

ORIGINAL RESEARCH ARTICLE

Psychological burden and burnout among
midwives: An epidemiological study in
Thessaly, GreeceAikaterini Sousamli^{1*}, Foteini Malli², Konstantinos Tsaras²,
Panagiota Dourou¹, Antigoni Sarantaki¹, and Maria Malliarou^{2,3}¹Department of Midwifery, Faculty of Health and Care Sciences, University of West Attica, Athens, Greece²Department of Nursing, School of Health Sciences, University of Thessaly, Larissa, Thessaly, Greece³Laboratory of Education and Research of Trauma Care and Patient Safety (Labedu TraumaCare), Department of Nursing, School of Health Sciences, University of Thessaly, Larissa, Thessaly, Greece**Abstract**

The COVID-19 pandemic has had a profound psychological impact on healthcare workers worldwide, including midwives across various levels of the healthcare system. This study aims to evaluate the psychological strain experienced by midwives in the region of Thessaly, Greece, due to the pandemic. Specifically, it examines levels of burnout while considering perceived stress, depression, and psychological resilience, as well as demographic, socio-economic, and occupational factors. This epidemiological study explores the extent of psychological distress among midwives in Thessaly during the COVID-19 crisis. Data collection was conducted between February and March 2021, involving 102 midwives, with a primary focus on burnout symptoms. Data were collected from three electronic databases: PubMed, MEDLINE, and PsycINFO. Information was gathered through a structured questionnaire covering sociodemographic and professional characteristics, alongside validated assessment tools, including the Spielberger State-Trait Anxiety Inventory, the Connor–Davidson Resilience Scale, the Beck depression inventory, and the Copenhagen Burnout Inventory. Statistical analysis was conducted using multifactorial linear regression to identify factors influencing midwives' mental health during the pandemic. Midwives experiencing high stress and burnout had an increased risk of depression, whereas psychological resilience was identified as a crucial protective factor against depressive symptoms. Midwives in Thessaly, Greece, have faced substantial psychological distress, with their overall mental well-being significantly impacted by the COVID-19 pandemic. These findings emphasize the need for targeted psychological support and preventive interventions for midwives, particularly in ongoing or future public health crises.

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doi: 10.36922/JCBP025200039**Received:** May 15, 2025**Revised:** June 11, 2025**Accepted:** June 25, 2025**Published online:** July 14, 2025**Copyright:** © 2025 Author(s). This is an Open-Access article distributed under the terms of the Creative Commons Attribution License, permitting distribution, and reproduction in any medium, provided the original work is properly cited.**Publisher's Note:** AccScience Publishing remains neutral with regard to jurisdictional claims in published maps and institutional affiliations.

1. Introduction

In December 2019, a new and undoubtedly dangerous respiratory disease emerged in Wuhan, the capital of Hubei province in China. Chinese authorities alerted the World Health Organization (WHO) about an unusual form of pneumonia caused by an unidentified virus, suspected to be linked to the city's wet market.¹ This disease was later officially named COVID-19. Within 4 months, the virus had spread throughout China and internationally, despite continuous warnings and recommendations from the WHO regarding containment and prevention measures.^{2,3}

The pandemic presented numerous challenges, including inadequate planning, insufficient preparedness, and poor organization by local governments in managing healthcare systems. In addition, the failure to ensure adequate supplies of essential medical equipment for protecting healthcare workers exacerbated the crisis. These shortcomings led to ethical dilemmas regarding public health responses and raised bioethical concerns among healthcare professionals.²

The rapid and extensive spread of the novel "COVID-19" became one of the most pressing global health concerns.⁴ This crisis had a profound negative impact on the mental well-being of frontline healthcare professionals, who played a vital role in combating the pandemic.^{5,6} Midwives, in particular, continued to provide essential care throughout this period, with many referring to them as heroes.²

Psychological distress is characterized by intense and prolonged stress that leads to both physical and emotional strain, with social and financial repercussions for those affected.⁷ Healthcare professionals frequently experience chronic exhaustion in their workplaces due to their responsibility for patient care.⁸ Mental resilience is a key factor in helping them adapt to and endure the crisis with reduced stress, anxiety, emotional exhaustion, and depressive symptoms.⁹

Midwifery holds a unique and respected place in healthcare, offering compassionate and individualized care to individuals, families, and communities. A midwife's role extends beyond assisting in childbirth; they also provide support and guidance to women during one of their lives' most important and transformative phases. In addition, midwives play a crucial role in advising on various health-related aspects of childbirth and neonatal care. Their contributions are vital to the continuation, protection, and well-being of the human population.⁹

The exceptional nature of the COVID-19 pandemic and its substantial psychological toll on the general population, particularly on midwives, prompted the need

for this study. The full extent of the pandemic's impact on the mental health of professionals working in obstetrics and gynecology remains unclear. While research in this area has increased in recent years, most studies focus on medical and nursing personnel, with significantly fewer studies examining the specific psychological burden on midwives. The primary aim of this study was to explore and assess the psychological burden of burnout experienced by midwives in the Region of Thessaly, Greece, due to the COVID-19 pandemic. This included evaluating levels of occupational burnout while considering stress, depression, and psychological resilience, as well as demographic, socio-economic, and workplace factors that may influence these mental health outcomes. Furthermore, the study sought to identify potential risk factors contributing to these conditions. The findings are expected to serve as a valuable resource for developing strategies to support the mental well-being of midwives during the ongoing health crisis.

2. Materials and methods

2.1. Study population, methods, and ethical considerations

This study is an epidemiological survey focusing on the psychological burden experienced by midwives in the Thessaly region of Greece due to the COVID-19 pandemic. Data collection and literature review were conducted between February and March 2021. The research is observational, meaning the researcher did not intervene or influence the results but simply observed, aiming to identify correlations between dependent and independent variables.¹⁰

The literature review began with a focus on defining key concepts such as anxiety, stress, burnout, depression, and psychological resilience in the context of midwives and healthcare workers on the frontlines of the COVID-19 pandemic. The search was conducted through databases such as PubMed, MEDLINE, and PsycINFO, using keyword combinations related to COVID-19 (e.g., "coronavirus" and "COVID-19"), psychological burden (e.g., "depression" and "stress"), and terms like "COVID-19" in conjunction with "mental health" or "midwives."

Approval for conducting the research was obtained from the Scientific Council of the Midwives Association of Thessaly, allowing the questionnaire to be distributed to its members via email. Due to the limitations of in-person data collection during the pandemic, quantitative data were gathered through structured questionnaires through Google Forms, which complies with privacy standards to ensure data protection. The study did not request any personal or institutional information. Participants were

informed about data confidentiality, the purpose of the research, their voluntary participation, and their right to withdraw. The study included 102 midwives who confirmed their consent to participate by selecting the "Agree" option. The research focused on identifying symptoms of anxiety, depression, burnout, and psychological resilience among the participants.

2.2. Research tools

The questionnaire consisted of five sections and included the following:

- (i) Demographic and professional characteristics: Information about the respondents' gender, age, marital and financial status, number of children, history of chronic illness, general health status, education level, and professional details such as the institution and healthcare level they work in, years of experience, and COVID-19-related questions. The content was developed based on a review of relevant literature.
- (ii) Spielberger State-Trait Anxiety Inventory (STAI): This questionnaire consists of 40 items and assesses anxiety both as a personality trait and as a situational state.¹¹ The state anxiety scale evaluates anxiety as a temporary emotional state, while the trait anxiety scale measures the individual's general tendency to experience anxiety. The inventory was administered to all participants in a controlled setting. Each scale includes 20 items rated on a 4-point Likert scale, with higher scores indicating greater anxiety levels.
- (iii) Connor–Davidson Resilience Scale: This tool measures psychological resilience based on key factors such as trust in personal instincts, tolerance for negative experiences, personal competence, self-efficacy, sense of control, a positive attitude toward change, spiritual influences, and secure relationships.¹²
- (iv) Beck depression inventory: This widely used tool assesses the cognitive, behavioral, and somatic manifestations of depression, along with its severity over the previous week. It is recognized as one of the most commonly used tools for depression assessment globally.¹³
- (v) Copenhagen burnout inventory: This tool evaluates burnout across three subscales: (a) personal burnout, (b) work-related burnout, and (c) client-related burnout. It has demonstrated adequate construct validity and satisfactory reliability (Cronbach's $\alpha = 0.844$).¹⁴

2.3. Statistical analysis

The distributions of quantitative variables were assessed for normality using the Kolmogorov–Smirnov test. Descriptive

statistics were reported as means and standard deviations (SDs) for normally distributed variables. For non-normally distributed variables, medians and interquartile ranges were used. Qualitative variables were described using absolute (n) and relative (%) frequencies. The non-parametric Mann–Whitney U test or the parametric Student's t-test was employed to compare quantitative variables between two groups, depending on the distribution. The non-parametric Kruskal–Wallis test or the parametric analysis of variance was applied for comparisons involving more than two groups. The Bonferroni correction was applied to adjust for multiple comparisons and control the risk of type I error, with the significance level set at $0.05/k$, where k represents the number of comparisons. Pearson's or Spearman's correlation coefficient (r) was used to examine relationships between two quantitative variables. Pearson's correlation was the primary method applied, with Spearman's correlation employed only when the assumption of normality was not met, as verified through appropriate diagnostics. The strength of correlation was categorized as low ($r = 0.1 - 0.3$), moderate ($r = 0.31 - 0.5$), and high ($r > 0.5$). To identify independent factors associated with the outcome measures, linear regression analysis was performed using a stepwise selection process, yielding dependency coefficients (β) and their standard errors. For the depression and resilience scales, logarithmic transformations were applied in the regression analysis. The internal consistency of the distributed questionnaire was assessed using Cronbach's α coefficient. All statistical tests were two-sided, with significance set at $p < 0.05$. Analyses were carried out using SPSS version 22.0 (IBM Corp., USA).

3. Results

The sample consisted of 102 midwives. The demographic and occupational characteristics are presented in [Table 1](#).

A total of 54.9% of participants were 35 years old or younger. The majority (84.3%) were married, and 82.4% reported having children. In addition, 14.7% of participants reported having a chronic disease, while 88.2% rated their health as good or very good. A total of 82.4% of the sample reported a low to moderate financial status, and two-thirds of the participants (66.7%) held an undergraduate degree. Most participants (69.6%) worked in the public healthcare sector, with 49.0% employed at the primary healthcare level. In addition, 52.0% had 10 years or less of work experience, and 23.5% worked in units treating COVID-19 patients. [Table 2](#) presents findings related to the pandemic and the associated stress reported by participants.

A total of 79.4% of participants reported experiencing stress about contracting COVID-19 due to their work, and

Table 1. Demographic and occupational characteristics of 102 midwives

| Characteristic | n | % |
|---|----|------|
| Age (years) | | |
| ≤35 | 56 | 54.9 |
| ≥36 | 46 | 45.1 |
| Marital status | | |
| Married | 86 | 84.3 |
| Single/divorced | 16 | 15.7 |
| Has children | | |
| No | 18 | 17.6 |
| Yes | 84 | 82.4 |
| Chronic disease history | | |
| No | 87 | 85.3 |
| Yes | 15 | 14.7 |
| Health status | | |
| Good/very good | 90 | 88.2 |
| Poor/moderate | 12 | 11.8 |
| Financial status | | |
| High | 18 | 17.6 |
| Low/moderate | 84 | 82.4 |
| Education level | | |
| Undergraduate | 68 | 66.7 |
| Postgraduate | 33 | 32.4 |
| Doctorate | 1 | 1.0 |
| Workplace sector | | |
| Private | 31 | 30.4 |
| Public | 71 | 69.6 |
| Healthcare level | | |
| Primary | 50 | 49.0 |
| Secondary | 34 | 33.3 |
| Tertiary | 18 | 17.6 |
| Years of work experience | | |
| ≤10 | 53 | 52.0 |
| ≥11 | 49 | 48.0 |
| Treatment of COVID-19 patients at the workplace | | |
| No | 78 | 76.5 |
| Yes | 24 | 23.5 |

90.2% were concerned about transmitting the virus to a family member. In addition, 37.3% stated that they spent less time with patients than before the pandemic, while 15.7% reported that knowing that pregnant women were tested for COVID-19 before visiting them did not reduce their stress.

Table 2. Pandemic-related stress reported by midwives in the sample

| Question | Response | n | % |
|--|----------|----|------|
| Are you stressed about contracting COVID-19 due to your job? | No | 21 | 20.6 |
| | Yes | 81 | 79.4 |
| Are you stressed about transmitting COVID-19 to a family member due to your job? | No | 10 | 9.8 |
| | Yes | 92 | 90.2 |
| Do you spend less time with patients due to the pandemic? | No | 64 | 62.7 |
| | Yes | 38 | 37.3 |
| Do you feel less stressed knowing that pregnant women are tested for COVID-19 before seeing you? | No | 16 | 15.7 |
| | Yes | 86 | 84.3 |

3.1. Resilience scale

Table 3 shows the resilience scale scores of the participants. Higher scores indicate greater resilience.

The resilience scale scores ranged from 7 to 100, with a mean score of 70.3 (SD = 18.3). The Cronbach's α coefficient of 0.96 indicates excellent reliability of the scale.

3.2. Depression scale

Table 4 presents the participants' scores on the Beck Depression Inventory scale. Higher scores indicate more severe depressive symptoms.

The depression scores ranged from 0 to 61, with a mean score of 9.7 (SD = 11.6). The Cronbach's α coefficient was above the acceptable threshold (0.7), indicating good reliability of the scale. Table 5 presents the depression levels of the participants, showing that 63% of participants showed no signs of depression and 15% experienced minimal depressive symptoms.

3.3. State-Trait Anxiety Inventory

Participants' anxiety levels were assessed using STAI, a widely used measure of situational (state) and general (trait) anxiety. Descriptive statistics and internal consistency values (Cronbach's α) for the scales are shown in Table 6.

Table 6 presents the summary statistics for participants' scores on STAI, including the minimum, maximum, mean, and SD for both the state and trait anxiety scales, along with the internal consistency coefficients (Cronbach's α). The scores on the state anxiety scale ranged from 23 to 73, with a mean value of 42.5 and a SD value of 11.3. Similarly, scores on the trait anxiety scale ranged from 20 to 76, with a mean value of 41.9 and a SD value of 11.7. Both scales demonstrated high internal consistency, with Cronbach's α values of 0.92 and 0.93 for the state and trait anxiety scales, respectively, indicating strong reliability.

Table 3. Resilience scale scores of the participants

| Scale | Minimum score | Maximum score | Mean (standard deviation) | Median (interquartile range) | Cronbach's α |
|------------------|---------------|---------------|---------------------------|------------------------------|---------------------|
| Resilience scale | 7.00 | 100.00 | 70.3 (18.3) | 73 (62 – 83.5) | 0.96 |

Table 4. Participants' scores on the beck depression inventory

| Scale | Minimum score | Maximum score | Mean (standard deviation) | Median (interquartile range) | Cronbach's α |
|------------------|---------------|---------------|---------------------------|------------------------------|---------------------|
| Depression scale | 0.0 | 61.0 | 9.7 (11.6) | 6 (1 – 14.5) | 0.95 |

Table 5. The depression levels of the participants

| Depression level | n | % |
|---------------------|----|------|
| No depression | 63 | 63.0 |
| Minimal depression | 15 | 15.0 |
| Mild depression | 11 | 11.0 |
| Moderate depression | 11 | 11.0 |

Table 6. Descriptive statistics and reliability for the State-Trait Anxiety Inventory

| Scale | Score range | Mean (standard deviation) | Cronbach's α |
|---------------------|-------------|---------------------------|---------------------|
| State anxiety scale | 23 – 73 | 42.5 (11.3) | 0.92 |
| Trait anxiety scale | 20 – 76 | 41.9 (11.7) | 0.93 |

3.4. Copenhagen burnout inventory: Occupational burnout scale

Table 7 presents the participants' scores across the dimensions of the occupational burnout scale. High values indicate high levels of occupational burnout.

The mean score for the personal burnout dimension was 54.1 (SD = 20.6), work-related burnout was 44.6 (SD = 22.2), and patient-related burnout was 36.1 (SD = 22.6). The Cronbach's α reliability coefficients exceeded the acceptable threshold (0.7), indicating satisfactory reliability of the scale.

3.4.1. Conceptual relationships between occupational burnout and measures of resilience, depression, and anxiety

Table 8 illustrates the expected relationships between occupational burnout dimensions (personal, work-related, and patient-related) and psychological variables (resilience, depression, state anxiety, and trait anxiety). In this study, it was hypothesized that the dimensions of occupational burnout would be significantly related to measures of resilience, depression, and anxiety. Based on existing literature,¹⁵⁻¹⁷ we expected that higher resilience would correlate with lower levels of burnout, as resilient

individuals tend to manage stress more effectively. Conversely, we anticipated that higher depression, state anxiety, and trait anxiety would be associated with higher levels of occupational burnout. These conceptual relationships are illustrated in Table 8, where we outline the expected direction of these associations.

The table illustrates expected trends based on existing literature. Higher resilience is anticipated to correlate with lower burnout, while greater depression, state anxiety, and trait anxiety are expected to correlate with higher levels of occupational burnout. Table 9 shows the scores of the participants on the dimensions of professional burnout according to their demographic and occupational characteristics.

Significantly higher burnout was observed in all three dimensions for participants with poor/average health status. The work-related burnout score differed significantly based on the participants' work level. After Bonferroni correction, it was found that participants working at the tertiary level reported significantly more burnout compared to those working at the primary level ($p=0.011$). Table 10 shows the scores of participants in the dimensions of professional burnout according to factors related to the pandemic.

Participants who spent less time with patients compared to before the pandemic reported significantly higher levels of professional burnout in all three dimensions. The score on the "work-related burnout" scale was significantly higher for participants who were anxious about transmitting COVID-19 to a family member. The score on the "burnout related to patients" dimension was significantly higher among participants who did not feel less anxious about pregnant women being tested for COVID-19 before their visits. Subsequent analyses of multivariate linear regression were conducted, with burnout scores and independent variables, including the demographic and occupational factors of the participants, pandemic-related factors, and the resilience, temporary, and chronic anxiety scores, serving as dependent variables. The analyses were performed using a stepwise inclusion-exclusion method.

Table 7. The participants' scores across the dimensions of the occupational burnout scale

| Dimension | Minimum score | Maximum score | Mean score (standard deviation) | Cronbach's α |
|-------------------------|---------------|---------------|---------------------------------|---------------------|
| Personal burnout | 4.17 | 100.00 | 54.1 (20.6) | 0.94 |
| Work-related burnout | 0.00 | 100.00 | 44.6 (22.2) | 0.84 |
| Patient-related burnout | 0.00 | 100.00 | 36.1 (22.6) | 0.91 |

Table 8. Conceptual relationships between occupational burnout and measures of resilience, depression, and anxiety

| Scale | Personal burnout | Work-related burnout | Patient-related burnout |
|---------------------|------------------|----------------------|-------------------------|
| Resilience scale | Lower burnout | Lower burnout | Lower burnout |
| Depression scale | Higher burnout | Higher burnout | Higher burnout |
| State anxiety scale | Higher burnout | Higher burnout | Higher burnout |
| Trait anxiety scale | Higher burnout | Higher burnout | Higher burnout |

Table 11 shows the results with the personal burnout dimension as the dependent variable.

The trait anxiety and depression scales of the participants, and whether they spent less time with patients compared to before the pandemic, were found to be independently associated with the score on the “personal burnout” dimension. Specifically, participants who spent less time with patients compared to before the pandemic had a higher score of 10.12, indicating more personal burnout. The more depressive symptoms participants experienced, the higher their level of personal burnout. Personal burnout increased with trait-anxiety symptoms. Table 12 shows the results with work-related burnout dimension as the dependent variable.

The resilience and depression scales of the participants, as well as whether they spent less time with patients compared to before the pandemic, were found to be independently related to the score in the “work-related burnout” dimension. Notably, participants who spent less time with patients compared to before the pandemic had a higher score of 12.22, indicating more work-related burnout. The more depressive symptoms the participants experienced, the higher the level of work-related burnout they faced. Work-related burnout increased with depression and decreased with resilience. Table 13 shows the results with patient-related burnout as the dependent variable.

The resilience and depression scales of the participants, whether they spent less time with patients compared to before the pandemic, and whether they felt less anxious that pregnant women were tested for

COVID-19 before visiting them, were found to be independently associated with the score in the “patient-related burnout” dimension. Particularly, participants who spent less time with patients compared to before the pandemic had a higher score of 8.67, indicating greater patient-related burnout. Participants who felt less anxious about pregnant women being tested for COVID-19 before visiting them had a lower score of 11.86 points, indicating greater patient-related burnout. Patient-related burnout increased with depression and decreased with patient resilience.

4. Discussion

This study investigated the impact of the COVID-19 pandemic on the mental health of midwives in the Thessaly region. The key findings demonstrated that 79.4% of participants reported anxiety about contracting COVID-19 due to their work, while 90.2% of them were concerned about transmitting the virus to a family member because of their job. These findings closely mirror the findings by Lai *et al.*³ Moreover, 37.3% of participants noted that they spent less time with patients compared to before the pandemic, which contrasts with the findings of Lai *et al.*,³ who observed that the quality of healthcare services provided by healthcare workers remained unchanged. Despite the implementation of COVID-19 testing for pregnant women before their visits, 15.7% of participants reported not feeling less anxious. In addition, 63.0% of participants did not exhibit any signs of depression, while 15.0% of them showed mild depression. This is significant when considering the average mental health burden in frontline healthcare workers, compared to the lower depression rates found in other countries, as reported in studies from Iran, China, India, and Italy.⁸

Unlike findings from Talevi *et al.*,⁵ where high rates of depression and anxiety were associated with gender and younger age, these trends were not observed in the present study. The overall findings suggest that midwives in Thessaly showed a slight concern for their psychological well-being during the pandemic, with notable anxiety related to the risks of infection and transmission. However, the reported depression rates were lower compared to the rates found in other countries, indicating a relatively more resilient psychological response among the midwives in

Table 9. Participants' scores on the dimensions of professional burnout according to demographic and occupational characteristics

| Parameters | Personal burnout | Student's <i>t</i> -test | Work-related burnout | Student's <i>t</i> -test | Burnout related to patients | Student's <i>t</i> -test |
|--|------------------|--------------------------|----------------------|--------------------------|-----------------------------|--------------------------|
| Age (years) | | | | | | |
| ≤35 | 51.2 (19.2) | 0.124 | 43.7 (20.7) | 0.643 | 35.4 (21.1) | 0.737 |
| ≥36 | 57.5 (21.8) | | 45.7 (24) | | 37 (24.6) | |
| Marital status | | | | | | |
| Married | 54 (20.3) | 0.899 | 44.6 (22) | 0.994 | 35.2 (22.5) | 0.336 |
| Single/divorced | 54.7 (22.8) | | 44.6 (24) | | 41.1 (23.3) | |
| Has children | | | | | | |
| No | 54.2 (20.5) | 0.985 | 44.6 (22.9) | 0.994 | 38.9 (20) | 0.570 |
| Yes | 54.1 (20.7) | | 44.6 (22.2) | | 35.5 (23.3) | |
| Chronic illness history | | | | | | |
| No | 53.6 (19.7) | 0.601 | 43.2 (21.4) | 0.130 | 35.2 (21.9) | 0.331 |
| Yes | 56.7 (25.9) | | 52.6 (25.5) | | 41.4 (26.7) | |
| Health status | | | | | | |
| Good/very good | 51.8 (18.8) | 0.002* | 41.7 (20.7) | <0.001* | 33.9 (20.9) | 0.006* |
| Poor/moderate | 71.2 (25.5) | | 65.8 (21.7) | | 52.8 (28.6) | |
| Economic status | | | | | | |
| High | 57.2 (24.3) | 0.484 | 49 (21.6) | 0.355 | 43.8 (21.7) | 0.115 |
| Low/moderate | 53.4 (19.8) | | 43.6 (22.3) | | 34.5 (22.6) | |
| Education level | | | | | | |
| Undergraduate education | 53.2 (19.5) | 0.531 | 43.1 (21.1) | 0.343 | 34.3 (22.5) | 0.260 |
| Postgraduate/doctorate | 55.9 (22.8) | | 47.6 (24.4) | | 39.8 (22.8) | |
| Healthcare provider | | | | | | |
| Private | 50 (21.5) | 0.185 | 43 (21.2) | 0.624 | 35.8 (23.7) | 0.913 |
| Public | 55.9 (20.1) | | 45.3 (22.7) | | 36.3 (22.3) | |
| Work health level | | | | | | |
| Primary | 51.7 (15.6) | 0.114+ | 38.8 (19.1) | 0.012+* | 33.1 (19.9) | 0.432+ |
| Secondary | 52.6 (22.6) | | 46.6 (22.4) | | 38.6 (22.9) | |
| Tertiary | 63.2 (26.4) | | 56.3 (25.3) | | 39.6 (28.7) | |
| Years of work experience | | | | | | |
| ≤10 | 51.3 (19.8) | 0.170 | 42.8 (22.3) | 0.405 | 36 (20.9) | 0.966 |
| ≥11 | 57 (21.2) | | 46.5 (22.1) | | 36.2 (24.5) | |
| Are patients with COVID-19 being hospitalized in the healthcare unit where you work? | | | | | | |
| No | 52.6 (18.5) | 0.211 | 42.2 (21) | 0.053 | 35.9 (21.5) | 0.833 |
| Yes | 58.7 (26.1) | | 52.2 (24.4) | | 37 (26.5) | |

Notes: Data are presented as mean (standard deviation); * indicates statistically significant values ($p < 0.05$); + represents analysis of variance as the statistical tool used.

Thessaly. The findings also highlight the unique pressures faced by midwives, given their high morbidity risk due to close patient contact and their involvement in both obstetric and gynecological care, as well as pandemic-related services.

Significant associations were found between all dimensions of the burnout and the resilience, anxiety, and depression scales. Specifically, higher resilience levels were linked to lower levels of professional burnout, as observed in the study by Yörük and Güle.⁸ In addition, increased

Table 10. Participants' scores in the dimensions of professional burnout according to pandemic-related factors

| Questions | Answer | Personal burnout | Student's t-test | Work-related burnout | Student's t-test | Burnout related to patients | Student's t-test |
|---|--------|------------------|------------------|----------------------|------------------|-----------------------------|------------------|
| Do you feel anxious about contracting COVID-19 due to your work? | No | 46.3 (15.3) | 0.057 | 36.3 (18) | 0.059 | 27.9 (19.5) | 0.070 |
| | Yes | 56 (21.3) | | 46.7 (22.7) | | 38.2 (23) | |
| Does the thought of transmitting COVID-19 to a family member due to your work make you anxious? | No | 41.7 (14.1) | 0.058 | 29 (21.8) | 0.026* | 25.5 (28.4) | 0.139 |
| | Yes | 55.3 (20.8) | | 46.2 (21.7) | | 37.2 (21.9) | |
| Do you spend less time with the patients now compared to before the pandemic? | No | 49.1 (20.7) | 0.002* | 38.4 (20.8) | <0.001* | 31.2 (21.2) | 0.005* |
| | Yes | 62.3 (17.8) | | 54.7 (20.8) | | 44.2 (22.9) | |
| Do you feel less anxious when pregnant women are tested for COVID-19 before they visit you? | No | 61.1 (24.4) | 0.153 | 51.7 (29.4) | 0.183 | 51.1 (26.9) | 0.005* |
| | Yes | 52.8 (19.7) | | 43.4 (20.6) | | 33.5 (20.9) | |

Notes: Data are presented as mean (standard deviation); * indicates statistically significant values ($p < 0.05$).

Table 11. Stepwise inclusion–exclusion method with personal burnout as the dependent variable

| Parameter | β | SE | p-value |
|---|---------|------|---------|
| Trait anxiety scale | 0.49 | 0.19 | 0.011* |
| Do you spend less time with patients compared to before the pandemic? | | | |
| No (reference) | — | — | — |
| Yes | 10.12 | 3.65 | 0.007* |
| Depression scale | 0.44 | 0.19 | 0.020* |

Notes: The independent variables include the demographic and occupational factors of the participants, pandemic-related factors, depression, as well as temporary and chronic anxiety scores. Health status has been clarified as part of pandemic-related factors; * indicates statistically significant values ($p < 0.05$).

Abbreviations: β : Coefficient of dependence; SE: Standard error of the coefficient.

Table 12. Stepwise inclusion–exclusion method with work-related burnout as the dependent variable

| Parameter | β | SE | p |
|---|---------|------|--------|
| Resilience scale | -0.30 | 0.12 | 0.020* |
| Due to the pandemic, do you spend less time with the patient compared to before the pandemic? | | | |
| No (reference) | — | — | — |
| Yes | 12.22 | 3.90 | 0.002* |
| Depression scale | 0.58 | 0.19 | 0.003* |

Notes: The independent variables include the demographic and occupational factors of the participants, pandemic-related factors, depression, as well as temporary and chronic anxiety scores; * indicates statistically significant values ($p < 0.05$).

Abbreviations: β : Coefficient of dependence; SE: Standard error of the coefficient.

depressive symptoms and permanent or temporary anxiety symptoms¹⁸ were significantly associated with high levels of professional burnout, consistent with findings from

Table 13. Stepwise inclusion–exclusion method with patient-related burnout as the dependent variable

| Parameter | β | SE | p |
|---|---------|------|--------|
| Resilience scale | -0.44 | 0.13 | 0.001* |
| Do you feel less anxious that pregnant women are tested for COVID-19 before visiting you? | | | |
| No (reference) | — | — | — |
| Yes | -11.86 | 5.28 | 0.027* |
| Due to the pandemic, do you spend less time with the patient compared to before the pandemic? | | | |
| No (reference) | — | — | — |
| Yes | 8.67 | 3.96 | 0.031* |
| Depression scale | 0.38 | 0.19 | 0.046* |

Notes: The independent variables include the demographic and occupational factors of the participants, pandemic-related factors, depression, as well as temporary and chronic anxiety scores; * indicates statistically significant values ($p < 0.05$).

Abbreviations: β : Coefficient of dependence; SE: Standard error of the coefficient.

the study of Aksoy and Koçak.¹⁹ Participants with poor or moderate health status and those who spent less time with patients compared to before the pandemic exhibited higher burnout levels across all three dimensions: Personal burnout, work-related burnout, and patient-related burnout. Moreover, work-related burnout scores varied significantly according to participants' job level. For instance, midwives working in tertiary healthcare settings experienced significantly higher exhaustion levels compared to those in primary healthcare settings ($p = 0.011$), as indicated in the studies by Talevi *et al.*,⁵ Huang *et al.*²⁰ on tertiary healthcare institutions, and Yörük and Güle.⁸ Participants who feared transmitting COVID-19 to a family member exhibited high work-related burnout and patient-related burnout. Midwives who spent less time with patients and reported higher depressive symptoms experienced greater work-related

burnout. However, increased resilience was associated with lower levels of work-related burnout. Midwives who felt less anxious about pregnant women being tested for COVID-19 before their visits exhibited high levels of patient-related burnout. Patient-related burnout increased with depressive symptoms, while it decreased as resilience increased. Personal burnout was recorded among midwives who spent less time with patients before the pandemic, with an increase proportional to depressive and persistent anxiety symptoms.

Multivariate linear regression revealed that depression and reduced patient interaction time were significant predictors of all three burnout subscales, while resilience was a protective factor in both work-related and patient-related burnout.

4.1. Implications of the study

Midwives with high levels of anxiety and professional burnout were at greater risk of depression, while psychological resilience emerged as a significant protective factor against depressive symptoms. Individuals with high resilience reported few depressive symptoms and anxiety. Furthermore, midwives who spent less time with patients than before the pandemic were more likely to experience burnout related to patient care compared to those in the primary sector. Healthcare workers in tertiary healthcare structures were more vulnerable to the psychological effects of the pandemic compared to those in primary healthcare settings.

To support midwives, interventions focusing on building resilience and moral courage are essential. It is crucial to protect healthcare workers as part of the broader public health efforts in combating the pandemic. Targeted interventions aimed at enhancing mental well-being and psychological resilience, such as ongoing education and behavioral therapies, are necessary. Healthcare workers with greater adaptability, mental flexibility, and a sense of humor tend to handle stressful situations well, making these traits key to developing strong psychological resilience. Health sector interventions should be incorporated into emergency preparedness and response plans, focusing on three main areas: (i) the establishment of multidisciplinary mental health teams, (ii) a continuous communication with updates on the pandemic, and (iii) the development of psychological counseling services through telemedicine or peer support groups to share experiences.

Special attention should be given to vulnerable midwives with poor or moderate health conditions, providing them with targeted psychological interventions. In addition, midwives could benefit from regular monitoring of their

mental health, training on managing uncooperative patients, and prioritizing self-care, including adequate time for eating, sleeping, and rejuvenation.

4.2. Limitations of the study

This study has various limitations that should be considered when interpreting its results. The limitation lies in the cross-sectional nature of the study, as it only provided insights into the midwives' mental health at 1 time point. Furthermore, data were collected through self-reports, which may introduce biases. Participants could have underreported or overreported their mental health symptoms, affecting the reliability of the findings. In addition, the study could not distinguish between pre-existing mental health symptoms and conditions that emerged during the pandemic, complicating long-term mental health monitoring. This makes it challenging to interpret the findings regarding the true impact of COVID-19 on the participants' mental health.

The number of midwives who responded to the survey was relatively small, which may limit the generalizability of the results. In addition, the snowball sampling method used, along with the lack of personal contact, may have led to a non-representative sample, as some midwives may have felt too anxious to complete the questionnaire or may not have been interested in participating. The study was conducted specifically in Thessaly; hence, the findings cannot be generalized to other regions in Greece or internationally. Different regions may have experienced different levels of COVID-19 spread and implemented varying public health measures, which could have influenced the psychological impact on healthcare workers.

The studies referenced in the literature review showed heterogeneity, with variations in sample sizes, study periods, and locations, possibly impacting the comparability of the findings. Additionally, data collection was also difficult, particularly for midwives who do not use social media, limiting the reach of the survey and potentially excluding certain individuals from participation. Given these limitations, further research is needed to explore the long-term psychological effects of the pandemic on midwives and healthcare workers more extensively, especially in diverse settings and with larger, more representative samples.

5. Conclusion

The study's findings indicate that midwives in Thessaly experienced notable psychological distress due to their roles during the COVID-19 pandemic. Several factors were identified as contributing factors to poorer mental health and lower resilience: Midwives with poor or moderate

health conditions, individuals who spent less time with patients than before the pandemic, and individuals working in the public sector were found to have poorer mental health. In addition, individuals with high resilience reported fewer symptoms of depression and anxiety. Furthermore, midwives with greater clinical exposure during the pandemic experienced more stress compared to those in primary care settings.

The study also highlights the need for further research to explore the long-term psychological consequences of the pandemic. Future studies should focus on developing appropriate prevention, treatment, and recovery strategies for global public mental health in emergency situations like pandemics. The results of this study are significant and impactful, emphasizing the need for targeted psychological support and preventive interventions for midwives, particularly in the context of ongoing or future public health crises.

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Conflict of interest

The authors declare that they have no competing interest.

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Ethics approval and consent to participate

The approval for conducting the study was obtained from the Scientific Council of the Midwives Association of Thessaly. All participants provided written informed consent prior to their participation in the study.

Consent for publication

Participants consented to the publication of their anonymized data.

Availability of data

Data used in this work are available from the corresponding author upon reasonable request.

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