

# Gender-specific Mental Strain in the Working Context

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## ABSTRACT

This is an analysis of the mental strain of employees in Germany. It addresses the question whether there is a gender-based gradient in emotional exhaustion in the working context. 4000 employees were asked by means of an online access panel in 2019. Women suffer significantly more often from emotional exhaustion, even after controlling for various demographic and work-related third variables. The finding is independent of migration experiences. Wage satisfaction appears to be the strongest predictor of emotional exhaustion which is in line with Siegrist's model of effort-reward-imbalance. Having children is a significant risk factor. Therefore, the adjusted gender pay gap has to be closed, while the compatibility of family and career needs to be strengthened on the levels of government and society. These would be improvements from which women with and without migration background would profit to the same extent.

**Keywords:** Public health; Women's health; Epidemiology; Occupational medicine; Mental health

## INTRODUCTION

It is already known that the prevalence of psychiatric disorders is a highly relevant public health issue [1]. They are accountable for a large proportion of disease-induced losses on the levels of both economy [2] and individual life quality [3]. In Germany psychiatric disorders are the second most common reason for work incapacity since 2016 [4] with the longest average duration of absence [5]. They are the main cause of early retirement [6]. Especially work-related mental disorders are on the rise [7].

As opposed to the German Modification, which already contained burnout as a difficulty in coping with life (Z73) [8], the burnout syndrome with its symptoms energy depletion or exhaustion, increased mental distance, negativism or cynicism, as well as reduced efficacy found entrance into the International Classification of Diseases (ICD-11). It is "resulting from chronic workplace stress that has not been successfully managed" and it is defined as a "factor influencing health status" instead of a stand-alone disease [9].

Critics argue that the distinction between burnout and disease pictures like mood disorders and chronic fatigue is difficult [10]. It is postulated that there is an overlap between burnout and depression [11].

Nonetheless, there are scientific instruments measuring burnout like the Maslach (MBI) [12] and the Copenhagen Burnout Inventory (CBI) [13]. The burnout risk is closely linked to stress [14], its

internal appraisal and coping possibilities [15], the individual locus of control [16], social support [17] and gratification [18].

Women seem to be affected by psychiatric disorders more often [19]. The evidence refers to diagnoses. Thus, a gender-specific bias in awareness and reporting has to be taken into consideration.

Women in Germany suffer more often from anxiety, eating, affective, obsessive-compulsive, post-traumatic stress and somatoform disorders as well as medical drug abuse. They are also more often prone to the occurrence of multiple psychiatric diagnoses [20].

The gender-based differences regarding depressive and anxiety disorders and their detection are constant throughout different countries [21].

While men on the other hand suffer more often from non-medical drug dependence [19], there is also a paradox in suicide to the disadvantage of men that might be traced back to undetected and untreated male depression [22].

There are several different attempts to explain the female dominance regarding the diagnosing of psychiatric disorders. One of them is biological and refers to different hormonal fluctuation cycles. The female sex hormone estrogen inhibits the depletion of serotonin which has an anti-depressive effect. Accordingly, there is a higher risk for affective disorders within the phases of puerperal, pre-menstruation and menopause [23].

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The vulnerability stress model suggests that the onset of a disease takes place when a predisposition meets additional stress [24]. Thus, a bio psychosocial explanatory model is needed that also incorporates psychosocial aspects, because, as Astbury states, gender “runs like a fault line, interconnecting with and deepening the disparities associated with other important socioeconomic determinants such as income, employment and social position” [25].

Women are more probable to be diagnosed with mental health problems than men with equal symptoms by both professionals [26] and family members [27]. However, the much-cited study of Kelley et al., which contains the conclusion that the image of a healthy person corresponds to the image of a healthy man, shows methodological flaws [28].

Women would rather be treated due to emotional problems; they fear a drinker label more than men, who fear a psychiatric label [29]. Accordingly, help seeking happens along stereotypical lines. Women are 48 percent more likely to use prescription drugs [30]. Their coping style seems to be more ruminating as opposed to a distractive male coping style [31]. Additionally, alexithymia is slightly but consistently more common in men [32].

Cultural beliefs ascribe multiple roles to women [33]. Strazdins et al. express that “like housework and child care, the distribution of emotional work is gendered” [34]. Lone mothers are subjected to an even higher risk of developing depressive disorders mediated by social disadvantage, stress and isolation [35].

Moreover, there is the gender pay gap (gpg) which connects to the theory of job effort and gratification [18]. Women earned on average 16.2 percent less than men in 2017 in Germany and 13.5 percent less within the OECD-countries [36]. The gpg can be traced back to the difference between sectors that are male or female dominated, rather than to different perceptions of justice and speaking up against them [37]. The adjusted gpg accounts for qualification, working hours etc., and exceeds the unadjusted one, but is still existent [38]. There is a tendency towards a lower social status of women which is a powerful predictor of depression [25]. Women are more often victims of violence, abuse and rape both as a child and as an adult [39]. Moreover, gender based-discrimination is a strong predictor of burnout [40].

In women, as opposed to men, burnout is associated with high levels of inflammatory markers (hs-CRP and fibrinogen). Chronic psychological stress can lead to an excessive activation of the sympathetic nervous system and the hypothalamus-pituitary-adrenal axis. Cortisol resistance then leads to chronic low-grade inflammation which increases the risk of developing for example cardio-vascular diseases and type-II-diabetes. This underlines the importance of studying gender differences regarding the connection between emotions and health [41].

Maslach et al. found in 1985 that gender is not a major factor in burnout, women do slightly better. Gender differences did not vary significantly between male and female dominated occupations. However, women were more likely to be emotionally exhausted, while men were rather depersonalized [42].

Interestingly, a meta-analysis of 183 studies in 2010 confirms the small effect size in favour of women as well as the missing difference within the sectors. There are larger gender differences regarding burnout in the US as compared to the EU which leads to the hypothesis that the difference depends on the level of administrative interventions like the job hazard analysis according to the German Occupational Safety and Health Act.

Again, women are more prone to emotional exhaustion, which shows that there is a gender-based difference on a more detailed level. The authors recommend the usage of emotional exhaustion instead of the burnout measuring tools [43].

Emotional exhaustion is also the constant dimension throughout the common different burnout inventories [44]. Thus, the study on hand examines whether there is a gender-specific gradient regarding emotional exhaustion in the working context, which is consistent within the existing literature.

## MATERIALS AND METHODS

In Germany in 2019, 4000 employees were polled net by means of a standardized online questionnaire. The respondents were participants of an access panel and had been recruited actively (telephone and e-mail recruiting) and passively (commercials on websites) by the provider. A random selection was carried out within a proportionate stratification representing the sectors and firm sizes in Germany. The sectors were categorized, according to the “WZ 2008” classification of the German Federal Statistical Office, into manufacturing industry, energy and water supply, disposal, building industry, commerce, maintenance and repair of motor vehicles, services, public administration, defence and social security, education, health and social services. The firm sizes differed between 0-9, 10-49, 50-249 and more than 250 employees.

A personalized invitation link was sent *via* email to the panel-participants who were selected. Their data was anonymized. Unemployment was besides the stratification quotations the only exclusion criteria. Employees with diverse gender were excluded analytically. The insufficient number of non-binary employees would not have led to statistically meaningful evidence for the subgroup [45].

The main dependent variable of the survey is emotional exhaustion which was enquired frequency-based (“How often do you feel emotionally exhausted?”) on a scale of five between often and almost never, matched by the values 100, 75, 50, 25 and 0 (100=often, 0=almost never). The scale corresponds to the emotional exhaustion dimension of the CBI as used within the German Copenhagen Psychosocial Questionnaire (COPSOQ) and thus the variable is treated as being quasi-metrical [46]. Missing values were handled using mean respectively modus imputation by using the mean or modus of the group of item respondents as a substitute for the missing item of the non-respondents.

To evaluate the impact of the gender on emotional exhaustion women were compared to men by means of student’s two-sided t-test of mean differences. The third variables age, education, current apprenticeship, working hours scheme, children below 16 years, other care-dependent relatives, migration background, psychiatric disorders, shift work, having to deal with the problems of others, discrimination, harassment, general state of health, wage satisfaction (as a partial aspect of gratification) and the sense of community at the workplace (as a partial aspect of social support) were controlled for as standardized and non-standardized coefficients in a multiple Ordinary Least Squares (OLS) regression model. Positive formulated statements concerning dealing with the problems of others, ever experienced discrimination, ever experienced harassment, general state of health, wage satisfaction and the sense of community at the workplace were asked for acceptance on a scale of five. The percentage in Table 1 refers to the sum of the values one (“I fully agree”) and two (“I mostly agree”). The regression model’s goodness of fit was tested by focusing

on the coefficient of determination ( $R^2$ ). We also evaluated a moderation of the gender influence on emotional exhaustion by the migration background within a second OLS model by means of an interaction term.

Sample size calculation was carried out using the software G\*Power Version 3.1.9.4 provided by the Heinrich Heine University Düsseldorf. Statistical analysis was done with R-Studio version 1.2.1335. The syntax code as well as the data set is available from the authors on reasonable request.

## RESULTS

Of 4000 respondents, 1781 were female, which is equivalent to 44.51 percent. Male and female employees do show some heterogeneity in the third variables as presented in Table 1. The men of the sample are older on average, better educated, more often doing an apprenticeship or working fulltime. They are considerably more satisfied with their wages. Having to deal with the problems

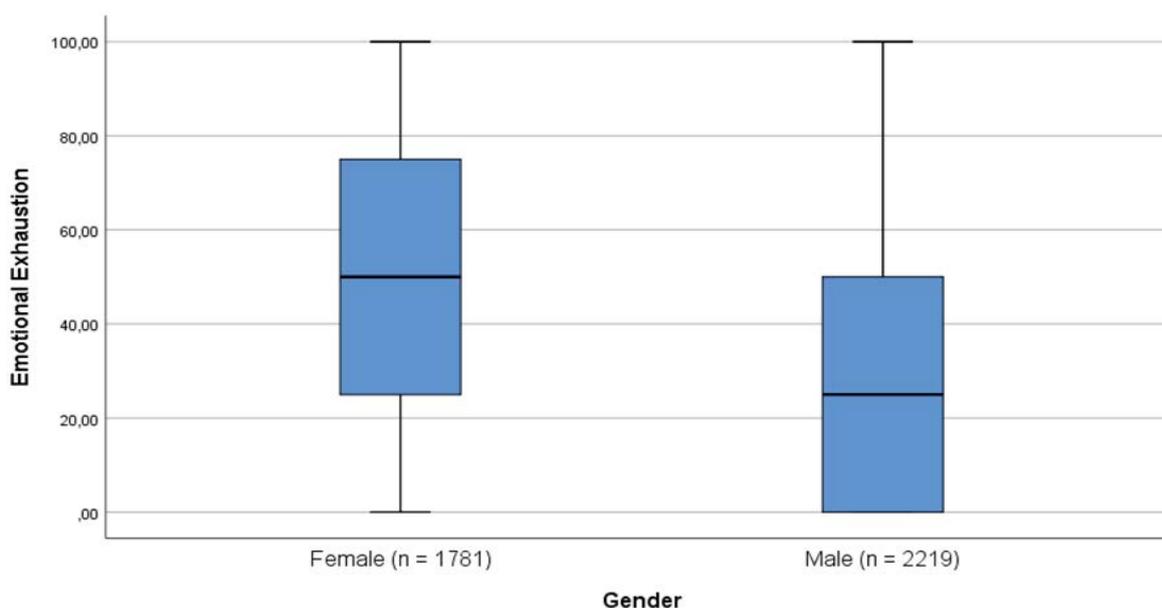
of others and caring for relatives other than children is a lot more common in women. Women suffer more often from psychiatric disorders and shift work. They are more satisfied with their general health and have experienced discrimination and harassment less often, although they show a migration background more often.

In 60 cases the mean value of emotional exhaustion (31.56 for  $n=3940$ ) had to be imputed. This nonresponse on the item of emotional exhaustion was with 45.70 percent caused by women and with 54.30 percent caused by men, which approximately matches the sample distribution.

The mean of emotional exhaustion in the sample is 31.56. It is 41.49 ( $\pm 31.56$ ) for women and 23.60 ( $\pm 26.41$ ) for men. The resulting  $t$ -distributed mean difference of 17.89 is significant ( $p < 0.01$ ). The 95 percent confidence interval puts out a mean difference between 16.08 and 19.68 towards less mental strain for the male employees. The comparison is visible between the boxplots in Figure 1 containing first and third quartile, median and outliers.

**Table 1:** Descriptive statistics of the female ( $n=1781$ ) and male ( $n=2219$ ) employees.

Variable	Women	Men
n (%)	1781 (44.51)	2219 (55.49)
Mean Age in Years	38.91 $\pm$ 12.24	43.25 $\pm$ 11.91
University Degree %	19.43	28.65
Apprenticeship %	1.29	3.24
Part-time %	20.04	12.21
Mean Count of Children below 16 Years	0.32 $\pm$ 0.66	0.41 $\pm$ 0.72
Other care-dependent Relatives %	10.73	3.47
Migration Background %	77.75	73.95
Psychiatric Disorder %	5.39	3.2
Shift Work %	68	61.62
Not/hardly ever Dealing with Problems of Others %	30.75	44.91
No/hardly any Discrimination	80.74	76.79
No/hardly any Harassment	83.09	74.09
Satisfied with one's general Health %	55.28	50.95
Satisfied with one's Wage %	39.36	48.9
Satisfied with Sense of Community at Work %	54.07	53.35



**Figure 1:** Boxplot of the emotional exhaustion of female ( $n=1781$ ) and male ( $n=2219$ ) employees.

**Table 2:** OLS-coefficients of the regression of the emotional exhaustion on gender and third variables (n=4000).

Variable	Estimate	Significance
n	4000	p
Male Gender	-11.49	<0.001
Age in Years	-0.52	<0.001
Education	-0.35	<0.001
Apprenticeship	-3.54	0.26
Part-time Work	-5.83	0.22
Count of Children below 16 Years	0.46	<0.001
Other care-dependent Relatives	2.34	0.46
Migration Background	2.35	0.17
Psychiatric Disorder	23.37	<0.001
Shift Work	1.21	0.02
Dealing with Problems of Others	1.48	0.06
Discrimination	4.02	<0.001
Harassment	-5.26	<0.001
General Health Satisfaction (descending)	5.08	<0.001
Wage Satisfaction (descending)	6.01	<0.001
Sense of Community at Work (descending)	-2.72	<0.001

In the multivariate OLS regression analysis of the emotional exhaustion, the gender coefficient changes to -11.49 compared to the mean difference of -17.89 in a bivariate model. A representation of the values of the other regression coefficients is shown in Table 2. The regression constant's value is 49.48. Note that general health, wage satisfaction and sense of community at work are descending from one to five.

The variance of the independent variables presented in Table 2 explains more than a quarter of the variance of the emotional exhaustion values ( $R^2=0.28$ ). The size of the model seems to be reasonable looking at the equally large adjusted coefficient of determination (adjusted  $R^2=0.28$ ).

Male gender, age, education, apprenticeship, part-time work, harassment and a lack of a sense of community at work appear protective of emotional exhaustion. Care work for children and other relatives, a migration background, psychiatric disorders, shift work, dealing with problems of others, discrimination as well as a lack of general health and wage satisfaction are risk factors for emotional exhaustion. The influence of part-time work, doing an apprenticeship, caring for relatives other than children, a migration background and dealing with the problems of others like clients and customers is not significant on a five percent level.

A comparison of the standardized coefficients indicates that wage satisfaction (0.22), age (-0.21), gender (-0.19) and a lack of general health satisfaction (0.18) are the strongest predictors of emotional exhaustion. The standardized coefficients are measured as changes of the emotional exhaustion depending on a change of one standard deviation regarding the respective explaining variable.

The interaction between migration background and gender within the second model is not significant ( $\beta=-0.54$ ,  $p=0.78$ ), while the significance of the two separate variables gender ( $\beta=-10.18$ ,  $p<0.01$ ) and migration ( $\beta=3.20$ ,  $p=0.32$ ) remains similar.

## DISCUSSION

Considering the fact that ten points are regarded as a significant difference in the COPSOQ surveys [47], gender is a strong predictor of emotional exhaustion with being female as a bio psychosocial risk

factor for vulnerability. It remains vague whether men suppress or withhold mental issues even within an anonymized online context. The comparison using standardized regression coefficients shows that only wage satisfaction and age are stronger protective factors of emotional exhaustion than being male. The reduction of the gender coefficient compared to the mean difference is also largely attributable to the incorporation of these two variables, because the sampled men are older and more satisfied with their wages. On one hand, this indicates the relevance of Siegrist's theory of effort-reward-imbalances. On the other hand, the protective influence of increasing age could be based on compensation by increasing depersonalization due to more experiences of disenchantment of own ideals and expectations. Lowered involvement is oftentimes followed by "working to rule". If this is true, then emotional exhaustion and depersonalization do not only correlate and come after one another in the working context but they are the two main emphases of different coping styles, of which one could be called rather female and the other rather male following Purvanova et al. in the broadest sense [43].

It is striking that the influence of the migration background falls below the threshold of significance compared to our previous analysis. One explanation is that the dependent variable is now emotional exhaustion instead of the CBI, which refers to the assumption that there is also a difference in coping styles between migrants and non-migrants towards depersonalization instead of emotional exhaustion. Probably, a large part of the changing effect size is attributable to the model incorporation of the variables shift work, psychiatric disorders and discrimination, which were only tested for correlation within our previous paper. A moderation of the influence of gender on emotional exhaustion by migration experiences can be ruled out looking at the minor interaction term. The issue affects women with and without migration background to the same extent.

The results of harassment and the sense of community at work seem counterintuitive. Both appear to be protective of emotional exhaustion. Maybe people who suffer from common harassment are more often attractive which is associated with a higher social status that is accompanied by resistance resources. Targeting the labour

and the marriage market, see Harper for an analysis of attractiveness [48]. There seems to be an additional moderation of the relation to earnings by confidence and communication as well as social skills [49]. Surprisingly, the sampled men experience harassment and discrimination more often. In addition, a more intensive sense of community acts as a further workplace stress factor. This could potentially be due to social control, the retention of criticism or a perceived obligation to act against authentic emotions for the sake of harmony. Consequently, social support should come from private agents not personally involved in workplace conflicts.

Besides the limitations that online access panel sampling involves, which are presented within the discussion section of our previous paper [45], the comprehension of the term “emotionally exhausted” could differ. Perhaps there is a different connotation of the wording for women as opposed to men. This is an issue the CBI and the COPSQ also have to deal with.

As it is true for the general health satisfaction, the direction of the relation between emotional exhaustion and psychiatric disorders is theoretically commutable, which is of minor relevance as long as these variables only act as part of the confounder analysis of gender-specific effects. Simultaneously, the high correlation between emotional exhaustion and psychiatric disorders refers to the validity of the dependent exhaustion variable. The medium large share of explained variance of emotional exhaustion by psychiatric disorders is attributable to their relatively low and due to social desirability perhaps even underestimated prevalence within the sample. A major part of the variance of emotional exhaustion could not be explained and may be attributable to biological predispositions and further work-specific or private influences.

We did not evaluate gender-specific differences concerning depersonalization and whether there is a trade-off with emotional exhaustion. This is desirable for future research. The usage of the Cambridge Depersonalization Scale (CDS) commends itself [50].

Of course gender is not a binary category. Hence, the missing coverage of employees with diverse gender is a further issue, which is due to the random sampling frame, within which they were not sufficiently represented. However, the wording gender instead of sex refers to the, not only but also, social nature of the empirical differences.

This also means that some differences are alterable. The integration of the variables wage satisfaction and the count of children below the age of 16 years into a multivariate model led to a significant reduction of the gender-specific difference regarding emotional exhaustion. Accordingly, an improved compatibility of family and career with an emphasis on the situation of lone mothers as well as a narrowing of the gpg is a reasonable political and enterprising approach.

## CONCLUSION

Female employees suffer significantly more often from emotional exhaustion, both before and after adjusting for further characteristics. Partially gender-based differences could not be explained by confounders, which could be attributable to the fact that men are less aware of mental issues, seek help later in the process and use rather distractive and depersonalizing coping styles. For that reason, public health surveillance and efforts as well as psychiatry and psychotherapy have to pay close attention to gender differences regarding cognition, emotion and behaviour, instead of focusing on one group exclusively. These differences are also present within the working context.

Nevertheless, there are factors that are capable of explaining the gender-specific gradient in emotional exhaustion. One of them is payment. Although the gpg is commonly overestimated in public due to a lack of adjustment for other factors, there remains a non-explained difference, while low wage satisfaction was shown to be the most relevant predictor of emotional exhaustion by the study on hand. Against that, perceived harassment and discrimination are not the cause of the gender difference in emotional exhaustion.

Having children (younger than 16 years) is another highly significant risk factor. Meanwhile, the distribution of custody and care work is still asymmetric to the disfavour of women. Therefore, the compatibility of family and career needs to be strengthened further, while gender roles have to be questioned critically in view of the fact that women are significantly more mentally strained in the working context as measured by emotional exhaustion.

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## AUTHORS' CONTRIBUTIONS

Kevin Claassen: Conceptualization, Methodology, Software, Validation, Formal Analysis, Investigation, Data Curation, Writing-Original Draft Preparation, Visualization, Project Administration, Funding Acquisition and Horst Christoph Broding: Conceptualization, Resources, Writing-Review and Editing, Supervision.

## CONFLICT OF INTEREST

Authors declare no conflict of interest.

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