would you rate your general state of health?” and graded on a 5-point scale ranging from 1 “Very good” to 5 “Very poor”. For the purpose of the analysis the replies were dichotomized into good self-rated health (very good

and quite good) and suboptimal self-rated health (neither good nor poor, quite poor and very poor) as used in a variety of studies. In the current study the prevalence of less than good health was 21%.

Predictor variable

The main predictor in the study was type of profession. All subjects were classified into either human service professions or other professions. Although human service professions have been studied before there is to my knowledge no well-recognized definition of them. However, the working definition in the current study was “jobs where professional contact with children, students, sick, elderly or individuals in an exposed situation in society is part of the daily work tasks”. While the human service profession refers to a specific education and subsequent degree in the United States (Neukrug, 2016), human service professions were in this study considered workers corresponding to the definition above, regardless of education. Subsequently, some in the human service professions did not have a university degree while others were primary education teachers or medical doctors.

The Swedish Standard Classification of Occupations (SSYK [Swedish abbreviation]; Statistics Sweden, 1996) was used to identify the human service professions. SSYK is organized hierarchically on four levels with 10 major groups, 27 sub-major groups, 113 minor groups and 355 unit groups. The groups are based on kind of work, skill level and skill specialization (see Figure 1 for an example). In the present study human service professions were identified at the unit group (and subsequently four-digit) level.



2 – Professionals
22 – Life science and health professionals
223 – Nursing and midwifery professionals
2234 – Pediatric nurses

Figure 1. Example of SSYK codes on all four levels

If all unit groups within the minor group were classified as human service professions the code for the minor group was also included. This due to the fact that all subjects were not classified at the finest level. A full list of the 39 unit groups and 13 minor groups classified as human service professions can be found in Appendix 1. They included e.g. midwives, social

work professionals, speech therapists, child-care workers and prison guards. Consequently, all subjects not classified into a human service profession made up the comparison group. A list of SSYK codes and titles for the 19 most common professions in the study can be found in Appendix 2.

Additionally to using the working definition to identify human service professions, a correspondence regarding what professions to include was held with employees at the Swedish Social Insurance Administration (SIA), the Swedish Work Environment Authority (SWEA), Statistics Sweden and AFA Insurance. A few professions were difficult to classify, even when applying the working definition and consulting other competences. Though, for the sake of this study the shared characteristics of the human service professions were considered the core – which resulted in a rather strict classification. Three unit groups who were considered but excluded were university teachers, workers with jobs including contact with students outside the ordinary educational system (e.g. drama pedagogues and driving instructors) and recreation leaders.

Rugulies et al. (2006) used a slightly different approach when studying human service professions, by identifying and selecting all occupational groups within organizations in the human service sector (e.g. social security offices, psychiatric prisons and home care services) and studied whether poor psychosocial work environment was associated with higher sickness absence. Though, selecting those that are believed to have a job dominated by human contact rather than all workers within a human service oriented organization could be considered more precise.

Psychosocial and organizational work factors

Eight work environment factors were used in the study, six of them concerning aspects of the psychosocial work environment and two of them concerning aspects of the organizational work environment. The Swedish Work Environment Authority (2016:2) defines psychosocial work environment as demands and resources at work. In the present study, efforts, (low) work-time control, organizational injustice and emotionally difficult situations at work could be classified as demands, while rewards and social support could be considered as resources. Together they make up the psychosocial work environment factors. Organizational factors are defined as the conditions, or organizational framework, in which the job is performed

(Swedish Work Environment Authority 2016:2). In the present study perceived human resources and perceived economic resources could be considered organizational work environment factors. All of the work environment variables were based on self-reports.

Efforts were measured with three items: “I have constant time pressure due to a heavy work load”, “I have many interruptions and disturbances while performing my job” and “Over the past few years, my job has become more and more demanding”. Cronbach’s alpha is a measure of reliability for psychometric tests, estimating how well different items measure the same construct (Bonett & Wright, 2015). It ranges from 0 (no correlation) to 1 (perfect correlation). For efforts, Chronbach’s alpha was 0.79. The items were graded on a 4-point scale ranging from 1 “Strongly agree” to 4 “Strongly disagree”. A quartile cut was performed to define cases with highest efforts. In the current sample that corresponded to an average score of 2.7 or lower.

Rewards were measured with seven questions and scored on a 4-point scale ranging from 1 “Strongly agree” to 4 “Strongly disagree”. The questions were: “I receive the respect I deserve from my supervisor” (reversely scored), “My job promotion prospects are poor”, “I have experienced or I expect to experience an undesirable change in my work situation”, “My job security is poor”, “Considering all my efforts and achievements, I receive the acknowledgement I deserve” (reversely scored), “Considering all my efforts and achievements, my job promotion prospects are adequate” (reversely scored), “Considering all my efforts and achievements, my income is adequate” (reversely scored) with Cronbach’s alpha 0.73. A quartile cut was performed to define cases with lowest rewards. In the current sample that corresponded to an average score of 2.1 or lower.

Social support was assessed with six items from the support section of the Demand Control Support Questionnaire (DCSQ) regarding the workplace atmosphere: “There is a calm and pleasant atmosphere where I work”, “There is a good spirit of unity”, “My colleagues are there for me”, “People understand that I can have a bad day”, “I get on well with my superiors” and “I get on well with my colleagues” (Cronbach’s alpha 0.86). It was scored on a 4-point scale ranging from 1 “Strongly agree” to 4 “Strongly disagree”. A quartile cut was performed to define cases with lowest social support, which corresponded to an average score of 2.2 or higher.

Work-time control was measured with six questions on to what extent one could influence one's work-time considering 1) the length of the work day 2) the starting and finishing times of the work day 3) taking breaks during the work day 4) scheduling work days 5) scheduling vacations and time off and 6) handling private matters during the workday (Cronbach's alpha 0.88). The questions were scored on a 5-point scale ranging from 1 "Very little" to 5 "Very much". A quartile cut was performed to define cases with lowest work-time control, corresponding to an average score of 2.0 or less.

Organizational injustice was assessed with six items regarding decision making in the organization: "Decisions are taken on the basis of correct information", "Bad decisions can be revoked or changed", "All parties affected by the decision are represented", "Decisions taken are coherent (the same rules apply to everyone)", "Everyone is entitled to give their opinion in matters of immediate personal concern", "Feedback is provided regarding the consequences of decisions and people are informed accordingly" with Cronbach's alpha 0.91. It was scored on a 5-point scale ranging from 1 "Strongly agree" to 5 "Strongly disagree". A quartile cut was performed to define cases with highest organizational injustice, which corresponded to an average score of 3.3 or higher.

Emotionally difficult situations at work were measured with the question "Does your work put you in emotionally difficult situations?". It was scored on a 4-point scale ranging from 1 "Yes, often" to 4 "No, almost never/Never". Cases were defined as those who often (1) or sometimes (2) were put in emotionally difficult situations, which placed 58% of the sample above the cut.

Perceived resources were assessed with two items: "Are there enough human resources for you to do your job?" and "Are there enough economic resources for you to do your job?". They were scored on a 4-point scale ranging from 1 "Yes, often" to 4 "No, almost never/Never". Cases were defined as those whose answer was No, rarely (3) or No, almost never/Never (4) on the questions respectively. The prevalence of insufficient human resources was 15% and insufficient economic resources 16%.

Background variables

Sex, age, education and civil status were used as background variables. Educational level and civil status were self-reported. All participants were classified as either woman or man. Higher rates of sickness absence (Wang, 2015) and suboptimal self-rated health (Case & Paxson, 2005) have been found for women than for men. For burnout some studies found no sex differences (e.g. Bria, Băban & Dumitrașcu, 2012; Maslach, Schaufeli & Leiter, 2001) while one study found that women had an increased risk (Norlund et al., 2010).

Age was used as a categorical variable with five groups for the descriptive analysis but controlled for as a continuous variable in the regression models. High age has been associated with a higher risk of sickness absence (Duijts et al, 2007; Niedhammer, Chastang & David, 2008) and poor self-rated health (Niedhammer, Chastang & David, 2008), while younger age (e.g. Maslach, Schaufeli & Leiter, 2001; Norlund et al., 2010; Soares, Grossi & Sundin, 2007) has been associated with an increased risk of burnout.

There were five educational group with lowest education (compulsory) was used as reference. For the sake of the regression analysis dummy-variables were created for each of the educational categories. Low education and not graduating from school has been associated with sickness absence (Duijts et al., 2007; Eshoj, Jepsen & Nielsen, 2001) and suboptimal self-rated health in an urban Korean sample (Kim, Yoo, Park, Lee & Kim, 2015) and in a sample from several OECD countries, but not in Sweden (Borgonovi & Pokropek, 2016). For burnout no differences were found with the regard to education (Lindblom, Linton, Fedeli & Bryngelsson, 2006).

For civil status the options were “Married/cohabiting” and “Single” with the former being used as reference. Duijts et al. (2007) found that unmarried civil status was associated with higher risk of sickness absence and Maslach, Schaufeli and Leiter (2001) found the same for burnout.

Statistical analysis and modelling

The statistical analysis was performed in IBM SPSS Statistics Version 22. Frequencies and percentages for all variables were presented stratified by sex and type of profession. Statistical differences in psychosocial and organizational work environment between women in human

service professions and women in other professions, and for men likewise, were assessed with Pearson's chi-square tests. Binary logistic regression was the method used for the main analyses, with all outcomes being dichotomized. Binary logistic regression is a good alternative when outcome variables have skewed distributions, which is common when it comes to health data. With multiple logistic regressions differences between groups can be assessed while the effect of other independent variables are kept constant. Hence, one can come closer to the 'pure' effect of the predictor variable on the outcome variable. Results are presented as odds ratios with 95% confidence intervals. Odds ratios higher than 1 indicate higher probability of the outcome in comparison with the reference group while odds ratios lower than 1 indicate lower probability. The 95% confidence interval indicates an upper and a lower limit in which the true population estimate lays 95% of the times. If the confidence interval does not include the estimate of the reference group, which is 1 in the case of binary logistic regression, there is a statistically significant difference between the groups at the 95% confidence level. In the result tables of the multiple logistic regressions, statistically significant associations are indicated in bold.

An interaction analysis was performed for sex and type of profession and it did not reach statistical significance for burnout, self-rated health nor sickness absence. However, interactions were found when investigating whether the association between being in a human service profession and low social support, high organizational injustice, low work-time control and insufficient human resources respectively varied with sex. Hence, there were sex differences in the association between type of profession and four of the work environment factors (see Results section; Figure 4). Nevertheless, the regressions were not stratified by sex, mainly due to possible power problems considering the low amount of men in human service professions (4% of the analytical sample).

Three models were fitted for each outcome. In the crude models the raw associations between all covariates and the outcome were tested. In the subsequent models a block-wise logistic regression approach was used, adding a number of variables at a time assessing the contribution of each block, as described by for instance Soares, Grossi and Sundin (2007). In Model 1, the association between type of profession and the outcome was tested, controlling for the background variables sex, civil status, age and education. In Model 2 the psychosocial and organizational work environment variables were added. If the main association was attenuated to non-significance in Model 2, or if the main association went from non-

significant to statistically significant, closer attention was paid to the variables that were added to see if any of them seemed to have stronger explanatory value. This was performed by adding one of the variables at a time to the previous model. While the results of this procedure are not presented in the tables they are described in the text in the Results section. In one case the background variables alone explained the positive main association found in the crude model. In that case, both the background and psychosocial and organizational work environment variables were added one by one to the crude association for exploratory purposes.

Sensitivity analyses were performed for all outcomes. For burnout, a sensitivity analysis was performed using the upper quartile with highest burnout scores (average ≥ 3.13) as cases. For self-rated health, a sensitivity test was carried out using only those who rated their health as “Very poor” and “Quite poor” as cases, which put 6.7% above the cut. For sickness absence, sickness absence 8 days or more was used as cut-off point which put 18.9% above the cut.

Table 1. Frequencies and percentages for background variables, psychosocial and organizational work environment variables and outcome variables by type of profession and sex (n=4486)

	Type of profession							
	Human service profession N = 1361				Other profession N = 3125			
	Men N=195 (14%)		Women N=1166 (86%)		Men 1699 (54%)		Women 1426 (46%)	
	N	%	N	%	N	%	N	%
Age								
30 and under	3	1.5	31	2.7	27	1.6	38	2.7
31-40	28	14.4	135	11.6	220	12.9	223	15.6
41-50	41	21.0	318	27.3	486	28.6	452	31.7
51-60	75	38.5	451	38.7	606	35.7	506	35.5
61 and above	48	24.6	231	19.8	360	21.2	207	14.5
Education								
Compulsory	11	5.6	130	11.1	208	12.2	138	9.7
2-year upper secondary	12	6.2	175	15.0	509	30.0	305	21.4
3 or 4-year upper secondary	22	11.3	133	11.4	471	27.7	386	27.1
University less than 3 years	44	22.6	251	21.5	179	10.5	186	13.0
University 3 years or more	106	54.4	477	40.9	332	19.5	411	28.8
Primary employer								
Municipality/county council/region	133	68.6	973	84.2	176	10.4	354	25.0
State	27	13.9	28	2.4	192	11.4	251	17.7
Private	22	11.3	124	10.7	1139	67.6	672	47.5
Other	12	6.2	31	2.7	178	10.6	139	9.8
Civil status								
Single	33	16.9	246	21.1	322	19.0	327	22.9
Married/cohabiting	162	83.1	920	78.9	1377	81.0	1099	77.1
Psychosocial and organizational work environment[†]								
High efforts ¹	49	25.1	349	29.9	300	17.7	374	26.2
Low rewards ¹	62	31.8	368	31.6	310	18.2	303	21.2
Low social support ¹	65	33.3	317	27.2	389	22.9	359	25.2
High organizational injustice ¹	79	40.5	350	30.0	398	23.4	378	26.5
Low work-time control ¹	69	35.4	572	49.1	271	16.0	265	18.6
Emotionally difficult situations at work ²	180	92.3	1092	93.7	640	37.7	711	49.9
Insufficient human resources ²	39	20.0	202	17.3	209	12.3	223	15.6
Insufficient economic resources ²	44	22.6	311	26.7	189	11.1	173	12.1
Outcomes								
Severe burnout	14	7.2	121	10.4	85	5.0	156	10.9
Suboptimal self-rated health	34	17.4	240	20.6	370	21.8	297	20.8
Sickness absence ³								
No	95	48.7	463	39.7	937	55.2	621	43.5
1-7 days	74	37.9	414	35.5	528	31.1	508	35.6
8-30 days	21	10.8	174	15.9	172	10.1	191	13.4
31-90 days	4	2.1	61	5.2	35	2.1	60	4.2
91 days or more	1	0.5	54	4.6	27	1.6	46	3.2

¹ Cases defined by a quartile cut

² Using 'Yes, often' and 'Yes, sometimes' as case

³ During the past 12 months

[†] Statistically significant differences between type of professions within sexes determined by Pearson's Chi-square test (95 % significance level) in bold face.

Results

Descriptive statistics

In Table 1 frequencies and percentages for all variables can be found, stratified by type of profession and sex. Those in human service professions made up 30% of the analytical sample (n=1361). They were clearly dominated by women (86%) while there was a slightly higher proportion of men in the other professions (54%). High education was considerably more common in the human service professions, even more so among men, with the mode for both men and women being university education or equivalent 3 years or more. In other professions, the mode was 2-year upper secondary education/vocational training for men and 3 or 4-year upper secondary education for women. While municipality/county council/region was the most common primary employer in human service professions, the private sector was dominant for other professions. Age and civil status distribution did not differ markedly between the types of professions while there were some sex differences (see Table 1). Poor psychosocial and organizational work environment was more common in human service professions than in other professions for all variables (see Figure 2). Significant differences are indicated in bold face in Table 1. Men in human service professions had significantly higher prevalence of all adverse psychosocial and organizational work environment factors than men in other professions. Compared with women in other professions, women in human service professions had significantly higher prevalence of all adverse psychosocial and organizational work environment factors except for low social support and insufficient human resources. While differences generally were larger among men than among women, poor psychosocial and organizational work environment was significantly more common among women than men for all variables except for low social support (results not reported).

Burnout was more common for women than for men, with slight differences between types of professions. Men in human service profession had a somewhat lower percentage of suboptimal self-rated health than the other groups. For sickness absence a sex difference was observed with women reporting more days of sickness absence than men, as well as a difference between types of professions with those in human service professions generally reporting more days of sickness absence. Consequently, no sickness absence during the past 12 months was reported most frequently by men not in human service professions while women in human service professions had the highest percentage of sickness absence 91 days or more during the past 12 months (see Figure 3).

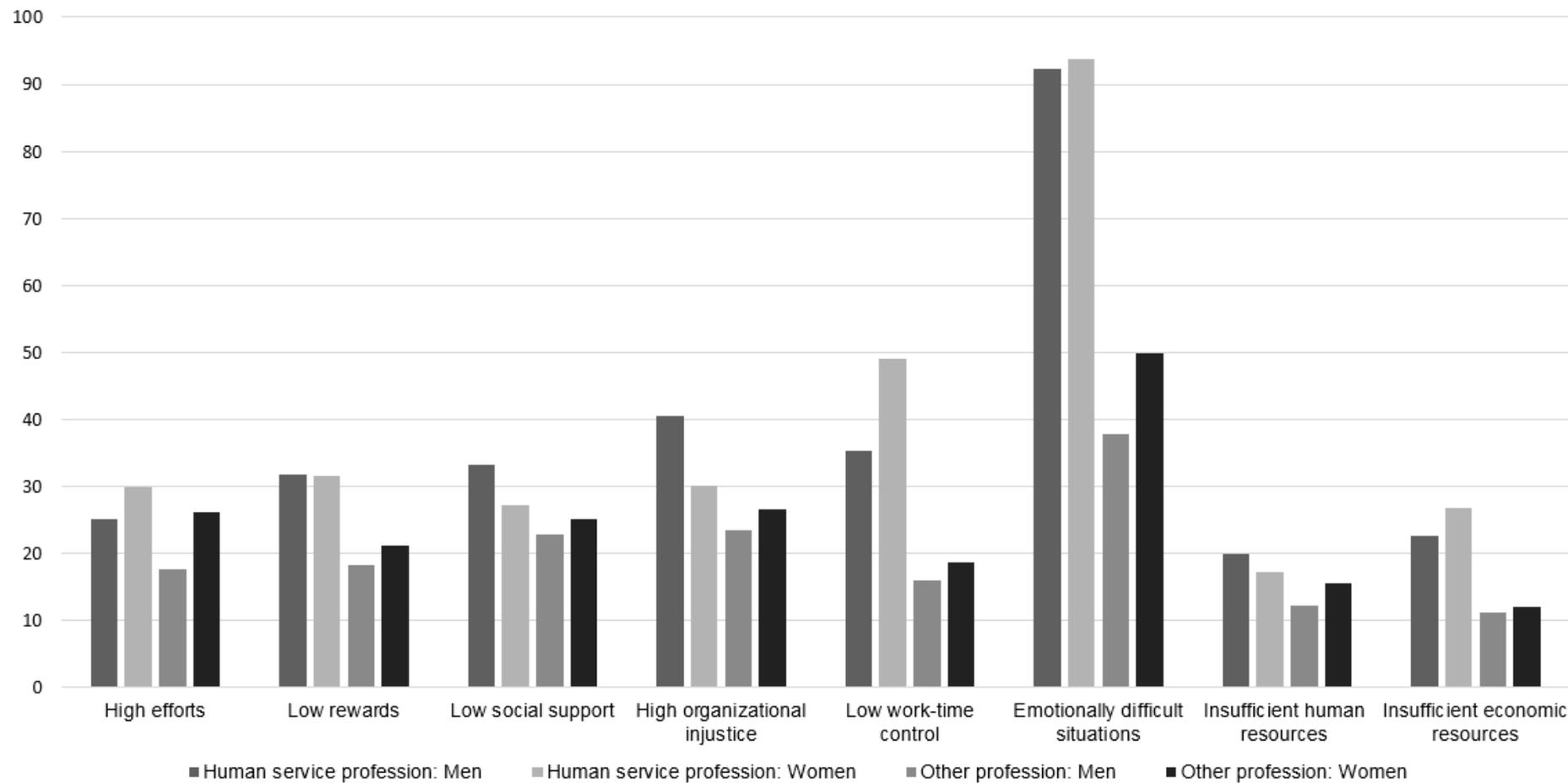


Figure 2. Distribution (%) of psychosocial and organizational work environment variables by type of profession and sex (n=4486)

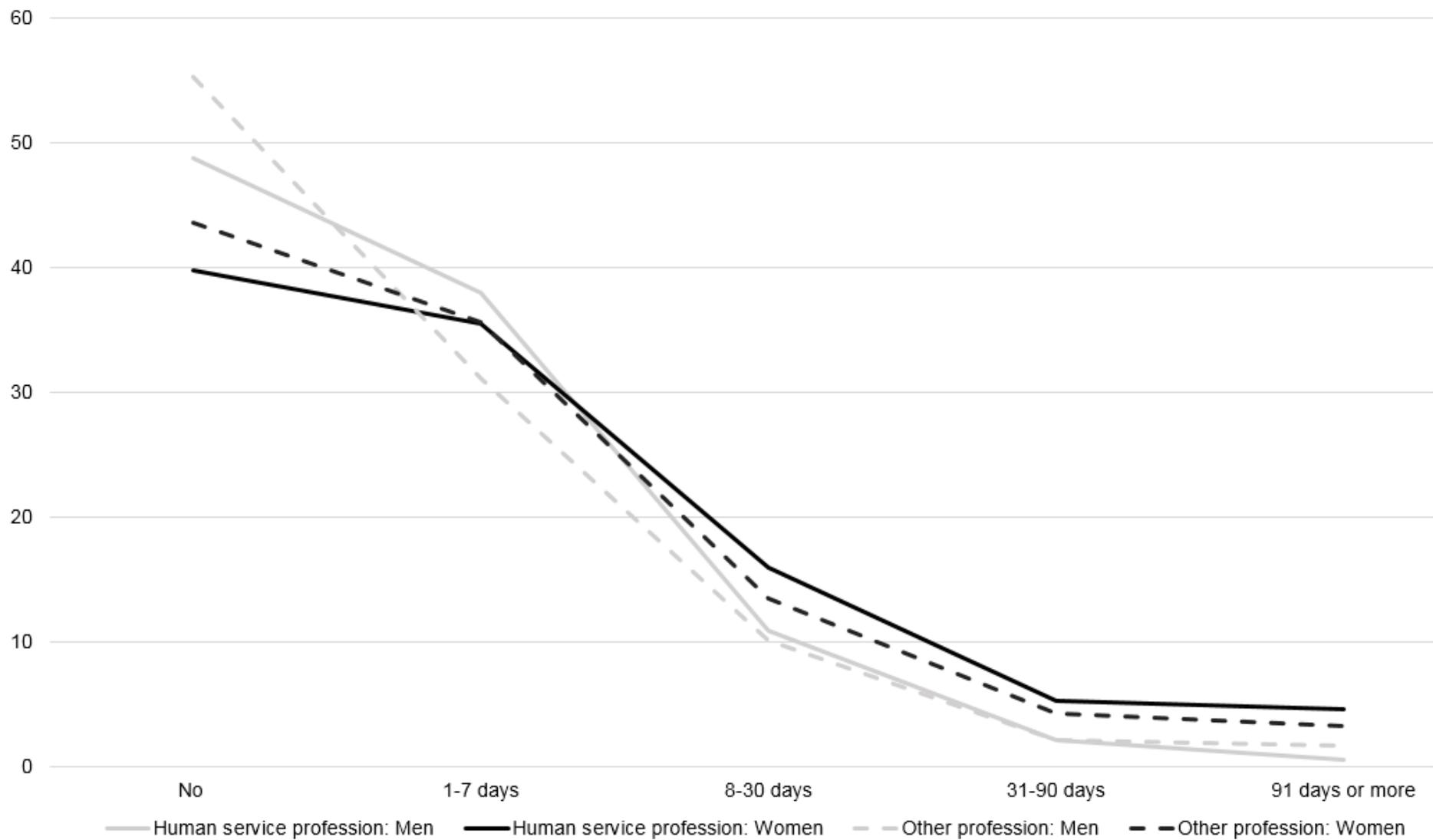


Figure 3. Distribution (%) of accumulated sickness absence during the past 12 months by type of profession and sex (n=4486)

Burnout

All variables except for education were independently associated with burnout (Table 2; Crude models). Those in human service professions had significantly higher odds of burnout (OR=1.32 [95% CI 1.06-1.64]) than those in other professions. Women had significantly higher odds than men (OR=2.17 [1.71-2.75]) and singles significantly higher odds than married/cohabiting (OR=1.59 [1.26-2.02]). A statistically significant negative association was found for age, hence older participants had lower odds of burnout (OR=.98 [0.97-0.99]). All adverse psychosocial and organizational work environment variables were positively associated with burnout, efforts, rewards and social support had the strongest relationship (see Table 2). Adding the background variables in Model 1, the association between type of profession and burnout (the main association) was attenuated to a non-significant level (OR=1.12 [0.88-1.43]). Looking at the background variables separately, sex alone explained the association between type of profession and burnout, while the main association stayed statistically significant controlling for level of education, age and civil status respectively (OR 1.32-1.41). Adding the psychosocial and organizational work environment variables separately to the crude association, all variables except insufficient human resources (OR=1.27, $p > .05$) explained the positive association between type of profession and burnout. In Model 2, the odds ratio for those in human service professions was attenuated to 0.78 (0.59-1.105) hence a negative yet not statistically significant association.

In the sensitivity analysis using the upper quartile with highest burnout scores (average ≥ 3.13) as cases results were similar, with the difference that the negative association between type of profession and burnout in Model 2 was statistically significant in the sensitivity analysis (OR= 0.75, $p < .01$). Hence, it indicated that those in human service professions had lower odds of burnout than those in other professions if background variables and psychosocial and organizational work environment variables were adjusted for. Adding the work environment factors one by one to Model 1, emotionally difficult situations at work was the only variable that alone turned the main association statistically significant.

Table 2. Associations between type of profession, psychosocial and organizational work environment in 2012 and severe burnout in 2014 based on logistic regression analysis (n=4486).

	Severe burnout		
	Crude models ^a	Model 1 ^b	Model 2 ^c
	OR (CI)	OR (CI)	OR (CI)
Human service professions	1.32 (1.06, 1.64)	1.12 (0.88, 1.43)	0.78 (0.59, 1.05)
Women	2.17 (1.71, 2.75)	2.13 (1.66, 2.75)	1.96 (1.51, 2.55)
Singles	1.59 (1.26, 2.02)	1.55 (1.22, 1.97)	1.44 (1.12, 1.85)
Age¹	0.98 (0.97, 0.99)	0.98 (0.97, 0.99)	0.99 (0.97, 1.00)
Education²			
2-year upper secondary	1.24 (0.84, 1.84)	1.27 (0.85, 1.90)	1.33 (0.88, 2.02)
3 or 4-year upper secondary	1.10 (0.94, 1.63)	1.01 (0.67, 1.53)	1.06 (0.69, 1.63)
University less than 3 years	0.99 (0.64, 1.53)	0.84 (0.54, 1.32)	0.87 (0.54, 1.38)
University 3 years or more	1.02 (0.70, 1.51)	0.83 (0.56, 1.25)	0.86 (0.56, 1.31)
Psychosocial and organizational work environment			
High efforts	3.44 (2.77, 4.26)		2.16 (1.70, 2.76)
Low rewards	3.58 (2.89, 4.45)		1.87 (1.44, 2.42)
Low social support	3.40 (2.75, 4.22)		2.01 (1.57, 2.58)
High organizational injustice	2.17 (1.75, 2.70)		1.16 (0.90, 1.48)
Low work-time control	1.99 (1.60, 2.48)		1.29 (1.00, 1.66)
Emotionally difficult situations at work	1.68 (1.34, 2.11)		1.22 (0.93, 1.60)
Insufficient human resources	2.42 (1.90, 3.08)		1.14 (0.84, 1.53)
Insufficient economic resources	2.46 (1.94, 3.12)		1.17 (0.87, 1.57)

^a Unadjusted ^b Adjusted for sex, civil status, age and education ^c Model 1 + psychosocial and organizational work environment

¹ Continuous ² Compulsory as reference. Statistically significant odds ratios (95% CI) in bold face.

Table 3. Associations between type of profession, psychosocial and organizational work environment in 2012 and suboptimal self-rated health in 2014 based on logistic regression analysis (n=4486).

	Suboptimal self-rated health		
	Crude models ^a	Model 1 ^b	Model 2 ^c
	OR (CI)	OR (CI)	OR (CI)
Human service professions	0.93 (0.79, 1.09)	1.05 (0.88, 1.25)	0.81 (0.66, 1.00)
Women	0.96 (0.83, 1.11)	1.00 (0.92, 1.54)	0.93 (0.79, 1.10)
Singles	1.39 (1.17, 1.65)	1.38 (1.16, 1.63)	1.31 (1.10, 1.56)
Age¹	1.00 (0.99, 1.01)	1.00 (0.99, 1.00)	1.00 (0.99, 1.01)
Education²			
2-year upper secondary	1.18 (0.91, 1.52)	1.19 (0.92, 1.54)	1.20 (0.92, 1.57)
3 or 4-year upper secondary	1.02 (0.79, 1.32)	1.02 (0.78, 1.33)	1.04 (0.79, 1.36)
University less than 3 years	0.72 (0.53, 0.96)	0.71 (0.53, 0.96)	0.70 (0.51, 0.95)
University 3 years or more	0.75 (0.58, 0.96)	0.74 (0.57, 0.96)	0.73 (0.56, 0.96)
Psychosocial and organizational work environment			
High efforts	1.76 (1.50, 2.06)		1.35 (1.13, 1.61)
Low rewards	2.08 (1.78, 2.43)		1.31 (1.09, 1.58)
Low social support	2.28 (1.95, 2.65)		1.64 (1.38, 1.96)
High organizational injustice	1.79 (1.53, 2.08)		1.32 (1.11, 1.57)
Low work-time control	1.53 (1.31, 1.79)		1.27 (1.07, 1.52)
Emotionally difficult situations at work	1.18 (1.02, 1.37)		1.19 (1.00, 1.41)
Insufficient human resources	1.78 (1.49, 2.14)		1.25 (1.01, 1.56)
Insufficient economic resources	1.68 (1.40, 2.01)		1.09 (0.88, 1.36)

^a Unadjusted ^b Adjusted for sex, civil status, age and education ^c Model 1 + psychosocial and organizational work environment

¹ Continuous ² Compulsory as reference. Statistically significant odds ratios (95% CI) in bold face.

Suboptimal self-rated health

Looking at the crude associations for suboptimal self-rated health (Table 3; Crude models), type of profession (OR=0.93 [0.79-1.09]) and sex (OR=0.96 [0.83-1.11]) had no statistically significant relationship with the outcome. Single civil status and all of the adverse psychosocial and organizational work environment factors were positively associated with suboptimal self-rated health on a statistically significant level (see Table 3). High education was negatively associated with the outcome. Hence, those with university education or equivalent less than 3 years (OR=0.72 [0.53-0.96]) as well as those with university education or equivalent 3 years or more (OR=0.75 [0.58-0.96]) had lower odds of suboptimal self-rated health compared with those who had compulsory education. The main association stayed at a non-significant level when adding the background variables (Model 1; OR=1.05 [0.88-1.25]). When adding the psychosocial and organizational work environment variables (Model 2) the association between type of profession and the outcome turned statistically significant in the negative direction (OR=0.81 [0.66-1.00]). Hence, those in human service professions had lower odds of suboptimal self-rated health compared with those in other professions if psychosocial and organizational work environment were adjusted for. Adding the psychosocial and organizational work environment variables to Model 1 one at a time, none of them alone lowered the odds ratio to a statistically significant level.

In the sensitivity analysis only those who rated their health as “Very poor” and “Quite poor” were defined as cases. The results were similar to the ones found with the less conservative cut-off.

Sickness absence 31 days or more

Looking at the crude associations in Table 4, being in a human service profession was associated with 1.7 times higher odds of sickness absence 31 days or more during the past 12 months compared with those working in other professions (1.33-2.17). Furthermore, a statistically significant positive association was found between being a woman and the outcome (OR=2.54 [1.92-3.36]) compared to being a man as well as for all the adverse psychosocial and organizational work environment variables (see Table 4). No significant associations were found for civil status, age or education. While the background variables (sex, age, education and civil status) attenuated the main association (Model 1; OR=1.46 [1.11-1.91]), it turned statistically non-significant when adding the psychosocial and

Table 4. Associations between type of profession, psychosocial and organizational work environment in 2012 and sickness absence (31 days or more during the past 12 months) in 2014 based on logistic regression analysis (n=4486).

	Sickness absence (31 days or more)		
	Crude models ^a	Model 1 ^b	Model 2 ^c
	OR (CI)	OR (CI)	OR (CI)
Human service professionals	1.70 (1.33, 2.17)	1.46 (1.11, 1.91)	1.09 (0.80, 1.50)
Women	2.54 (1.92, 3.36)	2.40 (1.78, 3.24)	2.26 (1.67, 3.06)
Singles	1.30 (0.99, 1.72)	1.24 (0.94, 1.64)	1.19 (0.30, 1.58)
Age¹	1.00 (0.98, 1.01)	0.99 (0.98, 1.01)	0.99 (0.98, 1.01)
Education²			
2-year upper secondary	1.06 (0.70, 1.59)	1.16 (0.77, 1.75)	1.17 (0.77, 1.77)
3 or 4-year upper secondary	0.82 (0.54, 1.25)	0.87 (0.56, 1.34)	0.88 (0.56, 1.37)
University less than 3 years	0.72 (0.45, 1.16)	0.61 (0.38, 0.99)	0.63 (0.39, 1.02)
University 3 years or more	0.68 (0.45, 1.02)	0.57 (0.37, 0.87)	0.58 (0.38, 0.90)
Psychosocial and organizational work environment			
High efforts	1.52 (1.17, 1.96)		1.09 (0.82, 1.46)
Low rewards	1.78 (1.38, 2.29)		1.11 (0.83, 1.50)
Low social support	1.87 (1.45, 2.39)		1.49 (1.12, 1.98)
High organizational injustice	1.46 (1.14, 1.89)		1.18 (0.89, 1.57)
Low work-time control	2.09 (1.64, 2.67)		1.49 (1.14, 1.96)
Emotionally difficult situations at work	1.76 (1.35, 2.28)		1.37 (1.01, 1.86)
Insufficient human resources	1.47 (1.09, 1.98)		1.16 (0.81, 1.66)
Insufficient economic resources	1.45 (1.08, 1.95)		0.92 (0.63, 1.31)

^a Unadjusted ^b Adjusted for sex, age, education and civil status ^c Model 2 + psychosocial and organizational work environment

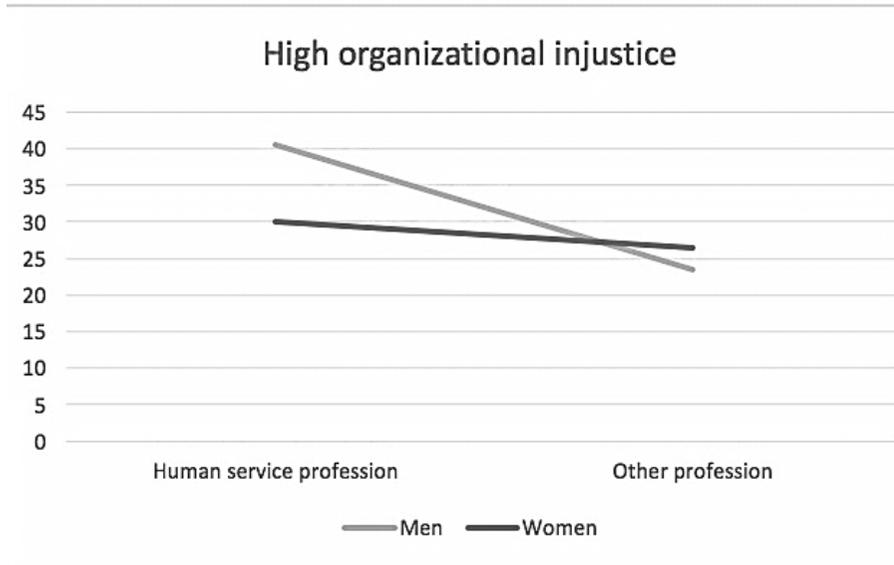
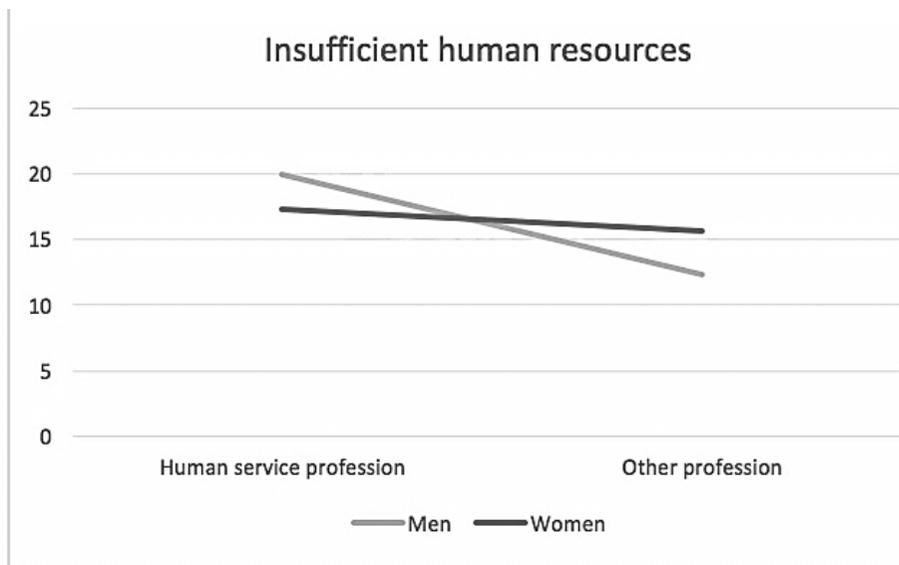
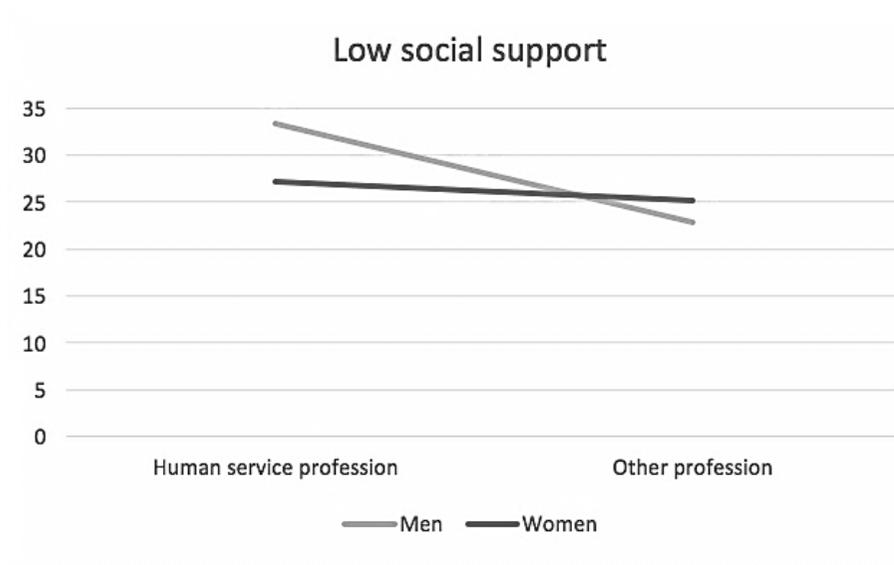
¹ Continuous ² Compulsory as reference. Statistically significant odds ratios (95% CI) in bold face.

organizational work environment variables (Model 2; OR=1.09 [0.80-1.50]). Looking at each of the psychosocial and organizational work environment variables separately (keeping background variables constant) low work time control and emotionally difficult situations at work respectively explained the remaining association alone. The other variables reduced the odds ratios to 1.38-1.44.

In the sensitivity analysis using sickness absence 8 days or more as cut-off point the results differed on a few points. Emotionally difficult situations at work and human resources at the workplace had no statistically significant association with the outcome. Furthermore, the fully adjusted model (Model 2) did not explain the higher odds of sickness absence for those in human service professions compared with those in other professions to the same extent, consequently the main association remained statistically significant at the $p \leq 0.01$ level.

Interactions

No statistically significant interactions were found between sex and type of profession in relation to sickness absence, severe burnout or self-rated health. However, looking at the interaction term in relation to the psychosocial and organizational work environment variables, statistically significant interactions were found for low social support, insufficient human resources, high organizational injustice and low work-time control. For three of them (low social support, insufficient human resources and high organizational injustice) men had higher prevalence than women in human service professions but lower prevalence than women in other professions. For low work-time control women had higher prevalence in both human service professions and other professions, but differences were larger in human service professions (see Figure 4).



Discussion

In this study I assessed differences in burnout, self-rated health and sickness absence in human service professions and other professions. Furthermore, I investigated if adverse psychosocial and organizational work environment factors could explain possible differences between the groups.

Principal findings

Descriptive statistics show that the majority of those in human service professions were women, had a high level of education and were employed within the public sector. They also had a higher prevalence of all adverse psychosocial and organizational work factors investigated in this study compared with those in other professions. Those in human service professions had higher odds of burnout and sickness absence 31 days or more compared with those in other professions. Differences in burnout were explained by the block of background variables (sex, education, age and civil status) but the difference in sickness absence 31 days or more was more strongly associated with the psychosocial and organizational work factors. Low work-time control and emotionally difficult situations at work had the largest explanatory power. No difference between those in human service professions and other professions was found with regard to self-rated health in the crude model or when adjusting for background variables, though a significant negative association was found when adding the psychosocial and organizational work environment factors. Hence, those in human service professions had lower odds of suboptimal self-rated health compared with those in other professions in the fully adjusted model. Women had significantly higher prevalence of all adverse psychosocial and organizational work environment factors except social support. The associations between type of profession and the outcome variables were not stronger for any sex.

Present findings in relation to previous findings

With regard to sickness absence, the results are in line with recent publications (Aagestad, Tyssen & Sterud, 2016; Swedish Social Insurance Agency, 2014). Aagestad, Tyssen and Sterud (2016) used a similar approach as in the present study and likewise found that factors in the psychosocial work environment explained differences in accumulated sickness absence between health and social workers and other workers. Though there were also apparent

differences between the studies. For one their sample was limited to health and social workers and although vaguely defined the present study did quite surely include a wider range of professions (e.g. teachers and religious professionals). Second, the present study included both women and men in the sample. Both allow for greater possibilities to generalize the results to all human service professions. Thirdly, they used other psychosocial factors, namely violence and threats of violence, emotional demands, role conflict, supportive leadership, job demands, job control, bullying and possibilities of development. They found that emotional demands and violence and threats of violence were the strongest contributors to accumulated sickness absence in health and social workers.

The present study suggests that emotionally difficult situations at work and low work-time control were the strongest contributors to accumulated sickness absence among the included psychosocial and organizational work factors. Hence, with regard to emotional work the present study and the study by Aagestad, Tyssen and Sterud (2016) have corresponding results. Relating back to the introductory section, the emotional demands that come with working in close contact with other people (Zapf et al., 1999) as well as the low work-time control within the public sector (Albrecht et al., 2016) were two of the identified factors that characterize work in human service professions. While the emotional component of working with humans in need of support might be hard to eliminate one can hypothesize how one can change the work environment in order for it to have the smallest impact possible on worker's sickness. For example, it might be that other factors in the psychosocial or organizational work environment can moderate the negative effect of emotionally difficult situations on sickness. Ergo, if there e.g. are sufficient human resources or high social support that might buffer the adverse effect of emotionally difficult situations at work. As discussed below, helping people in need can also potentially contribute to increased well-being due to the feeling of doing good (Berthelsen, Hjalmer, Pejtersen & Söderfeldt, 2010). Hence, one can postulate that emotional work does not have to be associated with adversity per se. With the regard to work-time control, working awkward hours is also a built-in characteristic in a lot of human service professions. Nevertheless, regardless of working hours, work-time control have the potential of being higher or lower. For example, Ingre, Åkerstedt, Ekstedt and Kecklund (2012) found that self-rostering, hence the possibility to schedule your own working hours, could be one possible factor buffering the adverse effects of shift work.

One interesting finding from the sensitivity analysis for sickness absence in the present study was that the psychosocial and organizational work environment did not explain differences between human service professions and other professions when the cut-point was set at eight days or more. One interpretation of this could be that higher accumulated sickness absence can be attributed to psychosocial and organizational work environment factors while lower accumulated sickness absence may be explained by other factors. For example, close physical contact with other people, even more so within the healthcare system, could involve a greater risk of catching infections etc., resulting in sickness absence not necessarily related to the psychosocial work environment. Another possibility is that other psychosocial and organizational work environment factors than the ones included in the present study can explain the difference in sickness absence eight days or more between human service professions and other professions.

With regard to self-rated health, no previous studies have to my knowledge compared human service professions and other professions. In this study no association was found between type of profession and self-rated health in the crude model nor when controlling for background variables. Though, a negative association was found when controlling for psychosocial and organizational work environment variables. This can be referred to as a suppression effect, which means that even though two variables are not directly related with each other they can show a significant association since they are both related to one or several other variables in a model (Pandey & Elliott, 2010). In the case of this study, working in a human service profession is associated with higher odds of adverse psychosocial and organizational work environment and adverse psychosocial and organizational work environment factors are in turn associated with suboptimal self-rated health. Subsequently, if psychosocial and organizational work environment variables are adjusted for, those in human service professions will statistically have lower odds of suboptimal self-rated health, even if being in a human service profession is not associated with suboptimal self-rated health per se. However it is noteworthy that those in human service professions had lower estimates of suboptimal self-rated health than their counterparts in other professions with equal working conditions. It could be interpreted as an indicator that it is not the close contact with other people as such that contributes to an increased risk of ill-health, but the psychosocial and organizational work environment in the concerned professions. Berthelsen et al. (2010) applied a salutogenic approach when they investigated what Swedish and Danish dentists defined as 'good work'. They found that many of the dentists valued the feeling of doing

something good for another person, certainly so if the patient was underprivileged, and enjoyed wellbeing from being appreciated by the patients. Hypothesizing that those in human service professions commonly experience similar feelings when assisting a patient, pupil, client, senior citizen etc., that could be one of the possible reasons why those in human service professions experience better general health than their counterparts with equal psychosocial and organizational work environment. Namely because they are employed in 'good' professions. Interestingly, the sensitivity analysis for burnout using a less conservative cut-point than the primary analysis also found that those in human service professions had lower odds of burnout in the fully adjusted model. Hence, the above discussed might be relevant with regard to other health related outcomes as well.

With regard to burnout, previous research comparing human service professions and other professions is to my knowledge also scarce. Though, since the initial research on burnout was based on human service professions and the special features thereof one could, despite the recognition of its generalizability to other professions, hypothesize that those in human service professions would be at higher risk. AFA Insurance (2015) reported that reaction to severe stress and adjustment disorders were the most common causes of long-term sickness absence among women in human service professions. In the present study those in human service professions had higher odds of burnout compared with those in other professions. However, the association was explained by sex differences in burnout. Adding the psychosocial and organizational work environment variables one at a time to the crude association between type of profession and burnout, all work environment factors except insufficient human resources explained the association. Hence, it seems as if differences in burnout between human service professions and other professions are not great. One can discuss several possible explanations for this. For one, the scale used might not capture all relevant aspects of burnout. Whereas only the emotional exhaustion section of the SMBQ was used in the present study, the use of all subscales might have given a different picture. Maybe more importantly, the sample was selected on the condition that they currently worked equal to or more than 30% of full time. Hence, those who were on sick leave due to burnout were probably not included in the study. The severity of the impact of work in human professions on burnout might subsequently not be fully captured.

No interactions were found for sex and type of profession for any of the outcomes. This indicates that being in a human service profession is not associated with differing risks for

men and women. This is in accordance with previous findings indicating that similar exposures are associated with similar outcomes for men and women, also called the convergence theory (Waldron, 2000, in Swedish Agency for Health and Technology Assessment and Assessment of Social Services, 2014). However, looking at sex differences in the association between type of profession and the psychosocial and organizational work environment factors, significant interactions were found for social support, work-time control, organizational injustice and insufficient human resources. This may be explained by that within the two groups, women and men are positioned in different occupations. Hence, the interaction may reflect differences between human service professions rather than gender differences in vulnerability. Future research looking closer at the specific human service professions and considering the gender composition within the different occupations would possibly shed light on the matter in question. One can also speculate that it could be a matter of men as a minority group in human service professions experiencing a different psychosocial and organizational work environment than their counterparts who are women (Jonsson, Lidwall & Holmgren, 2013), which is sometimes referred to as tokenism. Interestingly, distributions of social support and insufficient human resources did not differ significantly between women in human service professions and women in other professions. That calls for further research with analyses stratified by sex, as well as research comparing the different human service professions, considering their gender composition.

Women had higher odds of both burnout and sickness absence in all three models. That is in line with previous research regarding sickness absence (Wang, 2015) but not in line with previous research regarding burnout (Bria, Băban & Dumitrașcu, 2012; Maslach, Schaufeli & Leiter, 2001; Norlund et al., 2010). Since the associations were still significant in the fully adjusted model, the other variables did not cover the underlying causes of the sex differences. While distinguishing what the underlying causes might be is beyond the scope of this work, one could for example consider gender roles and what influence they might have on women's and men's health. In a classic article by Frankenhaeuser et al. (1989) the authors found that while men's blood pressure and neuroendocrine activity decreased markedly after the work ended, women's values remained high or even increased when the work day was over. This could be interpreted as a demonstration of the differential expectations on women and men in the home, often referred to as women's double burden of paid and domestic work (Väänänen et al., 2005), that in turn may have an effect on illness and sickness. Including unpaid work as

a factor in future research could possibly contribute to a greater understanding of sex differences in burnout and sickness absence.

Educational level generally had little impact in the models, with the exception of the negative association between high educational level and suboptimal self-rated health. Contradictory to previous research in which unmarried civil status was associated with an increased risk of sickness absence (Duijts et al., 2007) no significant association was found between civil status and sickness absence in the present study. Though the meta-analysis by Duijts et al. (2007) including studies of different occupational groups in twenty almost exclusively European samples used occurrence of sickness spells \leq three days as well as occurrence of sickness spells $>$ three days as outcomes. As pointed out by Wang (2015), there are a number of different ways to operationalize sickness absence. On top of that, different countries have diverse systems for sickness absence and sickness benefits that might contribute to cross-national differences. Hence, some contradictory results might be attributable to that the studied outcomes are not in fact comparable. Therefore, too strong assumptions should not be made with regard to the sometimes inconsistent results.

As suggested by Wikman, Marklund and Alexandersson (2005) different measures and dimensions of (ill)-health do not always overlap. Considering that, the different results for burnout, self-rated health and sickness absence in the present study should not be considered contradictory, but rather as a take off point for following research.

Strengths and weaknesses

The major strengths of the study are that it was based on an approximately representative sample of the Swedish working population and its longitudinal design, with the measure of the predictor temporally preceding the measure of the outcomes. Another strength is the thoroughness of the classification of human service professions, in which several other instances were contacted for discussion. Since there is no established definition of human service professions, the mentioned process of defining them and the list of the human service professions found in the appendix could contribute to the development of an established concept and subsequently to greater possibilities to compare results between various studies.

One weakness could be that health at the time of the exposure was not controlled for. Hence, the causal relationship cannot be guaranteed. One alternative would have been to look at only

those who did not report any burnout, suboptimal self-rated health or more than 30 days of sickness absence at baseline. By that, differences in health selection into different professions would have been accounted for. Though, considering the impact of type of profession on health it might be less reasonable to believe that type of profession would have caused ill-health during the past two years but not before, since type of profession can be assumed to be quite stable. One idea would have been to study changes in type of professions and investigate whether changing into or out of a human service profession caused changes in health, which subsequently would require another study design as well as the use of several cohorts to ensure enough power.

Another weakness is that only those currently in work were included. Considering the so-called healthy worker effect the sample in the study can be assumed to have better health than the general population (Shah, 2009). While measuring psychosocial and organizational work environment could be problematic if an individual is not working, one should not forget that the sample is not representative of the whole adult population in Sweden but selected on their will or ability to work more than 30% of full-time.

While strengths of using binary logistic regressions were brought up in the methods section, some limitations can also be worth mentioning. For example, one can argue that a lot of valuable information is lost when dichotomizing continuous variables (Lovasi et al., 2012). Furthermore, one should be cautious to interpret odds ratios as relative risks, certainly so when the outcome is common. In that case, odds ratios tend to be inflated compared to relative risks (Lovasi et al., 2012). While the prevalence of burnout and sickness absence 31 days or more were quite rare (eight and six percent respectively) suboptimal self-rated health was more common (21%). Though, the sensitivity analysis using a more conservative cut-point (with seven percent of the sample above the cut) had similar results, which indicates that the odds ratios were reasonable.

Study implications and future research

Implications for policy and practice of the present study are that improvements in psychosocial and organizational work environment can decrease the burden of ill-health and promote wellbeing in the working population, even more so in human service professions. Hence, preventing adverse psychosocial and organizational work environment factors and

facilitating for factors buffering the built-in characteristics of many of the human service professions (e.g. shift work, high place- and time dependency and emotional demands) should be prioritized.

For future research I recommend using a larger sample to allow stratification by sex. Investigating differential exposures to adverse psychosocial and organizational work environment factors for women and men could give an even more nuanced picture of how the human service professions are associated with health related outcomes. It would also be interesting to see whether there are differences between professions within the group of human service professions. Are some occupational groups at greatest risk? Are there any differences between female- and male-dominated occupations? Moreover, additionally to studying the outcomes in the present study further, it would be enriching to look at other health related outcomes, such as sickness presence and depression symptoms. Depression is interesting since it has been identified as the most common underlying psychiatric diagnosis for long-term sickness absence among men in human service professions (AFA Insurance, 2015). It would also be interesting to look at other psychosocial and organizational work environment factors, and combinations of factors, certainly those who can be expected to differ between human service professions and other professions. One suggestion is to investigate violence and threat of violence closer since that was one of the factors most strongly associated with sickness absence among Norwegian health and social workers (Aagestad, Tyssen & Sterud, 2016). As a general comment, I think that the research field would benefit from a mutual operationalization of human service professions, to allow comparisons between studies.

Conclusion

To conclude, those in human service professions had higher odds of sickness absence and burnout compared with those in other professions, but no increased risk of suboptimal self-rated health. While differences in burnout were explained by the background variables (primarily by sex), differences in sickness absence persisted when controlling for background factors, but were instead explained by differences in psychosocial and organizational work environment. For self-rated health on the other hand, those in human service professions had lower odds than those in other professions after adjustments of psychosocial and organizational work environment. Women had higher odds of burnout and sickness absence but with regard to self-rated health there were no significant differences. Results for sickness

absence were in line with previous research, while previous research regarding burnout and self-rated health has been scarce. Further research is urged to investigate what psychosocial and organizational work environment factors that have the greatest impact on (ill)-health in human professions. That can in turn facilitate for policy makers and employers to create health promoting work environments and in the longer run decrease societal health inequalities.

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Appendix 1. SSYK codes and titles for human service professions included in the study in English and Swedish

SSYK code	Profession	Yrke
222	Health professionals (except nursing)	Hälso- och sjukvårdsspecialister
223	Nursery and midwifery professionals	Barnmorskor; sjuksköterskor med särskild kompetens
232	Secondary education teaching professionals	Gymnasielärare m.fl.
233	Primary education teaching professionals	Grundskollärare
234	Special education teaching professionals	Speciallärare
246	Religious professionals	Präster
249	Psychologists, social work and related professionals	Psykologer, socialsekreterare m.fl.
322	Health associate professionals (except nursing)	Sjukgymnaster, tandhygienister m.fl.
323	Nursing associate professionals	Sjuksköterskor
331	Pre-primary education teaching associate professionals	Förskollärare och fritidspedagoger
345	Police officers and detectives	Poliser
348	Religious associate professionals	Pastorer
513	Personal care and related workers	Vård- och omsorgspersonal
2221	Medical doctors	Läkare
2222	Dentists	Tandläkare
2225	Speech therapists	Logopeder
2229	Health professionals not elsewhere classified	Övriga hälso- och sjukvårdsspecialister
2231	Midwives	Barnmorskor
2233	Emergency room nurses	Akutsjuksköterskor m.fl.
2234	Pediatric nurses	Barnjuksköterskor
2235	District nurses	Distriktssköterskor
2321	Teaching professionals, academic subjects	Gymnasielärare i allmänna ämnen
2322	Vocational teaching professionals	Gymnasielärare i yrkesämnen
2323	Teaching professionals, artistic and practical subjects	Lärare i estetiska och praktiska ämnen
2330	Primary education teaching professionals	Grundskollärare

2340	Special education teaching professionals	Speciallärare
2359	Teaching professionals not elsewhere classified	Övriga pedagoger med teoretisk specialistkompetens
2460	Religious professionals	Präster
2491	Psychologists and related professionals	Psykologer m.fl.
2492	Social work professionals	Socialekreterare och kuratorer
3221	Occupational therapists	Arbetsterapeuter
3223	Dieticians	Dietister
3225	Dental hygienists	Tandhygienister
3226	Physiotherapists and related associate professionals	Sjukgymnaster m.fl.
3229	Health associate professionals not elsewhere classified	Övriga terapeuter
3231	Medical care nurses	Sjuksköterskor, medicin/kirurgi
3232	Operating theatre nurses	Operationssjuksköterskor
3233	Geriatric nurses	Geriatriskssjuksköterskor
3234	Psychiatric nurses	Sjuksköterskor, psykiatrisk vård
3235	Radiology nurses	Röntgensjuksköterskor
3239	Nursing associate professionals not elsewhere classified	Övriga sjuksköterskor
3310	Pre-primary education teaching associate professionals	Förskollärare och fritidspedagoger
3450	Police officers and detectives	Poliser
3461	Social workers and related associate professionals	Behandlingsassistenter m.fl.
3480	Religious associate professionals	Pastorer
5131	Child-care workers	Barnskötare m.fl.
5132	Assistant nurses and hospital ward assistants	Undersköterskor, sjukvårdsbiträden m.fl.
5133	Home-based personal care and related workers	Vårdbiträden, personliga assistenter m.fl.
5134	Attendants, psychiatric care	Skötare och vårdare
5135	Dental nurses	Tandsköterskor
5139	Personal care and related workers not elsewhere classified	Övrig vård- och omsorgspersonal
5153	Prison guards	Kriminalvårdare

Appendix 2. SSYK codes and titles for the 19 most common professions in the study in descending order in English and Swedish. Human service professions indicated in bold.

SSYK code	Profession	Yrke
5132	Assistant nurses and hospital ward assistants	Undersköterskor, sjukvårdsbiträden m.fl.
3310	Pre-primary education teaching associate professionals	Förskollärare och fritidspedagoger
2330	Primary education teaching professionals	Grundskollärare
2131	Computer system designers, analysts and programmers	Systemare och programmerare
3415	Technical and commercial sales representatives	Företagssäljare
4190	Other office clerks	Övrig kontorspersonal
2470	Public service administrative professionals	Administratörer i offentlig förvaltning
5131	Child-care workers	Barnskötare m.fl.
5133	Home-based personal care and related workers	Vårdbiträden, personliga assistenter m.fl.
3239	Nursing associate professionals not elsewhere classified	Övriga sjuksköterskor
3431	Administrative secretaries and related associate professionals	Administrativa assistenter
2492	Social work professionals	Socialsekreterare och kuratorer
4120	Numerical clerks	Bokförings- och redovisningsassistenter
7137	Building caretakers	Fastighetsskötare
2221	Medical doctors	Läkare
2451	Authors, journalists and related professionals	Journalister, författare, informatörer m.fl.
3121	Computer assistants	Datatekniker
3433	Bookkeepers	Redovisningsekonomer m.fl.
4112	Office secretaries	Kontorssekreterare, läkarsekreterare m.fl.