

1 **Burnout among Norwegian midwives and the contribution of personal and**  
2 **work-related factors – A cross-sectional study.**

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6  
7 **Abstract**

8 Introduction: Burnout can be the result of long-term exposure to personal and/or work-related  
9 stressors and affect midwives performance of care

10  
11 Aim: To assess burnout levels among Norwegian midwives and identify personal and work-  
12 related factors associated with burnout.

13  
14 Methods: A cross-sectional study. A total of 1500 Norwegian midwives were sent a  
15 questionnaire which included the Copenhagen Burnout Inventory (CBI) that measured  
16 personal, work- and client-related burnout. Of 1458 eligible midwives, 598 completed the  
17 CBI. Descriptive and comparative analyses were done in addition to logistic regression  
18 modelling.

19  
20 Results: Approximately 20% reported personal or work-related burnout. Less than 5%  
21 reported client-related burnout. Midwives with sick leave within the last three months  
22 reported higher levels of burnout. The prevalence of work-related burnout was higher among  
23 younger and single midwives. Working in outpatient care and experience of a recent  
24 reorganization increased the likelihood of reporting personal and work-related burnout.

25  
26 Conclusion: One in five midwives had high levels of personal and work-related burnout in  
27 this study and the different sub-groups of burnout were all associated with absence from work  
28 within the last three months. Work-related factors such as shift work and number of working  
29 hours did not seem to influence burnout in this population.

30  
31 **Keywords:**

32 Midwives, midwifery practice, burnout, The Copenhagen Burnout Inventory

33  
34 **Abbreviations:**

35 CBI: The Copenhagen Burnout Inventory (CBI)

36

## 1 **Introduction:**

2 Burnout is a psychological concept, often used in a work context as a response to long-term  
3 emotional and interpersonal stressors [1]. Schaufeli and Greenglass defined burnout as “a  
4 state of physical, emotional and mental exhaustion that results from a long-term involvement  
5 in work situations that are emotionally demanding” [2](p. 501). Burnout can reduce  
6 concentration and the ability to communicate [3], essential skills in midwifery practice [4].  
7 Thus burnout can impact the performance of midwives and quality of care [5]. Studies show  
8 that burnout is related to factors like workload, working long hours, shift work, demanding  
9 patient relations, lack of occupational autonomy and work environment [6-8]. Burnout can  
10 lead to sick leave and increasing turnover [6].

11  
12 The professional role of a midwife is to provide care for pregnant women and Norwegian  
13 midwives have autonomous responsibility for care during pregnancy, birth and the postpartum  
14 period for healthy women with uncomplicated pregnancies [9, 10]. Experienced midwives  
15 have described changes in their professional role and identity in the recent decades [10, 11]  
16 and there have been extensive changes in obstetric practices in this period [11]. Birth has been  
17 medicalised in most modernised societies [10] and both the proportion of childbearing women  
18 that is defined as high risk and the use of interventions are increasing [12]. More women give  
19 birth in larger units with an increasing number of obstetricians and neonatologists, leaving  
20 midwives less autonomous [11]. A new study from the UK found that high levels of  
21 occupational autonomy were a key protective factor of burnout [6].

22  
23 Larger units mean more women in labour simultaneously and an increasing workload [13].  
24 The Norwegian health department has incorporated new important, but demanding, quality  
25 requirements, that add to the workload [13]. In addition, re-organisations are common in the  
26 Norwegian health-care system [7]. This is usually a stressful process for employees and has  
27 been associated with emotional exhaustion [7] that may lead to burnout.

28  
29 One hypothesis is that working a shift schedule can make health professionals more  
30 vulnerable to burnout [14] and studies have shown association with shift work and burnout  
31 among midwives [8] and among nurses [15]. The Norwegian Nursing Organisation has  
32 examined possible effects of shift work in a longitudinal survey among approximately 2000 of  
33 their members and found that evening shift insomnia was prevalent among nurses who  
34 worked in a two-shift rotation [16]. It is not unlikely that sleep difficulties are on the causal  
35 pathway between shift work and burnout.

36  
37 Midwives may be vulnerable to burnout because they work in a demanding area of health care  
38 and they are exposed to several of the factors mentioned above that are related to burnout.  
39 Understanding these factors can be beneficial to midwives at an individual level but also to  
40 health institutions both in terms of human and financial costs. To our knowledge, burnout has  
41 not been examined among midwives in Norway. This study aimed to assess burnout levels  
42 among Norwegian midwives and identify personal and work-related factors associated with  
43 burnout.

## 44 **Methods**

45 A cross-sectional study was designed to investigate midwives' working situation, including  
46 burnout. Similar studies have been performed in Australia, New-Zealand and Sweden [17-19].  
47 In September 2014, questionnaires, together with a response envelope, were sent to a random  
48 sample of 1500 midwives registered with either one of the two midwifery unions in Norway.  
49 The two unions together organize nearly one hundred percent of all active midwives in

1 Norway. The majority of the midwives (67%) are members of the Norwegian Association of  
2 Midwives (Den norske jordmorforening), while the rest are members of the midwifery group  
3 of the Norwegian Nurses Organization (Jordmorforbundet). The sampling method ensured  
4 proportional sampling (by number of members) from both organizations, approximately every  
5 second member of each organisation was randomly selected using a computer program. This  
6 was done by a third party, the printers who also posted the questionnaires. The number of  
7 midwives in active midwifery practice was around 3000 at the time of the study [20]. The  
8 printers handled lists with names and addresses confidentially and destroyed them after  
9 posting. As no name related data were collected, a consent form was not required and  
10 completion of the questionnaire implied consent. No reminder was sent to non-responders  
11 since the questionnaires were anonymous.

12  
13 Of the 1500 questionnaires, 1458 were eligible after exclusion of 26 due to wrong address  
14 (moved, unknown), and 16 midwives who no longer worked in midwifery. A total of 598  
15 completed the questionnaire, representing a 41% response rate.

16  
17 The questionnaire collected data on: background demographic information, such as age, civil  
18 status, main area of practice, years of experience, current post and type of midwifery  
19 education. There were questions that asked about midwives' health and wellbeing using a set  
20 of validated scales to measure quality of life, self-efficacy, interpersonal support,  
21 empowerment, depression and burnout. Finally, there were open-ended questions concerning  
22 the working environment and midwives' experiences at work. Results from the other  
23 instruments used will be presented elsewhere and one article regarding empowerment has  
24 been published [21].

#### 25 26 *The Copenhagen Burnout inventory:*

27 The Copenhagen Burnout Inventory (CBI) measures burnout in three domains; personal  
28 burnout, work-related burnout and client-related burnout [22]. CBI is a nineteen item tool and  
29 participants respond to each item using the response categories 'Always', 'Often',  
30 'Sometimes', 'Seldom', 'Never/almost never' or 'To a very high degree', 'To a high degree',  
31 'Somewhat', 'To a low degree', and 'To a very low degree' depending on the statement they  
32 assess. All items appear in table S1. Reliability of the tool was assessed by the original  
33 authors, reporting Cronbach's alpha between items of 0.87 in the personal and work-related  
34 sub-scales, and 0.85 for the client-related burnout scale [22, 23], results that are consistent  
35 with accepted standards for a reliable and valid questionnaire [24].

#### 36 37 *Variables*

38 The following demographic variables were included in this study: age, marital status, children  
39 (including step children), other care responsibilities and academic degree. The participants  
40 were asked different questions regarding work-related factors, and the following were  
41 included: main area of work, work experience, work distribution, work hours, work rotation,  
42 experienced recent reorganization and sick leave during the last three months.

#### 43 44 *Statistical analysis*

45 Data were analysed with the Statistical Package for Social Science (SPSS version 21). Prior to  
46 analysis all variables were checked for data file errors. Descriptive and explorative analyses  
47 of the participants characteristic and burnout subscales were performed. In this study the CBI  
48 was scored with the original answering options and the options were then re-coded into the  
49 original format labels of 100 (always/to a very high degree), 75, 50, 25 and 0 Never/almost  
50 never or to a very low degree) [22]. A score of 50 or greater indicated burnout [22]. For the

1 purpose of comparative analysis the scores for burnout were re-coded into burnout or no  
2 burnout within the categories personal, work- and client-related burnout. In the questionnaire,  
3 age was categorized in the following categories: 18-24, 25-29, 30-34, 35-39, 40-49 50-59 and  
4 over 60. Age was recoded into  $\leq 29$ , 30-39, 40-49, 50-59 and 60+ years. To become a  
5 midwife in Norway you have to be a nurse, have minimum one year work experience and then  
6 two years of midwifery education [13], thus it is rare for midwives to be under 25. There were  
7 no midwives under 25 years in this sample. In addition, we kept the 60+ category because  
8 they have special rights in Norway, like extra vacation and the right to modified work hours  
9 [25, 26]. Because of few respondent in the  $\leq 29$  group, we used the age group 25-39 for the  
10 purpose of the logistic regression analysis [24].

11  
12 We performed cross tabulations with Pearson Chi-Square Tests within each category of  
13 burnout and each demographic and work-related factor to see if the proportion of personal,  
14 work or client-related burnout were different within different age groups, area of practice etc.  
15 Where the assumption for cell count was violated the Fisher's exact probability value is  
16 reported. Logistic regression modelling was used to assess the impact of a number of personal  
17 and work-related factors on the likelihood of reporting burnout. The logistic regression  
18 models were performed for personal and work-related burnout. There were not enough cases  
19 of client-related burnout to perform a similar model. Absence from work within the last three  
20 months was not included in the model because of a correlation with the different type of  
21 burnout above the recommended cut off 0.6 [24]. Missing data related to the CBI were low  
22 and varied between 0-0.5 percent within each item. None of the participants were classified as  
23 non-responder; two participants responded to 9 of 19 items, two responders missed two items  
24 and 8 missed one item. The rest of the participants answered all items in the CBI. Because of  
25 this, missing variables were not imputed.

### 26 27 *Ethical considerations*

28 The study was submitted to the Medical and Health Research Ethics board of Southern  
29 Norway, who deemed their approval was not required as the study was not within their scope  
30 (Ref. 2014/153/REK Sør-Øst). The Norwegian Social Science Services (NSD) approved the  
31 study (Ref 38201/3/IB).

### 32 33 **Results**

34 At total of 598 completed the questionnaire, representing approximately 20% of the  
35 midwifery workforce in Norway[20]. Table 1 shows the background characteristics of the  
36 sample. The majority of midwives were aged between 40 and 59 years, 85.5% were living  
37 with a partner and 90.6% had children. The majority of the sample had over ten years of work  
38 experience as a midwife (68.7%) and the main area of work was in hospital with 60.7%  
39 working in birth and/or postnatal units. Approximately half of the midwives worked part time  
40 and the majority worked a three shift rotation. Only 6.5% of the midwives had a master  
41 degree and 0.2% a PhD.

42  
43 The proportion of midwives who reported burnout levels over 50 and the overlap between the  
44 three different types of burnout is presented in Figure 1. A total of 20.1% reported personal  
45 burnout, 19.1% work-related burnout and 4.2% reported client-related burnout. Almost 14%  
46 reported both personal and work-related burnout. The distribution of mean scores of the  
47 Copenhagen Burnout Inventory (CBI) and the Cronbach alpha coefficient for the three  
48 subscales of burnout are presented as supplementary material (Table S1). The Cronbach alpha  
49 values were between 0.88 and 0.90, higher than the recommended Cronbach alpha indicating  
50 instrument reliability [24].

1 Table 2 presents the results from the cross tabulations with Pearson Chi-Square Tests within  
2 each category of burnout related to the midwives' background characteristics. Regardless of  
3 burnout categories, midwives who had sick leave within the last three months reported  
4 significantly more burnout and those who had experienced a recent reorganization reported  
5 more personal and work-related burnout. Midwives who were single reported significantly  
6 more work- and client-related burnout. Working in more than one unit and in outpatient care  
7 was associated with personal burnout. The comparison groups were those within the same  
8 background characteristic. For example levels of burnout among single/married or co-  
9 habitant, within the different age groups, with sick leave or not, levels of burnout within  
10 working hours etc.

11  
12 The results from the logistic regression analysis that assessed the impact of different factors  
13 on the likelihood of reporting personal and work-related burnout are presented in Table 3. The  
14 models contained of different independent variables (demographics and different work  
15 factors). Both the full models containing all predictors were statistically significant,  $X^2$  (df 25,  
16  $n=527$ )= 49.22,  $p=0.003$  and  $X^2$  (df 25,  $n=527$ )= 46,35,  $p=0.004$  for personal and work-  
17 related burnout respectively, indicating that the models were able to distinguish between those  
18 who reported and those who did not report burnout. Regarding personal burnout, work area  
19 contributed significantly to the model; working in an outpatient clinic showed an increase in  
20 the odds of reporting personal burnout. Three of the independent variables made a statistically  
21 significant contribution to the model regarding work- related burnout: Being married or a co-  
22 habitant and age 60 and above decreased the odds of reporting work-related burn out while  
23 experiencing recent reorganization increased the odds.

#### 24 25 **Discussion:**

26 The main findings in this study were that 20.1% of the midwives reported personal burnout,  
27 19% work-related burnout and less than 5% reported client-related burnout. Midwives who  
28 reported any sick leave within the last three months and those who had experienced recent  
29 reorganization reported burnout more often. We found that working in an outpatient clinic  
30 increased the odds of reporting personal burnout and experienced recent reorganization was  
31 the strongest predictor for work-related burnout. Being married or co-habitant and age over 60  
32 were protective factors for work-related burnout.

33  
34 A strength of this study is the use of the CBI. The questions on burnout have been validated  
35 and used in similar settings both with other health professionals and among midwives [17, 18,  
36 22, 23, 27]. The use of a validated instrument with a clear operational definition [22] makes it  
37 possible to compare research results.

38  
39 This study has some limitations; one is the cross-sectional design that makes it difficult to say  
40 anything about a causal relationship [24]. A longitudinal study could be more appropriate  
41 because burnout is suggested as a sequential process that develops over time [1]. The low  
42 response rate, common in postal surveys, needs to be taken into consideration in the  
43 generalization of the results. Underreporting of burnout may be present both due to a healthy  
44 worker effect [1] and because midwives who are burned out may not participate in a survey  
45 like this. Unfortunately, we do not have information about the non-responders. Even though  
46 the response rate is low, the sample in this study is large, including approximately 20% of all  
47 practicing midwives in Norway [20]. Some variables had many categories, for example the  
48 question about main area of work (11 answer options) and age (7 predefined categories),  
49 leaving few respondents in each category. This needs to be taken into consideration when the  
50 results are interpreted. Even if age was predefined, we think the categories and the way we

1 were able to group them are suitable in the Norwegian midwifery setting. For example, as  
2 mentioned in the methods section, it is rare for Norwegian midwives to be under 25. We also  
3 saw a distinction in work experience among midwives under and over 40 years that support a  
4 cut off at this age (data not shown). There is no official register of midwives in Norway for us  
5 to compare our data with.

6  
7 Norwegian midwives report less burnout in comparison with Danish, Swedish and Australian  
8 midwives that have used the CBI [17, 18, 23]. Hildingsson et al. studied burnout in a  
9 population of 475 Swedish midwives and reported higher levels of personal burnout and  
10 client-related burnout, 39.5% and 15.5 % respectively [17]. A total of 15.0% reported work-  
11 related burnout compared to 19.1% in our study. A Danish study that used the CBI showed  
12 approximately the same levels of personal and work-related levels as our study but Danish  
13 midwives (n=41) reported higher levels of client burnout (16.6% versus 4.2%) [23, 28].  
14 Jordan et al. used the CBI in a smaller group (n=58) of Australian midwives and found high  
15 levels of personal and work-related burnout with 57% for both and significantly lower levels  
16 of client-related burnout with 9% [18]. In all four countries, maternity care is freely available  
17 to women [9, 18] and a midwife is recognized as a responsible and accountable professional  
18 to give the necessary care during pregnancy, labour and the postpartum period [11, 18, 29].  
19 Both the Danish and the Australian study included a small population of midwives from the  
20 same work place, which needs to be taken into consideration when comparing the results [18,  
21 23]. Midwifery is a field of work with high demands such as shift work, time pressure, high  
22 professional demands, high physical demands and high expectations from childbearing  
23 women and their families [6, 11]. Therefore, it is expected to find some degree of burnout as  
24 we have done regarding personal and work-related burnout. At the same time midwives are  
25 known as an engaged group with a highly satisfying and meaningful job. This may explain the  
26 low levels of client-related burnout.

27  
28 Recent reorganization was associated with work-related burnout in this study. This is to our  
29 knowledge a new finding in a midwifery setting. One Norwegian study has found  
30 development of burnout among nurses in a period of reorganization and downsizing [7]. A  
31 study from Belgium among 2094 nurses from 10 different work places found that  
32 reorganization was positively related to distress and sick leave [30]. Sick leave within last  
33 three months correlated with burnout in our study and there were higher levels of all three  
34 categories of burnout among those who reported sick leave. There are conflicting results  
35 reported in the literature regarding sick leave and burnout [31]. Soler et al. found higher odds  
36 of reporting burnout among 1 393 European family doctors if they had at least one period of  
37 sick leave during the last year [32]. It can be debated if this is comparable to the midwives in  
38 this setting. However both the study from Soler et al. and ours support a negative relationship  
39 between burnout and sick leave that may be costly for the health care system.

40  
41 In this study, age was a protective factor against work-related burnout which is in agreement  
42 with other studies among midwives that have found decreasing burnout levels in the higher  
43 age groups [8, 17, 18]. Age is the most studied demographic variable in connection with  
44 burnout and burnout levels are reported to be higher among younger employees [1]. Age is  
45 confounded with work experience and younger midwives are less experienced, thus burnout  
46 may be more of a risk earlier in a midwife's career. In addition to being an experienced  
47 midwife, the Norwegian senior employee politics, like an extra week vacation [25] and the  
48 right to modified work hours [26], may be related to why age over 60 seems to be protective  
49 against work related burnout. Having children also seemed to be protective against work  
50 burnout [1]. We found that single midwives reported more work and client-related burnout.

1 One suggested explanation for this is that having a family may contribute to a healthy  
2 life/work balance and work as a positive strategy for coping with burnout [1, 33].

3  
4 We performed a logistic regression to assess the impact of different personal and work-related  
5 factors on the likelihood of reporting burnout and the models that contained these factors were  
6 able to explain between 8 and 14% of the variance in burnout status (Table 3). Working in  
7 outpatient care increased the odds of reporting burnout approximately four times. In Norway,  
8 outpatient care is a daytime only job and may recruit midwives that cannot work a shift  
9 schedule. It is not unlikely that they already have higher levels of burnout when entering this  
10 area of work. Our study does not support the hypothesis that working a shift schedule  
11 increases burnout [14]. In this study, more of the midwives that worked a shift schedule  
12 worked part time compared to those who worked day time only (not in tables). Working fewer  
13 hours may explain the finding. An underreporting of burnout may also diminish our results.  
14 The literature suggests personality characteristics as important when explaining burnout [1].  
15 Differences are found within different personality types [1]. For example, research on the Big  
16 Five personality dimensions has found that burnout is linked to the dimension of neuroticism  
17 [1, 34]. Neuroticism is characterized by a tendency to negatively interpret events and  
18 characteristics like self-consciousness and vulnerability [35]. It is not unlikely that  
19 organizational stressors, such as a work overload and shift-work can lead to burnout, but  
20 depending on the personality of the midwife. We were not able to examine this in our study.

## 21 22 **Conclusion**

23 One in five reported high levels of personal and work-related burnout but less than five  
24 percent reported client-related burnout in a sample of 598 Norwegian midwives. Norwegian  
25 midwives suffer less from burnout than their Swedish, Danish and Australian colleagues.  
26 Midwives who were over 60 years old were less likely to report work related burnout  
27 compared to their younger colleagues, indicating that initiatives for senior employees in  
28 Norway may make a positive difference. Burnout was correlated with sick leave and  
29 experience of recent re-organisations contributed to burnout. The finding that reorganization  
30 increased the risk of burnout indicates that initiatives to prevent burnout should be  
31 implemented during such periods. Other work-related factors such as shift work, working  
32 hours and work distribution had a small influence on burnout. It is likely that a midwife will  
33 respond to more than the work setting and bring personal and unique qualities into the work  
34 relationship. Some are probably more susceptible to burnout than others and more research  
35 into this area is needed.

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22 Table 1. Background characteristics

Background variables	N= 598 (%)
<b>Age groups</b>	
< =29	14 (2.3)
30-39	134 (22.4)
40-49	165 (27.6)
50-59	209 (34.9)
60+	76 (12.7)
<b>Marital status</b>	
Married/cohabiting	511 (85.5)
Single	87 (14.5)
<b>No of children</b>	
No children	56 (9.4)
Children	542 (90.6)
<b>Academic degree</b>	
Bachelor level	558
Master	39 (6.5)
Phd	1 (0.2)
<i>Main area of practice</i>	
Antenatal care	113 (18.9)
Outpatient clinic	22 (3.7)
Ultrasound	21 (3.5)
Midwife lead unit	21 (3.5)
Labor ward	160 (26.8)
Combined unit	182 (30.4)
Post natal unit	27 (4.5)
Home birth	2 (0.3)
Research/education	12 (2.0)
Manager	11 (1.8)
Other	27 (4.5)

**Work experience**

<1 year	12 (2.0)
1 - 9 years	173 (28.9)
=>10 years	411 (68.7)

**Work distribution**

Full time	273 (45.7)
Part time	311 (52.0)
Casual	9 (1.5)

**Work distribution**

<b>Daytime only</b>	142 (23.7)
Three Shift	333 (56.4)
Two shift	67 (11.2)
Nights only	37 (6.2)

**Rotation**

Work in more than one area	280 (46.8)
Rotate between wards	180 (30.1)
Rotate between tasks	89 (14.9)

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1 Table 2. Prevalence of personal, work- and client related burnout within background factors.

	Personal burnout n=120 (20.1%)		Work burnout n= 119 (19.9%)		Client burnout n=25 (4.2%)	
	n (%)	p-value*	n (%)	p-value*	n (%)	p-value*
<i>Age</i>						
<=29	3 (21.4)		3 (21.4)		1 (7.1)	
30-39	27 (20.1)		31 (23.1)		7 (5.2)	
40-49	34 (20.6)		33 (20.0)		6 (3.6)	
50-59	44 (21.1)		44 (21.1)		9 (5.3)	
60+	12 (15.8)	0.904	8 (10.5)	0.261	2 (2.6)	0.869
<i>Marital status</i>						
Single	22 (25.3)		24 (27.6)		8 (9.2)	
Married/cohabiting	98 (19.2)	0.188	18 (18.6)	0.052	17 (3.3)	0.011
<i>Own children</i>						
No	11 (19.6)		13 (23.2)		4 (7.1)	
Yes	109 (20.1)	0.934	106 (19.6)	0.514	21 (3.9)	0.280
<i>Care responsibilities</i>						
No	105 (19.2)		106 (19.4)		22 (4.0)	
Yes	13 (31.7)	0.055	10 (24.4)	0.440	3 (7.3)	0.408
<i>Main area of practice</i>						
Antenatal care	23 (20.4)		21 (18.6)		5 (4.4)	
Outpatient clinic	11(50.0)		7 (31.8)		1 (4.5)	
Ultrasound	5 (23.8)		6 (28.6)		1 (4.8)	
Midwife lead unit	9 (42.9)		5 (23.8)		1 (4.8)	
Labor ward	32 (20.0)		37 (23.1)		11 (6.9)	
Combined unit	25 (13.7)		30 (16.5)		3 (1.6)	
Post-natal unit	10 (37.0)		9 (33.3)		2 (7.4)	
Home birth	0		0		0	
Research/education	0		0		0	
Manager	1 (9.1)		1 (9.1)		1 (9.1)	
Other	4 (14.8)	<0.001	3 (11.1)	0.160	0	0.530
<b>Work in different units</b>						
No	74 (17.7)		75 (17.9)		12 (2.9)	
Yes	46 (25.6)	0.028	44 (24.4)	0.068	12 (7.2)	0.015
<i>Work experience as midwife</i>						
<1 year	4 (33.3)		4 (33.3)		2 (16.7)	
1 - 9 years	37 (21.4)		36 (20.8)		8 (4.6)	
=>10 years	79 (19.2)	0.431	79 (19.2)	0.458	15 (3.6)	0.081
<i>Working hours</i>						
Full time	49 (17.9)		54 (19.5)		13 (4.8)	
Part time	96 (22.2)		65 (20.9)		12 (3.9)	
Casual	2 (22.2)	0.440	1 (11.1)	0.720	0	0.706

<b>Work distribution</b>						
Daytime only	26 (18.3)		19 (13.4)		6 (4.2)	
Two-shift	16 (23.9)		14 (20.9)		5 (7.5)	
Three-shift	73 (21.7)		79 (23.4)		12 (3.6)	
Night shift only	5 (13.5)	0.519	6 (16.2)	0.083	2 (5.4)	0.379
<b>Experienced recent reorganisation</b>						
No	59 (17.0)		58 (16.7)		11 (3.2)	
Yes	50 (24.5)	0.03	53 (26.0)	0.01	12 (5.9)	0.12
<b>Absence from work last 3 months</b>						
No	54 (14.1)		54 (14.4)		10 (2.6)	
Yes	66 (30.7)	<0.001	64 (29.8)	<0.001	15 (7.0)	0.01

\* P-values report differences in burnout within each background/ groups of background variables

Table 3. Logistic regression predicting likelihood of reporting personal and work related burnout

	<b>Personal burnout*</b>	<b>Work burnout**</b>
	OR (95% CI)	OR (95% CI)
Married/cohabitant	0.6 (0.3-1.2)	0.5 (0.2-0.9)
No children	1.2 (0.5-3.0)	1.3 (0.6-3.1)
Care responsibilities	1.8 (0.8-4.1)	1.2 (0.5 -2.9)
<i>Age Groups</i>		
25-39	1	1
40-49	0.9 (0.4-1.9)	0.5 (0.2-1.0)
50-59	1.0 (0.5-2.6)	0.6 (0.3-1.3)
60+	0.5 (0.2-1.4)	0.2 (0.1-0.7)
<i>Work experience</i>		
=>10 years	1	1
1 - 9 years	2.7 (0.6-11.3)	1.4 (0.3-5.7)
<1 year	1.1 (0.7-2.5)	0.7 (0.3-1.4)
<i>Work distribution</i>		
Full time	1	1
Part time	1.1 (0.7-1.8)	0.9 (0.6-1.4)
Casual	0.4 (0.0-4.3)	0.5 (0.1-5.0)
<i>Main area of work</i>		
Antenatal care	1	1
Birth unit	0.8 (0.3-1.8)	0.7 (0.2-1.7)
Midwife lead unit	2.4 (0.6-8.4)	1.3 (0.3-4.8)
Outpatient care	3.7 (1.2-11.1)	2.0 (0.6-6.4)
Post-natal care	1.9 (0.6-6.0)	1.5 (0.5-4.8)
Ultrasound	1.0 (0.3-3.6)	1.4 (0.4-5.0)
Combined units	0.4 (0.2-1.1)	0.4 (0.2-1.1)

Manager	0.4 (0.1-3.8)	0.5 (0.1-3.9)
Other	0.6 (0.1-2.1)	0.3 (0.1-1.5)

*Rotation*

Day time only	1	1
Two-shift	1.1 (0.5-2.6)	2.1 (0.9-5.0)
Three-shift	1.2 (0.5-3.0)	1.5 (0.6-3.9)
Night shift only	0.6 (0.1-2.4)	1.7 (0.6-6.2)
Work in more than on area	1.5 (0.9-2.5)	1.1 (0.7-1.9)
Experienced recent reorganisation	1.5 (0.9-2.4)	1.8 (1.2-2.9)

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- 1 \*X<sup>2</sup> (df 25, n =527)=49.22. p=0.003
  - 2 Cox and Snell R square=0.09, Nagelkerke R square=0.14, correct classified 81.7%
  - 3 \*\*X<sup>2</sup>(df 25, n =527 )=46.35. p=0.006
  - 4 Cox and Snell R square=0.8, Nagelkerke R square=0.13, correct classified 80.8%
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Table S1. Copenhagen Burnout Inventory (CBI): Scales, items, response frequencies, mean scores and Cronbach's alphas

Response category scoring: (score ranges 0–100, >50 indicates burnout) (N = 598)	Always or to a very high degree 100 n (%)	Often or to a high degree 75 n (%)	Sometimes or somewhat 50 n (%)	Seldom or to a low degree 25 n (%)	Never/almost never or to a very low degree 0 n (%)	Score Mean (SD)
<b>Personal Burnout (<math>\alpha = 0.889</math>)</b>						
How often do you feel tired?	8 (1.3)	172 (28.8)	326 (54.5)	83 (13.9)	9 (1.5)	53.64 (18.02)
How often are you physically exhausted?	4 (0.7)	66 (11.0)	237 (39.6)	221 (37.0)	70 (11.7)	38.00 (21.59)
How often are you emotionally exhausted?	2 (0.3)	78 (13.0)	218 (36.5)	230 (38.5)	69 (11.5)	38.02 (21.84)
How often do you think: "I can't take it any more"?	1 (0.2)	32 (5.4)	105 (17.6)	215 (36)	244 (40.8)	21.98 (22.37)
How often do you feel worn out?	1 (0.2)	50 (8.4)	172 (28.8)	246 (41.1)	128 (21.4)	31.16 (22.27)
How often do you feel weak and susceptible to illness?	1 (0.2)	25 (4.2)	119 (19.9)	280 (46.8)	172 (28.8)	25.00 (20.48)
<b>Total score</b>						34.26 (16.96)
<b>Work burnout (<math>\alpha = 0.887</math>)</b>						
Do you feel worn out at the end of the working day?	13 (2.2)	37 (6.2)	194 (32.4)	245 (41.0)	109 (18.2)	33.28 (22.93)
Are you exhausted in the morning at the thought of another day at work?	17 (2.8)	57 (9.5)	224 (37.5)	237 (39.6)	61 (10.2)	38.76 (22.58)
Do you feel that every working hour is tiring for you?	4 (0.7)	25 (4.2)	79 (13.2)	219 (36.6)	271 (45.3)	19.57 (21.98)
Do you have enough energy for family and friends during leisure time? (scores reversed)	-----	6 (1.0)	68 (11.4)	150 (25.1)	371 (62.0)	12.77 (18.37)
Is your work emotionally exhausting?	1 (0.2)	14 (2.3)	88 (14.7)	190 (31.8)	303 (50.7)	17.28 (20.48)
Does your work frustrate you?	8 (1.3)	95 (15.9)	254 (42.5)	176 (29.4)	63 (10.5)	41.99 (22.77)
Do you feel burnt out because of your work?	1 (0.2)	4 (0.7)	52 (8.7)	210 (35.1)	328 (54.8)	29.87 (19.23)
<b>Total score</b>						32.27 (18.81)
<b>Client-related burnout (<math>\alpha = 0.900</math>)</b>						
Do you find it hard to work with women?	1 (0.2)	5 (0.8)	47 (7.9)	231 (38.6)	312 (52.2)	14.42 (17.19)
Does it drain your energy to work with women?	1 (0.2)	4 (0.7)	52 (8.7)	227 (38.0)	311 (52.0)	14.58 (17.30)
Do you find it frustrating to work with women?	1 (0.2)	4 (0.7)	52 (8.7)	210 (35.1)	328 (54.8)	13.87 (17.38)
Do you feel you give more than you get back when you work with women?	9 (1.5)	26 (4.3)	103 (17.2)	245 (41.0)	213 (35.6)	23.70 (22.90)
Are you tired of working with women?	-----	9 (1.5)	81 (13.5)	168 (28.1)	338 (63.7)	14.97 (19.42)

Do you sometimes wonder how long you will be able to continue working with women?	6 (1.0)	50 (8.4)	159 (26.6)	381 (63.7)	11.61 (17.28)
<b>Total score</b>					15.50 (15.25)

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