



Research article

High prevalence of burnout among midwives in Hungary: High job demands and low resources as potential persistent stressors, a focus on prevention

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A B S T R A C T

Background: Midwifery practice in Hungary is characterized by chronic stress, which may in turn lead to burnout and impaired perinatal care. However, little is known about the degree and potential stressors of burnout, which hinder the development of strategies to promote well-being among midwives in Hungary.

Aim: To assess the prevalence of burnout and identify persistent individual and occupational stressors among midwives in Hungary over the past decade to inform prevention.

Methods: We conducted two cross-sectional studies among midwives in 2014 and 2022. We used the Maslach Burnout Inventory to assess burnout (emotional exhaustion, depersonalization, and personal accomplishment) over time. We also collected data on individual and work characteristics. We performed a multivariate regression analysis to explore associations between burnout and respondents' characteristics.

Findings: The degree and prevalence of emotional exhaustion among midwives increased significantly between 2014 (N = 224) and 2022 (N = 152). High workload, not feeling valued at work, poorly perceived health status and work dissatisfaction emerged as a significant positive correlate of emotional exhaustion or depersonalization in both studies. Living alone showed both a positive and inverse association with burnout in 2014 and 2022, respectively. Work satisfaction was a positive correlate of personal accomplishment in both studies.

Conclusions: Our results add to and confirm the growing body of evidence about the high prevalence of burnout among midwives in Hungary. We identified potential risk factors and outcomes of burnout, which remained unchanged over time. To prevent or reduce burnout among midwives, future interventions should focus on addressing these potential persistent risk factors. However, the time-varying role of factors influencing burnout makes it advisable to review preventive interventions from time to time.

1. Introduction

The concept of burnout syndrome was first described by Freudenberger [1] as a symptom complex that refers to the mental, emotional, and physical exhaustion resulting from long-term adverse stress and emotional strain. Short-to long-term burnout and more persistent emotional stress will sooner or later lead to psychological, physical, and even social symptoms [2], which include chronic anxiety, irritability, impaired self-esteem, aggression, weight changes, sleep disturbances, functional impairment and isolation from

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friends [3].

To contextualize the pathomechanism of burnout from its antecedents to potential outcomes, Demerouti et al. [4] developed the Job Demands-Resources (JD-R) model, which integrates various job stress and motivational theories and proposes that job demands (e.g., workload, work conflict) and job resources (e.g., support, leadership, autonomy) serve as antecedents or stressors of burnout, which then lead to health-related and job-related outcomes such as somatic and psychological morbidities, job dissatisfaction, high turnover, absenteeism, and impaired engagement and performance.

Due to its wide-ranging consequences, burnout has been extensively studied over the past few decades [5–7] to address it and improve individual and organizational outcomes. Most studies have conceptualized burnout along three dimensions, i.e., emotional exhaustion, depersonalization, and lack of personal efficacy, which were established by Maslach and Jackson [8]. They developed a comprehensive questionnaire specifically to investigate burnout in human service workers in the caring professions. The questionnaire measures three dimensions, one of which, and perhaps the most important, is emotional exhaustion, which indicates that a person's emotional resources are depleted. The second dimension is depersonalization, which refers to the development of a negative and impersonal attitude towards the client/patient and those with whom the professional works, including all members of their team. The third dimension refers to insufficient personal accomplishment, a decline in performance, whereby the individual's performance falls far short of what they expect/can expect of themselves, and this may be accompanied by a high degree of negative self-evaluation [9–11].

Evidence suggests that midwifery work is emotionally straining and is characterized by high levels of occupational stress due to high workload, limited job resources, and workplace support [7,12]. As a consequence, there is a growing body of evidence that suggests a high degree of burnout among midwives in various countries [13–15]. Burnout among midwives is considered to have a significant adverse impact on individual and public health as it can negatively affect their ability to provide high-quality, compassionate care, potentially leading to medical errors, misjudgments, high turnover at work, and a decrease in patient satisfaction [15]. Furthermore, burnout may impair a midwife's cognitive functions, decision-making abilities, and attention to detail, which in turn can impact patient safety and increase the risk of medical complications during delivery [14].

Due to its significant impact on the quality of care and patient safety, research on identifying antecedents to burnout has intensified over the past decade. In a recent systematic review by Albendín-García et al. [10], occupational factors such as work overload, lack of autonomy and professional recognition, as well as tenure were identified as significant potential stressors of burnout among midwives. Furthermore, living alone was shown to be strongly associated with low levels of personal accomplishment when compared with midwives who were living with a partner.

Midwives in Hungary are exposed to a particularly high level of physical and mental strain and stress in their daily work including high workload, lack of decision latitude, low financial and managerial recognition, and lack of peer and managerial support. Moreover, midwives' reputation in Hungary is very low [16]. These factors, in turn, can harm their daily lives and mental health [17]. Despite the potentially high prevalence and degree of burnout among midwives in Hungary, burnout research has mainly focused on other healthcare workers including physicians, medical students, and nurses [3,18,19]. At the same time, the responsibilities of midwives have been expanded since 2014 to include independent antenatal care. In particular, midwives are expected to perform independent antenatal care during a low-risk pregnancy, e.g., perform vaginal examinations, fetal heart function tests and assess the results, evaluate ultrasound findings, etc., within their competence.

Despite their growing significance in maternity care, radically changing legal and regulatory frameworks, and the numerous challenges they face at work, there are limited data on the degree and prevalence of burnout and its potential stressors and outcomes among midwives in Hungary [20]. Therefore, using the JD-R model as a theoretical framework, the objective of this study was to assess the degree and prevalence of burnout among midwives over the past few years and explore persistent associations between burnout and specific individual factors as well as working conditions so that informed decisions can be made on future interventions to reduce burnout and promote mental health among midwives in Hungary.

2. Methods

We conducted two cross-sectional studies, Study 1, a nationwide anonymous and voluntary online survey among midwives working in the obstetrics and gynecology departments of hospitals in 2014, and Study 2, a questionnaire-based survey among midwives who attended national conferences in 2022 using the paper and pencil method. Both surveys provided national coverage of midwives. Midwives earn credits toward their midwifery license for attending the conference. The participants came from all over the country, representing Hungarian midwives, as has been the case over the years. The participation of midwives in these conferences is supported by their employers, as the conference promotes the professional development of midwives and their interaction with each other. The anonymous questionnaires were distributed with the authorization of the conference organizer.

In the surveys, we used the Maslach Burnout Inventory–Human Services Survey (MBI-HSS) to assess the degree of burnout [21,22]. The tool has three subscales: (1) Emotional Exhaustion (EE), measured by 9 items exploring feelings of being emotionally overextended and exhausted by one's work; (2) Depersonalization (DP) assessed by 5 items to explore an unfeeling and impersonal response toward recipients of one's service, care treatment, or instruction; and (3) Personal Accomplishment (PA) measured by 8 items to assess feelings of competence and achievement in one's work. In contrast to Emotional Exhaustion and Depersonalization, lower mean scores on this subscale correspond to higher degrees of experienced burnout. All items were scored using a 7-point Likert scale of frequency ratings from “never” to “daily”. Each scale measures its own unique dimension of burnout. For each of the three subscales, average burnout scores were calculated. Based on cut-off burnout scores, participants were then classified as reporting low, moderate, or high levels of burnout on each of the subscales [23].

In line with the JD-R model (see Fig. 1), we also collected data on socio-demographic variables (e.g., age, marital status), job

demands (e.g., work overload, having a second job), job resources (e.g., educational level, tenure in health care, stress management strategies, feeling valued at work and the number of inhabitants of the township of work), health-related outcomes (e.g., smoking habit, duration of sleep, perceived health status, and attitudes toward health promotion presentations), and job-related outcomes (e.g., job satisfaction). The JD-R model is used to illustrate the conceptual framework used in the study and to outline the relationships between the variables under investigation and burnout. No formal analysis of our data against the model was undertaken.

We calculated means and standard deviations as well as relative frequencies for numerical data and categorical variables, respectively. We deployed a two-sample *t*-test to compare numerical variables and a chi-squared test for categorical variables. To explore associations between burnout on the three subscales as response variables and respondents' characteristics as explanatory variables, we used the Generalized Linear Model. The resulting coefficients show how much a unit change in each explanatory variable is associated with a change in the burnout score. A coefficient was considered significant if its probability of being different from 0 was less than 0.05. For statistical analyses, the Stata software was used (StataCorp. 2019. Stata Statistical Software: Release 16 College Station, TX: StataCorp LP.)

3. Results

There were 224 completed questionnaires available for analysis in Study 1 (in 2014) and 152 in Study 2 (in 2022). The characteristics of the respondents are summarized in [Table 1](#). The two samples of respondents differed significantly on the variables of having a second job, educational level, feeling valued, self-perceived health, willingness to attend health promotion lectures, and feeling satisfied, however, they were comparable regarding age, marital status, work overload, tenure in healthcare, and certain health behaviors ([Table 1](#)).

The reliability (Cronbach's alpha) of the MBI-HSS scales used in both studies was good, as shown in [Table 2](#).

3.1. The degree and prevalence of burnout are high among midwives in Hungary

The average scores on the three dimensions of burnout in both studies are shown in [Table 3](#). The degree of burnout among midwives on all three dimensions was close to or above the cut-off values for high burnout [23]. Whilst the two studies cannot be directly compared, the degree of emotional exhaustion was significantly higher in Study 2 (in 2022) vs. Study 1 (in 2014).

Using the cut-offs described by Maslach et al. (1996), we determined the prevalence of burnout among Hungarian midwives in Study 1 (2014) and Study 2 (2022). As shown in [Table 4](#), the prevalence of high and moderate degree of burnout (i.e., emotional exhaustion, depersonalization, and impaired personal accomplishment) was high in both studies. We found a significant increase in the prevalence of moderate and high degree of emotional exhaustion between the two time points (68.8% vs 80.9%) among the midwives.

3.2. Marital status, high job demands, and low job resources as potential stressors of burnout among midwives in Hungary

[Table 5](#) summarizes the relationships between individual and job-related characteristics and the three dimensions of burnout in Studies 1 and 2. Being single, feeling overloaded with work, not feeling valued at work, having poor self-perceived health status, and not feeling satisfied with work showed a significant correlation with at least one burnout dimension in both Study 1 and 2.

Among socio-demographic variables, age showed a significant protective relationship with Emotional Exhaustion and Depersonalization in Study 2 (in 2022). Being single correlated positively with Depersonalization in Study 1 (in 2014) and negatively with Emotional Exhaustion and Depersonalization in Study 2 (in 2022).

Among job demand variables, feeling overloaded was significantly associated with an increase in Emotional Exhaustion and Depersonalization, as well as a decrease in Personal Accomplishment in Study 1 (in 2014). Furthermore, it increased the probability of Emotional Exhaustion by 5.90-fold in Study 2 (in 2022). We identified having a second job as a positive correlate of Depersonalization

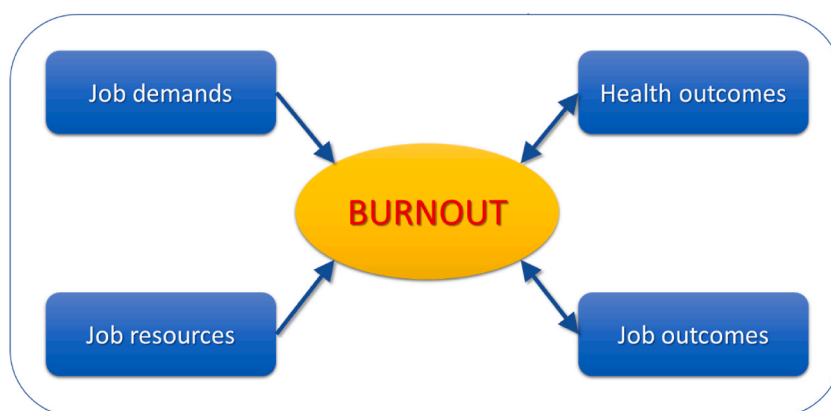


Fig. 1. The theoretical background of our study: possible effects in the Job Demands-Resources (JD-R) model (based on Schaufeli & Taris [24]).

Table 1
Respondents' characteristics (bolded ones indicate significant differences).

	Study 1 (2014) N = 224	Study 2 (2022) N = 152	Difference test (p)
Socio-demographic variables			
Age (SD)	40.1 (10.4)	42.7 (11.7)	0.989
Marital status			0.752
married	48.7 %	50.7 %	
single	51.3 %	49.3 %	
Job demands			
Feeling overloaded			0.122
always, often	68.3 %	75.7 %	
rarely, never	31.7 %	24.3 %	
Having second job			0.049
yes	17.9 %	26.3 %	
no	82.1 %	73.7 %	
Job resources			
Educational level			0.000
college	14.0 %	44.7 %	
less than college	86.0 %	55.3 %	
Tenure in health care – years (SD)	19.9 (11.3)	21.4 (13.9)	0.876
Number of ways to deal with stress (SD)	1.7 (1.2)	2.1 (1.2)%	0.998
Feeling valued			0.049
mostly, completely	52.9 %	63.2 %	
no, moderately	47.1 %	36.8 %	
Number of inhabitants in the township of workplace			0.963
<40k	25.5 %	25.7 %	
>40k	74.5 %	74.3 %	
Health-related outcome			
Self-perceived health			0.002
tolerable	25.6 %	12.5 %	
excellent, very good, good	74.4 %	87.5 %	
Smoking			
yes	29.0 %	24.3 %	0.317
no	71.0 %	75.7 %	
Length of sleep			
4–6 h	46.9 %	53.0 %	0.246
7–10 h	53.1 %	47.0 %	
Willing to attend health promotion presentation			
yes	40.2 %	79.6 %	0.000
no	59.8 %	20.4 %	
Job-related outcome			
Feeling satisfied			0.007
mostly, completely	64.6 %	77.6 %	
no, moderately	35.4 %	22.4 %	

Table 2
Reliability of the MBI-HSS scales used in Study 1 (2014) and Study 2 (2022).

	MBI-HSS	Cronbach' alpha
Study 1 (2014)	Total	0.8650
	Emotional Exhaustion	0.8235
	Depersonalization	0.6866
	Personal Accomplishment	0.7829
Study 2 (2022)	Total	0.8006
	Emotional Exhaustion	0.6669
	Depersonalization	0.7730
	Personal Accomplishment	0.6862

in Study 2 (in 2022).

In terms of job resources, longer tenure in healthcare was a protective correlate of Emotional Exhaustion in Study 1 (in 2014). The number of ways to cope with stress had a positive association with Personal Accomplishment in Study 1 (in 2014). Not feeling valued at work appeared to increase Emotional Exhaustion by 0.11 and 5.40-fold in Study 1 and 2, respectively.

Regarding health-related outcomes variables, those who rated their health as tolerable vs. good or better reported a 6.25 and 5-fold increase in Emotional Exhaustion in Study 1 and 2, respectively. Poor self-perceived health showed a negative association with Personal Accomplishment in Study 1 (in 2014) and a positive relationship with Depersonalization in Study 2 (in 2022). We identified

Table 3

The mean degree of burnout in Study 1 (2014) and Study 2 (2022).

	Study 1 (2014)			Study 2 (2022)			t-test (p)
	N = 224			N = 152			
	mean	lower 95%CI	upper 95%CI	mean	lower 95%CI	upper 95%CI	
Emotional Exhaustion	24.54	23.14	25.94	27.35	25.70	29.00	0.0056
Depersonalization	7.25	6.48	8.03	7.17	6.24	8.10	0.5540
Personal Accomplishment	36.56	35.57	37.56	37.51	36.61	38.41	0.0945

Table 4

The prevalence of burnout in Study 1 (2014) and Study 2 (2022) (bolded ones indicate significant differences).

	Study 1 (2014)		Study 2 (2022)		Total	Pearson χ^2 (p)
	N = 224		N = 152			
Emotional Exhaustion						
Low (<19) n	70		29		99	0.009
%	31.3		19.1		26.3	
High + Moderate (>18) n	154		123		277	
%	68.8		80.9		73.7	
Total n	224		152		376	
%	100		100		100	
Depersonalization						
Low (<6) n	105		75		180	0.638
%	46.9		49.3		47.9	
High + Moderate (>5) n	119		77		196	
%	53.1		50.7		52.1	
Total n	224		152		376	
%	100		100		100	
Personal Accomplishment						
Low (>39) n	94		57		151	0.386
%	42.0		37.5		40.2	
High + Moderate (<40) n	130		95		225	
%	58.0		62.5		59.8	
Total n	224		152		376	
%	100		100		100	

smoking as a positive correlate of DP, and a longer duration of sleep as a negative correlate of Emotional Exhaustion in Study 1 (in 2014). Willingness to attend a health promotion presentation was associated with an increase in Personal Accomplishment in Study 2 (in 2022).

Regarding the job-related outcomes variables, the lack of satisfaction with the job showed a significant positive association with Emotional Exhaustion and a negative association with Personal Accomplishment in both Study 1 and 2. In addition, it was a positive correlate of Depersonalization in Study 1 (in 2014).

4. Discussion

In this study, we measured the degree and prevalence of burnout in two samples of Hungarian midwives in 2014 (Study 1) and 2022 (Study 2) and explored associations between the individual as well as work characteristics and the three dimensions of burnout at the two data collection points. The two samples were comparable on various demographic variables but differed significantly in some individual and work characteristics, which allowed us to identify potential persistent antecedents of burnout over 8 years. While the two studies were representative of the midwives in Hungary, between-study comparisons do not yield meaningful conclusions. The degree of burnout was moderate on all three burnout dimensions in Study 1 (in 2014). In Study 2 (in 2022), midwives reported a high degree of emotional exhaustion. Furthermore, we found a high prevalence of burnout among midwives in Hungary in both studies. Of note, the proportion of midwives reporting at least a moderate degree of emotional exhaustion was 69 % and 81 % in Study 1 (in 2014) and Study 2 (in 2022), respectively, which suggests a potential increasing trend in job demands and/or a decreasing trend in job resources over time. Our results on the high prevalence of burnout among midwives in Hungary confirm findings in other studies conducted in various countries worldwide [10,13–15], which shed light on the significance of developing effective corrective and preventive measures and their applicability across various cultures. In the Work, Health, and Emotional Life of Midwives (WHELM) study, Creedy and co-authors [13] found that the prevalence of personal and work-related burnout among Australian midwives was high (64.9 % and 43.8 %, respectively). The authors suggested that further research is needed to support the personal well-being of midwives and to minimize workplace burnout by developing short and long-term strategies. Similarly, a recent study by Paul et al. [15] in Germany reported a comparable level of moderate-to-high degree of burnout among midwives (48.3 %). In their research, they found that midwives with low burnout rates worked fewer hours per week, were more likely to be freelance, and were more likely to

Table 5

Associations between individual and job-related factors and the three dimensions of burnout.

	Study 1 (2014)			Study 2 (2022)		
	EE	DP	PA	EE	DP	PA
Socio-demographic variables						
Age (SD)	-0.101	-0.002	0.05	-0.23**	-0.02**	0.03
Marital status ref.: married single	2.51	1.99*	-0.80	-3.98*	-0.26*	0.25
Job demands						
Feeling overloaded ref.: rarely, never always, often	0.35***	1.61*	-0.08**	5.90**	1.45	-0.003
Having second job ref.: no yes	0.09	0.28	0.03	3.16	2.72*	-0.02
Job resources						
Educational level ref.: college less than college	0.03	-0.96	-0.02	-2.31	-1.40	-0.002
Tenure in health care – years (SD)	-0.01*	-0.70	0.001	-0.07	-0.07	0.000
Number of ways to deal with stress	-0.90	0.82	0.89*	-0.80	-0.07	0.15
Feeling valued ref.: mostly, completely no, moderately	0.11*	-0.27	0.007	5.40**	1.09	-0.03
Number of inhabitants in the township of workplace ref.: <40k >40k	0.08	0.93	0.004	2.16	0.95	0.002
Health-related outcome						
Self-perceived health ref.: excellent, very good, good tolerable	6.25***	2.06	-4.9***	5.00*	0.56***	-0.97
Smoking ref.: no yes	2.41	2.94**	-0.06	0.82	-0.08	-0.49
Length of sleep ref.: 4–6 h 7–10 h	-2.9*	-0.70	-0.50	0.80	0.22	-0.31
Willing to attend health promotion presentation ref.: no yes	1.28	-0.36	0.34	-3.13	-0.22	2.84**
Job-related outcome						
Feeling satisfied ref.: mostly, completely no, moderately	0.29***	4.83***	-0.13***	3.98*	2.40	-0.09**

EE: emotional exhaustion; DP: depersonalization; PA: personal accomplishment; *: $p < 0.05$; **: $p < 0.01$; ***: $p < 0.001$; significant results depicted by coefficients are highlighted in bold; ref: reference category.

work in community settings.

We found that a significant proportion (ca. 40 %) of the midwives reported low personal accomplishment. Personal accomplishment appears to be less closely related in structural models to emotional exhaustion and depersonalization. In the JD-R model, insufficient job resources have been associated with a lack of personal efficacy [4]. Indeed, data suggest that a high prevalence of lack of personal accomplishment is more likely to develop in organizations characterized by work overload, which adversely impacts participative decision-making and social support, which serve as job resources and are significant facilitators of personal accomplishment [23].

Our study provided important insights into the potential socio-demographic and occupational antecedents and outcomes of specific burnout dimensions among midwives in Hungary at two sampling points in 2014 and 2022. It is expected that various job characteristics have a differential impact on burnout over time as the nature of work has radically changed among midwives in Hungary over the past decade. Furthermore, the impact of the COVID-19 pandemic on job demands and resources should also be taken into account. Nevertheless, we identified individual and occupational factors that demonstrated significant associations with burnout over time (i.e., in both studies) such as marital status (i.e., being partnered/not partnered), poor perceived health status, work overload, job dissatisfaction and not feeling valued at work. We posit that these temporally stable antecedents to burnout should be prioritized for interventions to reduce the degree and/or prevalence of burnout among midwives.

A recent systematic review on the prevalence and correlates of burnout among midwives identified a prevalence of 40 % for work-related burnout, and lower age, being single, lack of staff and resources, low salary, negative work environments, as well as poor

professional recognition as significant stressors of burnout among midwives in different cultures [24].

The results of our study add to and confirm most of these findings. There are conflicting data on the relationship between marital status and burnout. Evidence suggests that being single or married is unrelated to any of the three dimensions of burnout [26]. In contrast, research has identified that being single is associated with higher levels of burnout [27,28], whereas other studies posit that being single protects from burnout [29]. We identified significant associations between marital status and depersonalization and/or emotional exhaustion over time, in both studies. However, whilst being single demonstrated a positive association with burnout in 2014, it showed an attenuating relationship with burnout in 2022.

According to research in Hungary [16], being married and having a family appeared to be an important protective factor of burnout, which confirms our results obtained in 2014. A potential explanation for the conflicting results in our two studies might be that being single may eliminate marital stress, which has been identified as a potential contributor to burnout. Singlehood has been widely promoted among the younger generation in the past few years. In addition, the fact that midwives typically work three shifts may also be a factor that makes it difficult for them to commit to a partnership. Another plausible explanation for the dualistic nature of the association between burnout and marital status is that instead of directly influencing burnout, marital status may function as a moderator of the relationship between other variables and burnout. It means that marital status combined with another variable may lead to an increase or decrease in the degree of burnout.

In a seminal meta-analysis by Lee and Ashforth [30] among human services providers, exposure to job demands such as work overload and work pressure resulted in emotional exhaustion and depersonalization. In line with these results, high workload and work pressure were identified as significant stressors of emotional exhaustion among midwives as well [31]. Our results support this line of evidence, as work overload is significantly associated with emotional exhaustion in both of our studies. According to the JD-R model, job demands are associated with a health impairment process (exhaustion) and lack of job resources strongly correlates with a motivational process (lack of personal accomplishment/efficacy, disengagement, or depersonalization). It is therefore interesting to note that having a second job (conceptualized as a proxy for a high workload) did not show a significant association with emotional exhaustion in either of our studies; however, it was a significant positive correlate of depersonalization in Study 2 in 2022. We hypothesize that having a second job may serve as a job resource, which may buffer the negative effects of job demands on burnout, at least in Study 1, or may negatively impact engagement directly (in Study 2). It is important to note, though, that the prevalence of having a second job among midwives increased from 18 % in 2014 to 26 % in 2022, and the mean score of emotional exhaustion also increased from 25.4 to 30.7 (data not shown).

Scarcity of work resources, specifically, lack of peer or managerial support has also been identified as a significant antecedent to burnout among midwives [10]. In another study by Thumm et al. [32] among midwives in the US, practice environment, namely practice leadership and participation of and support for midwives, were identified as key antecedents of burnout. Our data confirm this line of evidence. In our study, not feeling valued at work, which we considered an indirect indicator of the lack of workplace support, emerged as a significant correlate of emotional exhaustion. In the Hungarian context with an extremely high level of workload among midwives, lack of job resources or work support is particularly important as it may adversely impact work engagement and work performance.

Potential consequences of burnout have been a focus of attention in healthcare as they may adversely impact patient care. In a systematic review among nurses, Jun et al. [33] investigated the relationship between burnout and patient as well as organizational outcomes. This study identified emotional exhaustion as an inverse correlate of patients' satisfaction with care and patient safety as perceived by nurses. Furthermore, depersonalization was associated with medication errors. In our study, we examined the relations of burnout to job satisfaction, as a potential outcome variable, and found that emotional exhaustion and depersonalization (in Study 1) was a positive correlate of job dissatisfaction. In addition, we identified a significant positive association between job satisfaction and personal accomplishment in both studies. Our study provides confirmatory data for the significant role of burnout in influencing job satisfaction in the nursing profession [34]. There is a growing body of evidence that links job satisfaction with turnover, productivity, continuity, and quality of care among nurses [12,35]. Furthermore, recent research demonstrated that job resources, namely professional recognition, improved job satisfaction among midwives [36]. This further signifies the importance of job resources in modulating the degree of burnout among midwives.

There is wide empirical evidence that demonstrates a causal link between burnout and poor mental as well as somatic health, such as anxiety, depression, back and neck pain, sleep deprivation, and insomnia [37]. In our study, we explored the relationship of burnout to self-perceived health status, an indicator of the health outcome of burnout. Midwives who rated their health as only tolerable were significantly more likely to have higher levels of burnout on the emotional exhaustion dimension in both studies, on the depersonalization domain in Study 2, and also on the personal accomplishment dimension in Study 1. A positive perception of one's health appears to be an important protective factor for burnout [38]. An interesting finding of our study was that personal accomplishment was significantly associated with one's willingness to improve one's health in Study 2. Our results suggest that personal accomplishment may promote health maintenance behaviors, which in turn may lead to increased job resources and engagement.

Our study has important limitations. First, because of the cross-sectional nature of the study, the relationships between various variables and burnout cannot be interpreted causally. Nevertheless, as we conducted two studies on two samples 8 years apart and used definitions for the explanatory variables that were not easy to connect with the burnout variables, we minimized common method bias. Second, our samples may not be representative of midwives in the country, which would make extrapolation of the results limited. Third, instruments to assess certain occupational stressors or constructs were developed in-house. Future research should include reliable instruments to assess the potential consequences of job burnout among midwives in Hungary. Finally, there could have been a significant impact of COVID-19 on both the participants and their working conditions, which might have biased their responses.

However, our study has strengths. We have identified correlates of burnout that remained persistent over time, which allows for the

development of relevant and effective strategies to reduce or prevent burnout among midwives. In addition, most studies of burnout among midwives have been conducted in Western cultures. However, midwifery work differs greatly among these countries owing to different education, roles and responsibilities, and maternity care models [25]. To our knowledge, the present study is the first to report correlates of burnout among midwives in Hungary, where caseload and other work models co-exist.

5. Conclusions

Our study identified three important potential stressors of burnout among midwives in Hungary: being single or partnered (demographic variable), high workload (high job demands), and not feeling valued at work (low job resources). To reduce or prevent burnout among midwives, we suggest that individuals, organizations, and policymakers make every effort to support single midwives, increase job resources, and reduce job demands. Some of the concrete actions may include.

1. Support young midwives with life coaching to help them to reconcile their work and home lives. More emphasis should be placed on how to overcome initial professional difficulties among young midwives starting their careers. We recommend that more focus on onboarding challenges is given during vocational training.
2. We also advocate for the introduction and reinforcement of a mentoring system. Although the likelihood of burnout appears to decrease with age, we believe that there is a role for older and more experienced midwives to mentor younger colleagues and pass on their professional experience.
3. We would consider it important for midwifery students to be exposed to real-world practice as soon as possible, either in a hospital environment or, if it is not feasible, by showing reality-based educational films and realistic simulation exercises and tasks.
4. Reduce workload by providing training on time management, rationalizing shift work, and ensuring role clarity.
5. Increase job resources by implementing a coaching and feedback culture, providing rewards and professional recognition, increasing job control/autonomy as well as job security, and ensuring supervisor's and coworker's support.
6. Of particular interest from a prevention perspective is that the role of some of the determinants of burnout has changed over the eight years observed. This draws the attention of professionals to the need to monitor the individual and workplace factors that potentially influence burnout and to adapt prevention interventions to the results from time to time.

Data availability

Question: Has data associated with your study been deposited into a publicly available repository?

Answer: No.

Question: Has data associated with your study been deposited into a publicly available repository?

Answer: The authors do not have permission to share data.

Declaration

This research was approved by the Regional Scientific and Research Ethics Committee of Semmelweis University (TUKÉB approval number: SE RKEB 222/2018.). The studies were conducted following the principles of the World Medical Association's Declaration of Helsinki and according to the requirements of all applicable local and international laws and regulations. Studies 1 and 2 were additionally approved by each participating hospital administration and the organizing committee of each conference, respectively. Participants were informed in writing about the purpose of the studies and were reminded of the voluntary nature of participation. Consent was implied through the completion of the survey. The anonymity of participants was assured as no name-related data were collected.

CRedit authorship contribution statement

Zsuzsanna Soósne Kiss: Writing – review & editing, Writing – original draft, Supervision, Methodology, Investigation, Conceptualization. **József Vitrai:** Writing – review & editing, Writing – original draft, Supervision, Formal analysis. **Mihály Dió:** Writing – review & editing, Writing – original draft, Investigation. **Ibolya Lipienné Krémer:** Writing – review & editing, Writing – original draft, Methodology, Investigation, Conceptualization. **Szilvia Adám:** Writing – review & editing, Writing – original draft, Supervision, Conceptualization.

Declaration of competing interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

Appendix A. Supplementary data

Supplementary data to this article can be found online at <https://doi.org/10.1016/j.heliyon.2024.e24495>.

References

- [1] H.J. Freudenberger, Staff burn-out, *J. Soc. Issues* 30 (1) (1974) 159–165, <https://doi.org/10.1111/j.1540-4560.1974.tb00706.x>.
- [2] K.I. Mohammad, A.N. Al-Reda, M. Aldalaykeh, W. Hayajneh, K.K. Alafi, D.K. Creedly, J. Gamble, Personal, professional and workplace factors associated with burnout in Jordanian midwives: a national study, *Midwifery* 89 (2020) 102786, <https://doi.org/10.1016/j.midw.2020.102786>.
- [3] E. Fülöp, Z. Gábris, Burnout in the light of cognitive emotion regulation among Hungarian physicians, *Orv. Hetil.* 163 (8) (2022) 319–327, <https://doi.org/10.1556/650.2022.32388> [In Hungarian].
- [4] E. Demerouti, F. Nachreiner, A.B. Bakker, W. Schaufeli, The job demands–resources model of burnout, *J. Appl. Psychol.* 86 (2001) 499–512, <https://doi.org/10.1037/0021-9010.86.3.499>.
- [5] C.R. Beaver, E.S. Sharp, G.A. Cotsonis, Burnout experienced by nurse-midwives, *J. Nurse-Midwifery* 31 (1) (1986) 3–15, [https://doi.org/10.1016/0091-2182\(86\)90174-6](https://doi.org/10.1016/0091-2182(86)90174-6).
- [6] R.H.C. Bakker, P.P. Groenewegen, L. Jabaaij, W. Meijer, H. Sixma, A. de Veer, Burnout among Dutch midwives, *Midwifery* 12 (4) (1996) 174–181, [https://doi.org/10.1016/S0266-6138\(96\)80004-0](https://doi.org/10.1016/S0266-6138(96)80004-0).
- [7] Y. Yoshida, J. Sandall, Occupational burnout and work factors in community and hospital midwives: a survey analysis, *Midwifery* 29 (8) (2013) 921–926, <https://doi.org/10.1016/j.midw.2012.11.002>.
- [8] C. Maslach, S.E. Jackson, The measurement of experienced burnout, *J. Organ. Behav.* 2 (1981) 99–113, <https://doi.org/10.1002/job.4030020205>.
- [9] M. Galanakis, M. Moraitou, F.J. Garivaldis, A. Stalikas, Factorial structure and psychometric properties of the Maslach Burnout Inventory (MBI) in Greek midwives, *European Journal of Psychology* 5 (4) (2009) 52–70, <https://doi.org/10.5964/ejop.v5i4.240>.
- [10] L. Albendín-García, N. Suleiman-Martos, G.A. Cañadas-De la Fuente, L. Ramírez-Baena, J.L. Gómez-Urquiza, E.I. De la Fuente-Solana, Prevalence, related factors, and levels of burnout among midwives: a systematic review, *J. Midwifery Wom. Health* 66 (1) (2021) 24–44, <https://doi.org/10.1111/jmwh.13186>.
- [11] S. Yörük, D. Güler, The relationship between psychological resilience, burnout, stress, and sociodemographic factors with depression in nurses and midwives during the COVID-19 pandemic: a cross-sectional study in Turkey, *Psychiatr. Care* 57 (1) (2021) 390–398, <https://doi.org/10.1111/ppc.12659>.
- [12] J. Doherty, O'Brien, D. Giving of the self and Midwife Burnout – an exploration of the consequences of being 'with woman' and how individual midwives can reduce or prevent burnout, *Women Birth* 36 (4) (2023) 349–356, <https://doi.org/10.1016/j.wombi.2022.12.002>.
- [13] D.K. Creedly, M. Sidebotham, J. Gamble, J. Fenwick, Prevalence of burnout, depression, anxiety and stress in Australian midwives: a cross-sectional survey, *BMC Pregnancy Childbirth* 17 (2017) 13, <https://doi.org/10.1186/s12884-016-1212-5>.
- [14] E. Cramer, B. Hunter, Relationships between working conditions and emotional wellbeing in midwives, *Women Birth* 32 (2019) 521–532, <https://doi.org/10.1016/j.wombi.2018.11.010>.
- [15] N. Paul, M. Limprecht-Heusner, J. Eichenauer, C. Scheichenbauer, T. Bärnighausen, S. Kohler, Burnout among midwives and attitudes toward midwifery: a cross-sectional study from Baden-Württemberg, Germany, *European Journal of Midwifery* 6 (July) (2022) 1–12, <https://doi.org/10.18332/ejm/150582>.
- [16] I. Lipienné Krémer, *A Szülész-nők Egészségkultúrájának Ismerete Hivatásuk Tükrében. PhD Értekezés. Midwife's Awareness of Health Culture in the Light of Their Profession: PhD Thesis, Semmelweis University, Budapest, 2016 [in Hungarian]*.
- [17] B. Hunter, J. Fenwick, M. Sidebotham, J. Henley, Midwives in the United Kingdom: levels of burnout, depression, anxiety and stress and associated predictors, *Midwifery* 79 (2019) 102526, <https://doi.org/10.1016/j.midw.2019.08.008>.
- [18] S. Adám, Z. Gyórfy, É. Sasvánszky, Physician burnout in Hungary: a potential role for work-family conflict, *J. Health Psychol.* 13 (7) (2008) 839–848.
- [19] E. Czeglédi, M. Tandari-Kovács, Characteristics and prevention of burnout syndrome among nurses, *Orv. Hetil.* 160 (1) (2019) 12–19, <https://doi.org/10.1556/650.2019.30856> [In Hungarian].
- [20] I. Lipienné Krémer, M. Rados, M. Pálvölgyi, M. Dió, J. Mészáros, Z. Soósné Kiss, A highly demanding profession: midwifery. Do the midwives who provide sensitive support for birthing women feel satisfied and appreciated? *New Med.* 20 (1) (2016) 19–26, <https://doi.org/10.5604/14270994.1197175>.
- [21] Sz. Adám, V. Mészáros, Psychometric properties and health correlates of the Hungarian Version of the Maslach burnout inventory — human services, *Survey (MBI-HSS) among physicians] Mentálhigiéné és Pszichoszomatika* 13 (2) (2012) 127–144 [In Hungarian].
- [22] V. Mészáros, Sz. Adám, M. Szabó, R. Szigeti, R. Urban, The bifactor model of the maslach burnout inventory – human services survey (MBI-HSS): an alternative measurement model of burnout, *Stress Health* 30 (1) (2014) 82–88.
- [23] C. Maslach, S.E. Jackson, M.P. Leiter, *Maslach Burnout Inventory Manual, third ed., California, Mountain View, 1996*.
- [24] W.B. Schaufeli, T.W. Taris, A critical review of the job demands–resources model: implications for improving work and health, in: *Bridging Occupational, Organizational and Public Health*, Springer, Dordrecht, 2014, https://doi.org/10.1007/978-94-007-5640-3_4.
- [25] N. Suleiman-Martos, L. Albendín-García, J.L. Gómez-Urquiza, K. Vargas-Román, L. Ramirez-Baena, E. Ortega-Campos, E.I. De La Fuente-Solana, Prevalence and predictors of burnout in midwives: a systematic review and meta-analysis, *Int. J. Environ. Res. Publ. Health* 17 (2) (2020) 641, <https://doi.org/10.3390/ijerph17020641>.
- [26] M.H.J. Bekker, M.A. Croon, B. Bressers, Childcare involvement, job characteristics, gender and work attitudes as predictors of emotional exhaustion and sickness absence, *Work. Stress* 19 (2005) 221–237.
- [27] G. Gama, F. Barbosa, M. Vieira, Personal determinants of nurses' burnout in end of life care, *Eur. J. Cancer Care* 18 (2014) 527–533.
- [28] G.A. Cañadas-De la Fuente, E. Ortega, L. Ramirez-Baena, E.I. De la Fuente-Solana, C. Vargas, J.L. Gómez-Urquiza, Gender, marital status, and children as risk factors for burnout in nurses: a meta-analytic study, *Int. J. Environ. Res. Publ. Health* 15 (2018) 2102, <https://doi.org/10.3390/ijerph15102102>.
- [29] P. Kiekkas, F. Spyrtatos, E. Lampa, D. Aretha, G.C. Sakellaropoulos, Level and correlates of burnout among orthopaedic nurses in Greece, *Orthop. Nurs.* 29 (2010) 203–209.
- [30] R.T. Lee, B.E. Ashforth, A meta-analytic examination of the correlates of the three dimensions of job burnout, *Journal of Applied Psychology* 8 (1996) 122–133.
- [31] L. Mollart, V.M. Skinner, C. Newing, M. Foureur, Factors that may influence midwives work-related stress and burnout, *Women Birth* 26 (2013) 26–32, <https://doi.org/10.1016/j.wombi.2011.08.002>.
- [32] E.B. Thumm, D.C. Smith, A.P. Squires, G. Breedlove, P.M. Meek, Burnout of the US midwifery workforce and the role of practice environment, *Health Serv. Res.* 57 (2) (2022) 351–363, <https://doi.org/10.1111/1475-6773.13922>.
- [33] J. Jun, M.M. Ojemeni, R. Kalamani, J. Tong, M.L. Crecelius, Relationship between nurse burnout, patient and organizational outcomes: systematic review, *Int. J. Nurs. Stud.* 119 (2021) 103933, <https://doi.org/10.1016/j.ijnurstu.2021.103933>.
- [34] E.M. White, L.H. Aiken, D.M. Sloane, M.D. McHugh, Nursing home work environment, care quality, registered nurse burnout and job dissatisfaction, *Geriatr. Nurs.* 41 (2) (2020) 158–164, <https://doi.org/10.1016/j.gerinurse.2019.08.007>.
- [35] L. Barrett, P. Yates, Oncology/haematology nurses: a study of job satisfaction, burnout, and intention to leave the specialty, *Aust. Health Rev.* 25 (3) (2002) 109–121.
- [36] T.L. Mharapara, N. Staniland, M. Stadler, J.H. Clemons, L. Dixon, Drivers of job satisfaction in midwifery—a work design approach, *Women Birth* 35 (4) (2022) e348–e355, <https://doi.org/10.1016/j.wombi.2021.07.004>.
- [37] Y. Yang, J.A. Haxes, Causes and consequences of burnout among mental health professionals: a practice-oriented review of recent empirical literature, *Psychotherapy* 57 (2020) 426.
- [38] I. Lipienné Krémer, Á. Harmath, M. Dió, Z. Soósné Kiss, Burnout syndrome among healthcare professionals of neonatal intensive care units, *Orv. Hetil.* 163 (32) (2022) 1268–1274, <https://doi.org/10.1556/650.2022.32539> [In Hungarian].