Arch Womens Ment Health (2007) 10: 61–71
DOI 10.1007/s00737-007-0170-3
Printed in The Netherlands

Archives of
Women's
Mental Health

Original contribution

Burnout among women: associations with demographic/socio-economic, work, life-style and health factors

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Received July 13, 2006; accepted January 13, 2007
Published online March 15, 2007

Summary

This study examined the occurrence of low/high burnout among women and the demographic/socio-economic, work, life-style, and health ''correlates'' of high burnout. The sample consisted of 6.000 randomly selected women from the general population, of which 3.591 participated. The design was cross-sectional. The univariate analyses showed that about 21% of the women had high burnout, and compared to those with low burnout, they were more often younger, divorced, blue-collar workers, lower educated, foreigners, on unemployment/retirement/sick-leave, financially strained, used more medication and cigarettes, reported higher work demands and lower control/social support at work, more somatic problems (e.g. pain) and depression. The regression analysis showed that only age, sick-leave, financial strain, medication, work demands, depression and somatic ailments were independently associated with high burnout. Thus, women with high burnout were apparently faring poorly financially, emotionally and physically. Considering our findings, interventions to alleviate their problems may be necessary. We may have provided new insights into women's burnout experiences, but longitudinal studies are warranted to firmly identify ''determinants'' of burnout.

Keywords: Low/high burnout; depression; physical health; work factors, financial strain.

Introduction

Maslach et al (Maslach & Jackson, 1986; Maslach et al, 1996) have provided the most common definition of burnout, characterised as a syndrome of emotional exhaustion, depersonalisation and reduced personal accomplishment, and with emotional exhaustion as the central component. Others (Melamed et al, 1992, 1999; Shirom et al, 1997) state that the core element of burnout is the chronic depletion of an individual's energetic resources, i.e. emotional exhaustion, physical tiredness and mental weariness, following prolonged stress exposure. Viewed from this perspective, burnout resembles the chronic fatigue syndrome (Sharpe, 1996) and vital exhaustion a condition of unusual fatigue, malaise, demoralisation and irritability often preceding cardiac events (Appels & Mulder, 1988; Appels et al, 1987; Kop et al, 1994).

The discriminant validity between burnout and major depression has been demonstrated (e.g. Maslach et al, 2001). The two conditions share common features (e.g. cognitive weariness) and often co-occur, but are not identical (e.g. Brenninkmeyer et al, 2001; Glass and McKnight, 1996). Further, Brenninkmeyer et al (2001) describe some marked dissimilarities, i.e. a feeling of status loss and ''giving up'' which is often reported by depression patients.

Typically, burnout has been regarded as a strictly work-related condition, but this view has been questioned (Hallsten, 1993; Pines, 1987, 1994, 1996; see also Ekstedt, 2005). A recent study with a general population sample found high burnout in non-working groups (Hallsten et al, 2002).

Burnout has been associated with depression, anxiety, sleep disturbances, somatic symptoms (e.g. cardiovascular) and physiological reactions such as prolonged elevations of glucose and markers of inflammation.

Studies about the function of the hypothalamic-pituitary-adrenocortical axis (HPA) in burnout have yielded contradictory results showing insignificant, negative or positive associations between burnout and cortisol (e.g. Brenninkmeyer et al, 2001; De Vente et al, 2003; Ekstedt, 2005; Glass & McKnight, 1996; Grossi et al, 2003, 2005; Lerman et al, 1999; Melamed et al, 1999, 2006; Moch et al, 2003; Mommersteeg et al, 2006; Shirom et al, 2005; Soares & Jablonska, 2004; Tokert et al, 2005; Toppinen-Tanner et al, 2002). Moreover, burnout has been linked to high job demands, job turnover, absenteeism and sick-leave (e.g. Drake & Yadama, 1996; Hallsten et al, 2002; Iversen et al, 1998; Lee & Ashforth, 1996; Maslach et al, 2001; Parker & Kulik, 1995; Shelledy et al, 2001; Soares & Jablonska, 2004; Van der Doef & Maes, 1999). Associations between burnout and demographics/socio-economics (e.g. profession) tend to diverge (e.g. Brown & Pranger, 1992; Hallsten et al, 2002; Kalimo, 2000; Lemkau et al, 1994; Maslach & Leiter, 1997; Maslach et al, 2001; Pines et al, 1981; Ray & Miller, 1994), but there may be some consistency in that persons who are single, divorced, high educated and of foreign origin could be at risk for burnout (e.g. Hallsten & Bracken, 1995; Hallsten et al, 2002; Schaufeli & Enzmann, 1998; Soares & Grossi, 1999a, b).

Women are over-represented in disorders such as depression and musculoskeletal pain (e.g. LeResche, 2000; Sadock & Sadock, 2004; WHO, 2001), but data concerning gender differences in burnout are inconclusive. Some studies report more burnout among women than men (e.g. Hallsten et al, 2002; Cocco et al, 2003; McMurray et al, 2000), whereas others found small or no differences (e.g. Benbow & Jolley, 2002; Jamal & Baba, 2000; Kalimo, 2000). In the Swedish general population, there seems to be a preponderance of women afflicted by burnout (Hallsten et al, 2002). Caution must be, however, exercised in viewing women as a homogenous group. They live under varying socio-economic and psychosocial conditions, and consequently, their burnout experiences should not be considered as uniform. Insufficient attention has been paid to the identification of those sub-groups of women that may be at increased risk of developing burnout.

Data show that low socio-economic status (SES) contributes to the occurrence of women's ill-health, to disease severity and to the exacerbation of pre-existing health problems (e.g. Blank & Diderichsen, 1996; Dalstra et al, 2002; Kogevinas & Porta, 1997; Mead et al, 2001). Psychosocial work conditions also shape health and severity of ill-health (e.g. Marklund, 2000; Mausner-Dorsch & Eaton, 2000; Niedhammer & Chea, 2003, Van der Doef & Maes, 1998). It could thus be assumed that low SES and unfavourable psychosocial working conditions would be positively associated with burnout among women. In studies of the associations between SES, psychosocial factors and burnout, gender is often regarded as only one of the explanatory factors. This may lead to incorrect conclusions if the connections between burnout and these factors are not the same, in direction or magnitude, among women/men. When studies focus specifically on women's burnout experiences, the samples are usually selected, and findings may not be generalized to women in the general population.

Therefore, the principle aim of the present study was to investigate the associations between various demographic/socio-economic, psychosocial and health-related variables, and burnout among women from the general population. For example, the relationship between physical pain and burnout has mainly been examined in clinical samples, with gender as only one of the explanatory factors. Potential associations distinctive to the female population were not analysed, and in any case the experiences of pain patients may not correspond to those of the general population.

Concretely, this study investigated the demographic/socio-economic, work, life-style and psychological/somatic "correlates" of burnout by comparing a randomised sample of women from the general population with low/high burnout levels, as assessed with the SMBQ (Melamed et al, 1992, 1999; Shirom et al, 1997). The main hypotheses were that financial strain, work factors, depression and somatic problems would be ''predictors'' of high burnout.

Methods

Participants

The participants consisted of 6000 randomly selected women, aged 18–64 years, from the general population resident in Stockholm County. Of the contacted women, 3.591 participated in the study and 2.022 declined. We excluded 362 women because they had moved to unknown addresses or had poor fluency in Swedish language, and 25 due to incomplete burnout data. Participants/non-participants did not differ in age. Thus, the final sample consisted of 3.591 women (64%), of which 744 (20.7%) had high burnout and 2.847 (79.3%) low burnout (Table 1).

Measures

This study focused on low/high burnout, demographic/socio-economic, work and life-style variables, depression and somatic health.

The Shiron-Melamed Burnout Questionnaire (SMBQ, Melamed et al, 1992, 1999; Shirom et al, 1997), is a 22-item scale (graded 1–7) used to assess different aspects of the burnout syndrome (burnout, tension, listlessness, cognitive difficulties). An overall burnout index was also computed for each participant (total burnout) and based from cut-off points of female with burnout/female burnout patients (e.g. Grossi et al, 2003, 2005; Perski & Grossi, 2004) and means of the present sample, total burnout was dichotomised into low (1–3.99) and high burnout (4–7) scores. This scale correlates significantly (Grossi et al, 2003) with the EE/DP/PA sub-scales of the Maslach Burnout Inventory (MBI, Maslach & Jackson, 1986; Maslach et al, 1996) and the Pines Burnout Measure (PBM, Pines et al, 1981; Pines & Aronson, 1988). Cronbach α for the present sample was 0.79.

Job strain/social support at work was assessed with the Karasek et al job demand-control-support model (Karasek & Theorell, 1990). This scale contains 18 items (graded 1–4), of which 6 concern job control, 5 job demands and 7 social support at work. A job strain measure can be derived by dividing demands with control. In the present sample, Cronbach α for demands, control and social support were 0.77, 0.75 and 0.82, respectively.

Depression was assessed with The General Health Questionnaire (GHQ-12) (Goldberg & Williams, 1988), which is as sensitive to depression disorders as any of specially designed depression scales (e.g. BDI) and able to identify cases of depression in various groups (e.g. Bowling, 1997; Prevalin, 2000; Schmitz et al, 1999). The GHQ-12 consists of 12 items, with the total score amounting to 12. Scores 0–2 indicate no depression and scores 3–12 indicate increasing depression levels. Data can also be divided into 3 categories (0–2 = no depression; 3–5 = low/moderate depression levels; and 6+ = high depression levels). Cronbach α for the present sample was 0.80.

In addition, we assessed whether women used alcohol/cigarettes (no, 1–4 times a month, 2+ times a week) and asked them to rate their height and weight, and a body mass index (BMI) was computed for each women with the formula kg/m^2. We also assessed, using a "yes/no" format, whether women used medication (e.g. sedatives), had pain (e.g. back-pain, 3-months) and suffered from cardiovascular (e.g. hypertension), respiratory (e.g. asthma), gastrointestinal (e.g. ulcer) and "other" diseases (e.g. diabetes). These items were largely derived from The Pain Questionnaire (Arnér, 1984; Carlsson, 1984), which measures various facets of pain and pain-related/unrelated health aspects. Finally, we assessed various demographics/socio-economics (e.g. age). Women answering "no" to the question "do you have a foreign background?" were considered as native Swedes. Financial strain (concerns about how to make ends meet) was assessed with one question in a "no/sometimes/often/always" format. A woman was defined as having financial strain if she chose any response other than "no". These items were largely derived from classification systems regarding socio-economics etc used in Sweden (e.g. SCB, 1989).

Design and procedure

The study was cross-sectional and data were collected during 8 consecutive weeks with two reminders in between. The names/addresses of the participants (with a code number) were obtained from the AdressKompaniet[1], which is a company with data on the population living in Sweden. The sample was chosen by the AdressKompaniet using a random selection program. Women were sent questionnaires to their home addresses, together with a letter giving detailed information about the study, and asked to return the questionnaire by post. All women were volunteers and gave their informed consent. Confidentiality was emphasised. The ethical committee at the Karolinska Institute, Stockholm, approved the study.

Statistical analyses

The data were examined with ANOVAs and chi-square tests (χ^2). The significance level for the univariate analyses was set at $P < 0.01$.

A block-wise logistic regression analysis was computed to identify/quantify factors associated with high burnout among all women, while controlling for other possible confounders. The candidate confounders were variables that significantly differentiated women in the univariate analyses. That is, demographics/socio-economics (e.g. age), demands, control and social support at work, life-style variables (e.g. alcohol), medication (e.g. sedatives), depression and somatic health (e.g. pain). In block-wise logistic regression, variables are entered into the regression equation block by block and the contribution of every block in explaining the dependent variable is assessed. The dependent variable is dichotomous. Results are expressed as odds ratio, Nagelkerke R^2 and CI 95%. Nagelkerke R^2 (e.g. Peng et al, 2002) is an approximation to descriptive goodness-of-fit statistics to assess the fit of the proposed logistic model (quantify the strength of association between variables). All categorical variables with more than two categories were transformed into dummy-variables. Single data were lost for a number of variables, as indicated by the N's and degrees of freedom.

Results

Demographic/socio-economic and work variables

As shown in Table 1, women with high burnout scores (WHB) were more often younger, single, divorced, of foreign origin and had lower education levels than women with low burnout scores (WLB). Moreover, WHB were more often blue-collar workers and on sick-leave/unemployment/pension benefits, whereas WLB tended

[1] After authorisation from various authorities, we bought the names/addresses of the participants (with a code number). The analysis of the differences in age between participants/non-participants was done by the company. Except for the names/addresses (with a code number), we had no other information about the non-participants.

Table 1. Demographic/socio-economic and work variables among women with high/low burnout

Variables	High burnout		Low burnout		Test statistics/P
	$n = 744$	%	$n = 2847$	%	
Age (years) (n)	(713)		(2781)		
Means ± S.D.	39.1 ± 12.5		41.2 ± 12.6		(F(1,3492) = 11.1, $P < 0.0001$)
Marital Status (n)	(712)		(2786)		
Single	198	27.8	577	20.7	
Married/Cohabiting	402	56.5	1885	67.7	
Divorced/Separated	97	13.6	276	9.9	
Widow/er	15	2.1	48	1.7	($\chi^2(3) = 31.6$, $P < 0.0001$)
Foreign background (n)	(720)		(2799)		
Yes	199	27.6	530	18.9	($\chi^2(1) = 26.4$, $P < 0.0001$)
Education level (n)	(716)		(2782)		
Low[a]	161	22.5	498	17.9	
Intermediate[b]	290	40.5	1017	36.6	
High[c]	265	37	1267	45.5	($\chi^2(2) = 18.2$, $P < 0.0001$)
Occupational status (n)	(649)		(2589)		
Blue-collar workers	200	30.8	545	21.1	
Low white-collar workers	255	39.3	1011	39.1	
Inter. white-collar workers	152	23.4	794	30.6	
High white-collar workers	9	1.4	154	5.9	
Own business	10	1.6	28	1.1	
Other[d]	23	3.5	57	2.2	($\chi^2(5) = 57$, $P < 0.0001$)
Current financial support (n)	(719)		(2791)		
Working	353	49.1	2004	71.8	
Studying	102	14.2	303	10.8	
Sick-leave	134	18.6	95	3.4	
Unemployment	29	4.1	53	1.9	
Pension	62	8.6	124	4.5	
Other[e]	39	5.4	212	7.6	($\chi^2(5) = 286.5$, $P < 0.0001$)
Children at home (n)	(720)		(2799)		
Yes	358	49.7	1451	51.8	ns
Weekly working hours (n)	(672)		(2663)		
Mean ± S.D.	26.6 ± 18.9		33.7 ± 14.5		(F(1,3333) = 112.7, $P < 0.0001$)
Financial strain (n)	(715)		(2770)		
Yes	465	65	1053	38	($\chi^2(1) = 168.8$, $P < 0.0001$)
Work demands (n)	(705)		(2731)		
Means ± S.D.	3 ± 0.6		2.6 ± 0.6		(F(1,3434) = 179, $P < 0.0001$)
Work control (n)	(704)		(2733)		
Means ± S.D.	2.8 ± 0.5		3.1 ± 0.5		(F(1,3435) = 63.4.1, $P < 0.0001$)
Social support at work (n)	(691)		(2670)		
Means ± S.D.	3.1 ± 0.6		3.5 ± 0.5		(F(1,3359) = 275.7, $P < 0.0001$)

[a] Primary school/similar or lower; [b] upper secondary school/similar; [c] university/similar; [d] e.g. students; [e] e.g. social benefits.

n Number of people who answered the question.

to be high/intermediate white-collar workers and on work. WLB reported a greater number of weekly working hours. WHB were more financially strained than WLB. Finally, WHB experienced greater demands and lower control/social support at work than WLB.

Depression (GHQ)

As shown in Table 2, WHB reported greater depression scores than WLB. An examination of depression levels, revealed that 36.1% of the WHB and 40.7% of the WLB had moderate levels, whereas 17.7% of the WHB and 5.8% of the WLB had elevated.

Life-style, medication and somatic health variables

As shown in Table 3, WHB were more often smokers, but used less alcohol than WLB. They also consumed more psychoactive agents and drugs for somatic diseases than WLB. Finally, WHB reported more cardiovascular, gastrointestinal and ''other'' diseases, and complained more often of pain than WLB.

Table 2. Means, standard deviations and levels for depression (GHQ) among women with high/low burnout

Variables	High burnout		Low burnout		Test statistics/P
	$n = 744$	%	$n = 2847$	%	
Depression (n)	(718)		(2798)		
Means ± S.D.	5.1 ± 3		1.6 ± 1.9		(F(1,3514) = 1435, $P < 0.0001$)
Level of depression (n)	(718)		(2798)		
0–2 none	167	23.2	2140	76.5	
3–5 low/moderate	259	36.1	496	17.7	
6+ high	292	40.7	162	5.8	($\chi^2(2) = 874.6$, $P < 0.0001$)

n Number of people who answered the question.

Table 3. Life-style, medication and somatic health variables among women with high/low burnout[a]

Variables	High burnout		Low burnout		Test statistics/P
	$n = 744$	%	$n = 2847$	%	
BMI (n)	(705)		(2750)		
Mean ± S.D.	23.9 ± 4.3		23.7 ± 3.9		ns
Smoking (n)	(728)		(2809)		
1–4 times a month	41	5.6	148	5.3	
2+ times a week	216	29.7	618	22	($\chi^2(2) = 19.8$, $P < 0.0001$)
Drinking (n)	(728)		(2822)		
1–4 times a month	381	52.3	1646	58.3	
2+ times a week	139	19.1	620	22	($\chi^2(2) = 27$, $P < 0.0001$)
Psychoactive medication[b] (n)	(720)		(2799)		
Yes	240	33.3	328	11.7	($\chi^2(1) = 197.7$, $P < 0.0001$)
Somatic medication[c] (n)	(718)		(2798)		
Yes	396	55.2	1290	46.1	($\chi^2(1) = 18.7$, $P < 0.01$)
Cardiovascular diseases[d] (n)	(728)		(2803)		
Yes	84	11.5	92	3.3	($\chi^2(1) = 81.2$, $P < 0.0001$)
Respiratory diseases[e] (n)	(731)		(2816)		
Yes	228	31.2	760	27	ns
Gastro-intestinal diseases[f] (n)	(728)		(2809)		
Yes	169	23.2	308	11	($\chi^2(1) = 74.4$, $P < 0.0001$)
Other diseases[g] (n)	(669)		(2565)		
Yes	250	37.4	619	24.1	($\chi^2(1) = 47.3$, $P < 0.0001$)
Pain[h] (n)	(720)		(2799)		
Yes	579	80.4	1637	58.5	($\chi^2(1) = 118.1$, $P < 0.0001$)

[a] The same individual may have various diseases etc; [b] e.g. sedatives; [c] e.g. insulin; [d] e.g. hypertension; [e] e.g. asthma; [f] e.g. ulcer [g] e.g. diabetes; [h] e.g. back-pain (pain other than from diseases).

n Number of people who answered the question.

Factors associated with burnout

As shown in Table 4, sick-leave and financial strain were positively associated with high burnout, and increased age and high white-collar position negatively. The demographic/socio-economic block accounted for 19.6% of the variation in high burnout.

High work demands were positively associated with high burnout. The work stress block accounted for 8.1% of the variation in high burnout.

Of the life-style/medication/somatic health variables, cardiovascular and gastrointestinal diseases, pain and use of psychoactive medication were positively associated with high burnout. The life-style/medication/somatic health block accounted for 5.9% of the variation in high burnout.

Finally, elevated depression scores were positively associated with high burnout. The psychological block accounted for 14% of the variation in high burnout.

Together, the variables in the 4 blocks accounted for 47.6% of the variation in high burnout among women.

Table 4. Factors associated with burnout among all women ($n = 2796$)

Independent variables	Odds ratio R-square changes (in brackets)	CI (95%)
Demographics/socio-economics (Block 1)		
Age[a]	0.971****	0.959–0.984
Marital status[b]		
Single	0.622	0.232–1.67
Married/cohabitant	0.494	0.190–1.29
Divorced	0.412	0.151–1.12
Widow[c]	1	
Foreign background[b]		
Yes	1.32	0.984–1.78
No[c]	1	
Education[b]		
Low	1.19	0.839–1.68
High	1.16	0.837–1.61
Intermediate[c]	1	
Occupational status[b]		
Blue-collar worker	0.795	0.324–1.95
Low white-collar worker	0.783	0.317–1.93
Inter. white-collar worker	0.583	0.229–1.49
High white-collar worker	0.149**	0.040–0.548
Own business	0.930	0.224–3.86
Other[c]	1	
Current financial support[b]		
Working	0.864	0.525–1.42
Studying	0.743	0.387–1.43
Sick-leave	2.54**	1.29–5.01
Unemployment	1.14	0.439–2.94
Pensioning	1.12	0.486–2.59
Other[c]	1	
Weekly working hours[a]	0.999	0.987–1.01
Financial strain[b]		
Yes	1.45**	1.12–1.89
No[c]	1	
R-square change	(19.6)	
Work stress (Block 2)		
Work demands[a]	1.89****	1.50–2.37
Work control[a]	1.19	0.913–1.55
Social support at work[a]	1.09	0.851–1.41
R-square change	(8.1)	
Life-style, medication/somatic health (Block 3)		
Drinking[b]		
1–4 times a month	0.874	0.636–1.20
2+ times a week	0.946	0.640–1.39
No[c]	1	
Smoking[b]		
1–4 times a month	1.10	0.654–1.86
2+ times a week	1.07	0.807–1.43
No[c]	1	
Psychoactive medication[b, d]		
Yes	1.39*	1.01–1.92
No[c]	1	
Somatic medication[b, e]		
Yes	1.05	0.814–1.35
No[c]	1	
Cardiovascular diseases[b, f]		
Yes	3.18****	1.97–5.13
No[c]	1	
Gastro-intestinal diseases[b, g]		
Yes	1.58***	1.22–2.04
No[c]	1	
Other diseases[b, h]		
Yes	0.874	0.664–1.15
No[c]	1	
Pain[b, i]		
Yes	1.69****	1.26–2.26
No[c]	1	
R-square change	(5.9)	
Psychological (Block 4)		
Depression[a]	1.55****	1.47–1.64
R-square change	(14)	
Total R-square	(47.6)	

[a] Continuous variables; [b] category variables; [c] comparison categories; [d] e.g. sedatives; [e] e.g. insulin; [f] e.g. hypertension; [g] e.g. ulcer [h] e.g. diabetes; [i] e.g. back-pain (pain other than from diseases);
* $P < 0.05$; ** $P < 0.01$; *** $P < 0.001$; **** $P < 0.0001$.

Discussion

Extent of burnout

The high burnout rates in the present study (20.7%) exceed those found for women (9.3%) in a recent survey by Hallsten et al (2002), which employed the PBM combined with a scale assessing achievement dependent self-esteem. The difference may be due to various reasons. The SMBQ used here, focuses mainly on the core symptoms of burnout, i.e. mental and physical exhaustion. The PBM, on the other hand, also contains items pertaining to dysphoric feelings typical of depression, which yield lower burnout rates defined in terms of exhaustion. It is also possible that the scale (achievement dependent self-esteem) used by Hallsten et al (2002) in combination with the PBM had a deflating effect on the prevalence of high burnout, which seems the case as the total rate increased from 7.1 to 13.9% with the PBM alone. Another explanation could be that, opposed to Hallsten et al (2002), women in this study were recruited solely from the Stockholm. Women in large cities compared with women from other parts of Sweden report an increase in psychological problems (SCB, 2003; Socialstyrelsen, 1999).

Demographic/socio-economic variables

Women with high burnout differed from those with low burnout in various demographic/socio-economic factors

(e.g. age). However, only age, high status white-collar work, sick-leave and financial strain were independently associated with burnout in the regression.

The relationship between younger age and high burnout appears in line with observations that burnout symptoms may decrease when people get older (Maslach & Leiter, 1997; Maslach et al, 2001). Being younger may imply both a lack of occupational experience/resources to cope with various facets of work-related stress. Considering that mental ill-health often decreases among middle-aged/older people on work and remains constant or deteriorates among people not working (European Commission, 2004; Lundberg, 2000), our findings could be related to selection processes into and away from the labour market. Our results may also reflect an increase in mental health problems among young adults, particularly women (European Commission, 2004; Sadock & Sadock, 2004; WHO, 2001).

Women with high status white-collar work were less likely to report high burnout than women with lower status, which seem to be at odds with previous findings (e.g. Hallsten et al, 2002). The discrepancy could pertain to that earlier findings did not address this issue separately for women. What may independently contribute to the explanation of burnout variance in gender as a whole, may not be necessarily an explanatory factor in an analysis of only women. This may also reflect the fact that, in Sweden, stress-disorders more often affect other groups than those with high status white-collar work (e.g. Lindwall, 2002).

Concerning the relationship between sick-leave and high burnout, one could speculate that sick-leave contributed to physical/social inactivity, financial hardships and disempowerment, resulting over time in detrimental health effects such as stress and subsequently burnout. This hypothesis seems to be in line with data showing an association between sick-leave/various health problems (e.g. Floderus et al, 2003; Grossi et al, 1999; Judiesch & Lyness, 1999; Ockander, 2001) and stress/hyperarousal and burnout (Melamed et al, 1999; Shirom, 1989).

On the other hand, the relationship between sick-leave and burnout may reflect the patterns of sick absenteeism and disease in Sweden. During the past decade, sick-leave rates among women have increased dramatically, largely resulting from stress-related problems, including burnout (RFV, 2003). In any case, our data appear to be in accord with observations of a connection between burnout and sick-leave (e.g. Hallsten et al, 2002; Iversen et al, 1998; Parker & Kulik, 1995; Soares & Jablonska, 2004).

As far as we know, financial strain per se has not been previously independently associated with high burnout. Income level and financial difficulties may correlate with burnout (Brown & Pranger, 1992; Hallsten et al, 2002), but in neither case was financial strain per se addressed. On could hypothesize that financial strain mediates the associations between low socio-economic status, divorcee status, exclusion from the labour market and burnout. Financial strain may thus be a common "risk factor" for ill-health among individuals living under such circumstances. Findings on a relationship between low socio-economic status, being divorced, unemployment, financial strain and poor health may support this hypothesis (e.g. Blank & Diderichsen, 1996; Dalstra et al, 2002; Kogevinas & Porta, 1997; Mead et al, 2001; Price et al, 2002; SCB, 2003).

Work variables

High demands and low control/social support at work were more common among women with high burnout than among those with low burnout. Only high work demands were independently associated with high burnout in the regression, which appears in accord with other findings (e.g. Hallsten et al, 2002; Lee & Ashforth, 1996; Maslach et al, 2001; Melamed et al, 2006; Shirom et al, 2005; Soares & Jablonska, 2004; Van de Doef & Maes, 1999). Working conditions characterised by high demands/low decision latitude elicit psychophysiological stress reactions mediated by the locus coeruleus-sympathetic-adreno-modullary (SAM) and the hypothalamic-pituitary-adreno-cortical (HPA) axes, such as elevated metabolic, cardiovascular and muscular function (e.g. Chrousos et al, 1992; Karasek & Theorell, 1990; Lundberg et al, 1994; Melin & Lundberg, 1997; Stoney et al, 1988). Thus, chronic activation of the body's systems through high job demands and other problems (e.g. pain) may lead to negative health consequences including burnout, suggesting that burnout could be primarily a response to various types of overload (Shirom et al, in press).

Depression (GHQ)

The high burnout group showed greater mean scores for depression. Also, about 41% of women with high burnout reported elevated depression levels in contrast to 5.8% among those with low burnout, suggesting that an important proportion of the women with high burnout may have been clinically depressed. The association between depression and high burnout was confirmed in

the regression. Whether high rates of depression were the ''cause'' of high burnout could not be ascertained here, but our findings appear in line with studies showing a linkage between depression and burnout (e.g. Brenninkmeyer et al, 2001; Glass & McKnight, 1996; Melamed et al, 2006; Shirom et al, 2005).

Life-style, medication and somatic health variables

Women with high burnout differed from women with low burnout concerning various life-style and somatic health variables (e.g. pain). However, only cardiovascular and gastrointestinal diseases, psychoactive medication and pain were independently associated with high burnout in the regression.

Use of prescribed psychoactive drugs has been suggested to be a consequence of burnout (Schaufeli & Enzmann, 1998). However, our findings may reflect significant increases in medication use in Sweden over the past years, not least among women (Socialstyrelsen, 2000), and/or that women, being less often referred to specialist examinations than men (Bernsten et al, 1990), are routinely prescribed pharmacological treatment by general practitioners.

Some 65% of the high burnout women reported suffering from somatic ailments (except pain). Only cardiovascular and gastrointestinal ailments were independently associated high burnout in the regression. The rates of somatic morbidity in the present study are similar to the prevalence of unspecified somatic complaints in the general population, particularly women (e.g. Eriksen et al, 1998; Ihlebaek et al, 2002; Krantz & Östergren, 2000). However, comparisons may not be adequate as we asked for diseases and these studies tend to assess unspecific symptoms. To the extent that substantial symptoms are scrutinized, our high burnout women appear to have more severe somatic health problems than women in general. For example, Ihlebaek et al (2002) found that 4% of the participants reported substantial gastrointestinal complaints, whereas the figures for our high burnout women were 23.2%.

Our findings seem to be in line with data that burnout is associated with physiological reactions that may facilitate/indicate somatic illness and that burnout/the related construct vital exhaustion ''predicts'' myocardial infarctions/other cardiovascular endpoints independent of traditional risk factors such as lipids and smoking (e.g. Appels et al, 1993; De Vente et al, 2003; Ekstedt, 2005; Melamed et al, 1999, 2005; Shirom et al, 1997, in press). Also, a recent prospective study (Toppinen-Tanner et al, 2002) reported that burnout was related to increased risk of medically certified illness (e.g. gastrointestinal disorders).

Although potential mechanisms explaining the connection between the abovementioned somatic ailments and burnout have been suggested (e.g. Melamed et al, 2005; Shirom et al, in press), we could not assess here whether the ailments were a ''cause'' or a ''consequence'' of burnout. This issue needs further clarification, in future research, with a more adequate design than the cross-sectional approach.

The association between pain and burnout has previously been shown, but mainly among pain patients (e.g. Soares & Grossi, 1999a, b; Soares & Jablonska, 2004). As far as we know, the current study is the first to reveal a relationship between pain and burnout in a randomly selected sample of women from the general population. However, considering that about 81% of those with high burnout reported pain, it is possible that a significant number of them suffered from clinical pain disorders. The frequency of pain is high among women in Sweden/elsewhere (e.g. Bergman et al, 2001; LeResche, 2000), though generally not as high as among our high burnout women. The mechanisms behind the relationship between pain and burnout were not addressed here. This issue needs elucidation, in future research, with a more adequate design than the cross-sectional approach.

Though the current study seems to have corroborated some previous findings in the field and may have provided new insights into women's burnout experiences, its limitations must be acknowledged. First, issues of causality cannot be solved by the cross-sectional study design. Another type of design would be needed, i.e. repeated measures, to determine causality. Second, the attrition rate (36%) was relatively high and there were limited possibilities to analyse differences between responders/non-responders. The two groups were, however, comparable in terms of age and the total response rate is similar to other studies in the field. Third, the sample was recruited in Stockholm County, and may not be representative of women in the rest of the country. Consequently, the generalisability of the study's findings cannot be guaranteed. Fourth, the accuracy of data was solely dependent on the womens' subjective assessment of their situation. No objective assessment strategies were incorporated to corroborate their responses. For example, the occurrence of diseases/pain was not objectively confirmed and diagnostic procedures to assess whether participants suffered from depression were not applied. However, the instrument used to assess the pres-

ence of diseases/pain has been shown to be reliable and valid (e.g. Arnér, 1984; Carlsson, 1984). The GHQ (Goldberg & Williams, 1988) is as sensitive to depression disorders as any of specially designed depression scales (e.g. BDI) and able to identify cases of depression in various groups (e.g. Bowling, 1997; Prevalin, 2000; Schmitz et al, 1999). Fifth, considering the proportion of women with high burnout, one may question the cut-off level. On the other hand, the cut-off was based on data from females with burnout/female burnout patients (e.g. Grossi et al, 2003, 2005; Perski & Grossi, 2004) and on the means from this study's sample, and as ''discussed'' elsewhere (e.g. Schaufeli & Van Dierendonck, 1995) clinical derived cut-offs can be employed. Finally, one can question whether is appropriated to measure burnout in non-working groups. However, the view that burnout is a strictly work-related condition has been challenged (Hallsten, 1993; Pines, 1987, 1994, 1996; see also Ekstedt, 2005) and high burnout has been reported in non-working groups from the general population (Hallsten et al, 2002).

Despite these limitations, the reliability of the study may have been confirmed by the fact that some of the findings seem to be consistent with other research in the field and we may have provided new insights into women's burnout experiences.

In conclusion, our findings show that an important proportion of women from the general population had high burnout. Women with high burnout reported a worse situation than their counterparts socio-economically, work-wise, emotionally and physically, and some of these factors were independently connected to high burnout. For example, women from the general population in ''difficult'' socio-economic and working situations not only seemed to be ''prone'' to high burnout, but burnout also was associated with greater ill-health.

The extension/complexity of these women's problems should be a source of concern for many groups (e.g. health providers). Urgent attention is required because the impact of these women's problems may be profound for themselves and others. In view of our findings, interventions aimed at improving the situation of women with burnout are necessary, likely requiring synchronous interventions at various levels, different approaches, varying time frames, and by various professionals. Our data may also be useful to health care planers/providers in their aims to prevent burnout.

As suggested by the current study, burnout and its association with other factors (e.g. pain) are complex issues. Although we have pointed to some important factors related to burnout among women from the general population, more than half of its variation remains to be explained. It follows that further research is needed, not least longitudinal, to firmly identify ''determinants'' of burnout among women.

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