



## 'A question of time and work-situation' – a cluster analysis of Swedish midwives' levels of burnout and attitudes towards midwifery continuity of care

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### ABSTRACT

**Background:** Midwifery continuity of care (MCoC) has been associated with reduced burnout and increased work satisfaction among midwives. Despite these benefits, MCoC is not common in Sweden.

**Aim:** This study aimed to explore midwives' profiles based on burnout levels and attitudes towards midwifery continuity of care, considering various background and work-related factors.

**Methods:** A national cross-sectional digital survey was conducted among midwives in Sweden. The questionnaire covered the Copenhagen Burnout Inventory (CBI), attitudes towards MCoC and background variables. Cluster analysis identified a set of profiles, which were then compared by calculating odds ratios and 95 % confidence intervals for various background and work-related factors. Logistic regression examined the factors most associated with each profile.

**Findings:** A three-cluster solution for the 1,983 midwives surveyed was suggested, labelled as *Reserved*, *Visionary*, and *Sensitive*. Midwives in the *Reserved* cluster exhibited negative attitudes towards MCoC, through negative scores on both components and negative scores on the CBI. Within the *Visionary* cluster, midwives showed positive scores on the *Relational* component of MCoC, but negative scores on the *Practical and Organisational* component and the CBI. In the *Sensitive* cluster, midwives exhibited the highest scores on the CBI and negative scores on the *Practical and Organisational* component of MCoC, with just slightly positive scores on the *Relational* component. Cluster membership was associated with length of work experience ( $p < 0.001$ ) and work domain ( $p < 0.001$ ).

**Conclusion:** Based on the CBI and attitudes towards MCoC, three distinct clusters of midwives were identified, with different factors contributing to membership in each cluster. Understanding how midwives relate to MCoC can facilitate the implementation of the model, potentially improving midwives' work-related health.

### Background

Continuity in care encompasses three distinct dimensions: informational continuity, management continuity, and relational continuity (Haggerty et al., 2003). Midwifery continuity of care (MCoC) is a relational care model. As defined by the World Health Organization (WHO), MCoC occurs when the same midwife or the same small group of

midwives follows a woman throughout the whole childbearing period (WHO, 2018). The medical benefits of MCoC for women such as more spontaneous vaginal births, fewer caesarean sections, fewer clinical interventions, and more positive birth experiences, are researched and widely known (Sandall et al., 2024). Women also report high levels satisfaction with continuity of midwifery care (Allen et al., 2019; Forster et al., 2016; Perriman et al., 2018).

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Midwives' experiences in MCoC have been predominantly positive (Dawson et al., 2018). In a MCoC model, midwives work on call, responding to the needs of the women rather than adhering to shift-based rosters (Newton et al., 2016; Homer, 2016). Being on call can be challenging, and is described as 'unpredictable' and 'uncertain' (Newton et al., 2016). A qualitative systematic review with meta-synthesis concluded that midwives encounter both advantages and challenges in MCoC (Pace et al., 2022). The challenges involve personal costs such as managing work-life balance, and conflicts with medical institutions, professionals, and management which represent different care philosophies. However, the main positive aspects include developing meaningful relationships, practising 'real midwifery' and experiencing joy in practice (Pace et al., 2022). Midwives in MCoC models report higher levels of job satisfaction and feel a greater sense of flexibility and autonomy (Newton et al., 2016; Collins et al., 2010; Kashani et al., 2021; Haines et al., 2015; Tran et al., 2017). Compared with midwives working shifts in hospitals, those in MCoC typically experience lower levels of burnout (Jepsen et al., 2017; Newton et al., 2014; Sidhu et al., 2020).

Two systematic reviews with meta-synthesis conclude that working in MCoC could protect against developing burnout symptoms (Albendín-García et al., 2021; Suleiman-Martos et al., 2020). Predisposing factors for burnout are shift work, lack of professional recognition and high levels of demand for care as highlighted by one of the reviews (Albendín-García et al., 2021). The other review identifies younger midwives and those with less work experience as being at greater risk of experiencing burnout (Suleiman-Martos et al., 2020).

The working conditions of midwives have been extensively investigated in recent decades. Many midwives tend to leave the profession due to heavy workloads and stressful work environments (Elmir et al., 2017). In Sweden, up to 24% of the registered midwives do not work in healthcare sectors, contributing to staffing problems, according to the National Board of Health and Welfare (National Health Competence Council, 2023). Swedish midwives also report higher levels of burnout and a sense of lack of influence and recognition compared to the national benchmark (Hansson et al., 2022). Burnout is a phenomenon of energy exhaustion, increased mental distance, and a sense of a lack of accomplishment, experienced within an occupational context (World Health Organization, 2024).

A Swedish study on midwives' emotional well-being and work-related health indicates that midwives working in a hospital-based clinic assess staffing and resources unfavourably (Hildingsson and Fenwick, 2015). A study from New Zealand comparing midwives in different work settings finds that professional recognition predicts job satisfaction in all three settings. However, only one setting shows a statistically significant association between decision-making autonomy and job satisfaction: the MCoC model (Mharapara et al., 2022).

Midwifery continuity of care models exist in several European countries. England (National Maternity Review, 2016) and Australia (Dahlen et al., 2022) have national recommendations to expand access to these models. Despite these efforts, few countries, apart from New Zealand, have successfully increased the availability of continuity models (Bradford et al., 2022). In Sweden, care during pregnancy, intrapartum and postpartum is fragmented, as most midwives either work in antenatal outpatient clinics or in hospitals in labour or postpartum wards (Skogsdal et al., 2023). One out of 21 community regions offers MCoC as a part of the regional service (Karolinska University Hospital [Karolinska Universitetssjukhuset.] 2024), but the development of such models is growing slowly at a national level (Dalarna County Council, 2022; Skåne County Council, 2024).

### Problem area

In summary, Swedish labour wards are experiencing a shortage of midwives, who are advocating for improved working conditions. Burnout levels among midwives in Sweden have increased. The

implementation of midwifery continuity of care models could offer a sustainable solution to some of the staffing and work-related health challenges faced by midwives. However, it is essential to investigate how midwives relate to MCoC before its widespread implementation. Therefore, this study aims to explore midwives' profiles based on burnout levels and attitudes towards midwifery continuity of care, considering various background and work-related factors.

## Method

### Study design

This national cross-sectional digital survey is based on anonymously collected responses from Swedish-speaking midwives.

### Participants and procedure

The inclusion criteria were to be a midwife registered in Sweden, capable of understanding and completing the survey in Swedish. Midwives who were not currently working in midwifery were also included in the study. The data were collected using the software Research Electronic Data Capture (REDCap) (Harris et al., 2009), accessed through Uppsala University, as part of a larger study on midwives' interest in midwifery continuity of care models, where a detailed description of the sample can be found (Hildingsson et al., 2023b). Midwives accessed the survey through a web link or a QR code. The link and the code were distributed, along with information about the research project, through the union organisations, the Swedish Midwifery Association and Swedish Union of Healthcare Workers. The survey link was also distributed in closed Facebook-groups and through service email addresses. Reminders were sent via e-mail after two and five weeks, respectively. The survey was accessible during November and December 2021.

### Measurement

This paper builds on a previous Principal Component Analysis (PCA) carried out to identify underlying components in a questionnaire with 15 statements (Hildingsson et al., 2024). In the current study, the midwives' attitudes towards MCoC were measured using these 15 statements, including examples such as 'Knowing the women you are looking after in labour is satisfying' and 'Shift work is a better way of working than on-call work'. The statements were graded on a 5-point Likert-type scale, ranging from 'Strongly agree' to 'Strongly disagree', and the midwives were asked to choose the alternative that best reflected their views. The 15 statements were initially developed by Australian researchers to measure midwives' willingness to work in MCoC (Dawson et al., 2018; Newton et al., 2021). In the present study, the statements were translated into Swedish by the research group. The PCA revealed two components of attitudes: the *Relational* component of MCoC and the *Practical and Organisational* component of MCoC, with Cronbach's alpha values of 0.765 and 0.742, respectively. The *Relational* component was associated with a general optimism towards continuity models, whereas the *Practical and Organisational* component was associated with a more hesitant approach (Hildingsson et al., 2024).

The total score of the Copenhagen Burnout Inventory (CBI) was used to measure levels of burnout (Kristensen et al., 2005). This is a validated and widely used instrument (Suleiman-Martos et al., 2020) consisting of 19 questions, such as 'How often do you feel emotionally exhausted?', 'Do you feel weary at the end of your work day?' and 'Do you experience difficulty in working with women/families?' with responses on a 5-point Likert-type scale. The CBI measures burnout in three dimensions: personal burnout (6 items), work burnout (7 items), and client burnout (6 items). The total score of CBI ranges from 0 to 100, with the absolute results of CBI for this group of Swedish midwives presented elsewhere (Hildingsson et al., 2023a). The Cronbach's alpha value was 0.90 for this

sample.

The survey also included questions about sociodemographic data (i.e. gender, age, family situation, geographical work area) and work-related data (i.e. years of work experience, workplace, and working hours). The survey was piloted online and in hard copy versions with Swedish-speaking midwives before it was used, resulting in a few minor refinements.

### Process and analysis

Data were downloaded from REDCap and analysed in IBM Statistical Package for the Social Sciences (SPSS) version 28. Initially, descriptive analysis presented background variables with proportions and frequencies.

The *Relational* component of MCoC and the *Practical and Organisational* component of MCoC from the PCA, as well as the total score of the CBI, were z-transformed to enable a Kappa-mean cluster analysis. Cluster analysis is a numerical method for discovering groups in data (Landau and Chis Ster, 2010). By grouping individuals in a sample based on similarities, cluster analysis attempts to reach a high homogeneity within the clusters, and thereby high heterogeneity between the clusters (Hair et al., 2006). In this cluster analysis, midwives were grouped based on the components of their attitudes towards continuity of care, along with their levels of burnout. A negative score indicates fewer symptoms of burnout according to the CBI and less agreement with the *Relational* component of MCoC and the *Practical and Organisational* component of MCoC. A positive scoring indicates more symptoms of burnout according to the CBI and greater agreement with the *Relational* component of MCoC and the *Practical and Organisational* component of MCoC.

Odds ratios (OR) with 95 % confidence intervals (CI) were calculated between the clusters, for all explanatory variables, using one of the clusters as the reference group. Finally, to identify the factors most strongly associated with each cluster, a logistic regression model was performed. Adjustments were made for background variables such as age, living with a partner, and living with children under the age of 15. All statistically significant variables from the univariate analysis were entered simultaneously and excluded one by one until only statistically significant factors remained. The significance level was set at  $p < 0.05$  for all analyses.

### Ethics

The study was conducted in accordance with the Code of Ethics of the World Medical Association (World Medical Association, 2022). Ethical approval was granted by the Swedish Ethical Review Authority, DNR 2021–0914. The midwives were informed about what to expect from participating in the study. The initial page of the survey stated that participation was voluntary and that, by continuing to fill out the survey, midwives consented to participate in the study, with the option to withdraw at any moment. The researchers' contact details were provided for participants to address any questions or concerns.

## Results

### Sample characteristics

Background characteristics of the 1,983 midwives included in the study are presented in Table 1. The mean age was 47 years, with most midwives living with a partner and having children under the age of 15. Furthermore, half of the midwives had worked for more than ten years, worked full-time, daytime only, and within one domain and without rotating between wards or tasks. After grouping midwives into similar work domains, three major domains remained. The most common domain was the group of midwives working in intrapartum care, including home births or postpartum care, followed by the group of midwives working in antenatal care, gynaecological care, youth clinics,

**Table 1**  
Background variables of midwives.

	n = 1983 n (%)
<b>Age group (years)</b>	
24–34	295 (15.2)
35–45	595 (30.6)
46–55	538 (27.5)
56–70	519 (26.7)
<b>Civil status</b>	
Living with a partner	1718 (87.5)
Not living with a partner	246 (12.5)
<b>Have children younger than 15 years</b>	
Yes	1038 (58.5)
No	737 (41.5)
<b>Work-life experience as a midwife (years)</b>	
0–3	232 (11.8)
4–10	635 (32.2)
11–19	526 (26.7)
20 or more	579 (29.4)
<b>Main area of work</b>	
Antenatal/outpatient domain	751 (38.5)
Intrapartum/postpartum domain	863 (44.2)
Other domain	337 (17.3)
<b>Working hours</b>	
Full time	1208 (61.6)
Part time	668 (34)
Casual	86 (4.4)
<b>Work distribution</b>	
Daytime only	999 (50.4)
Rotating shift morning and afternoon	405 (20.4)
Rotating shift morning, afternoon and night	366 (18.5)
Night shift only	186 (9.4)
<b>Rotating between wards or tasks</b>	
Yes	785 (40.7)
No	1146 (59.3)

Numbers might not add to 100 % due to internal missing values.

or family planning. The remaining smaller group of midwives worked in 'other' areas, such as research and development, education/supervision or neonatal care.

### Cluster analysis

A three-cluster solution was suggested, graphically presented in Fig. 1, with descriptive statistics for each cluster presented in Table 2. The decision to use three clusters was based on after comparisons with four- and five-cluster solutions, which revealed less distinct differences between the clusters. The clusters were named: the *Reserved* cluster (n = 417), the *Visionary* cluster (n = 655), and the *Sensitive* cluster (n = 661). The *Reserved* cluster consisted of midwives who scored negatively on both the *Relational* and the *Practical and Organisational* components of MCoC, as well as on the CBI. Midwives in the *Visionary* cluster scored positively on the *Relational* component, negatively on the *Practical and Organisational* component of MCoC, and negatively on the CBI. In the *Sensitive* cluster, midwives scored somewhat positively on the *Relational* component, positively on the *Practical and Organisational* component of MCoC, and positively on the CBI.

In the next step, comparisons were made between midwives in the *Reserved* cluster and those in the other clusters by calculating odds ratios with a 95% confidence interval for each variable sequentially. Significant differences appeared, as shown in Table 2. Belonging to the *Reserved* cluster was associated with the age group 56–70 years, living without children, having more than 20 years of experience in the profession, working in the 'other' domain, and not rotating between wards or tasks.

For midwives in the *Visionary* cluster, the following background variables were associated with membership when compared to the *Reserved* cluster: ages 24–34 years ( $p < 0.001$ ), ages 35–45 years ( $p < 0.001$ ), and living with children ( $p < 0.001$ ). Work-related variables

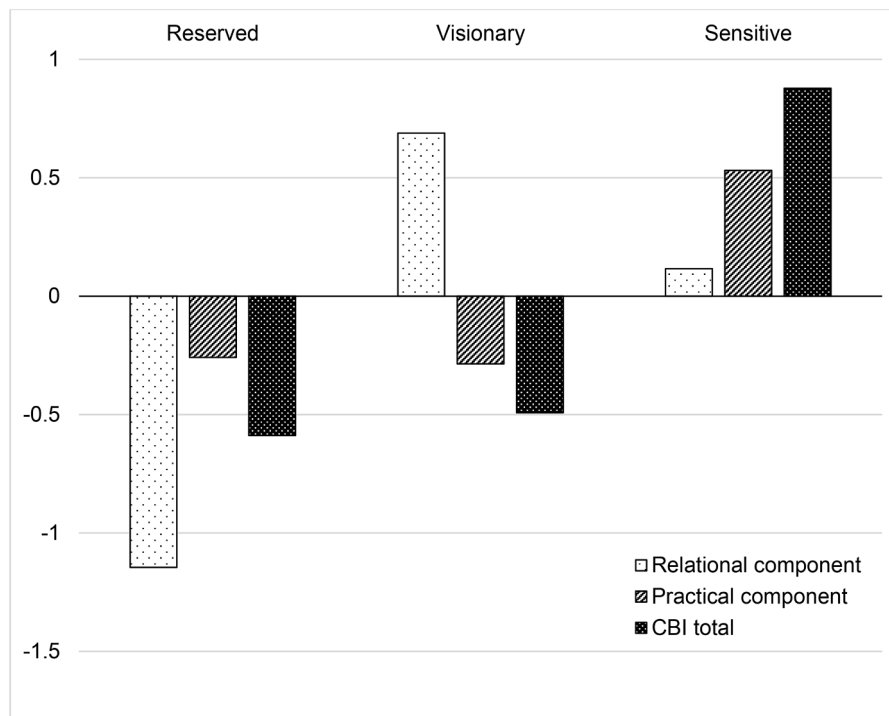


Fig. 1. Clusters identified from z-score transformed components of attitudes towards MCoC, and CBI total score.

were also associated with membership in the *Visionary* cluster: work-life experience of 0–3 years ( $p < 0.001$ ), work-life experience of 4–10 years ( $p < 0.001$ ), working in the antenatal/outpatient domain ( $p < 0.001$ ), rotating between wards or tasks ( $p < 0.001$ ), and working hours not limited to the night ( $p < 0.001$ – $0.002$ ).

When the *Sensitive* cluster was compared to the *Reserved* cluster, all age groups, except for 56–70 years were associated with membership ( $p < 0.001$ ), as was living with children ( $p < 0.001$ ). Similar to the age groups, the odds were greater for all work-life experience durations shorter than 20 years ( $p < 0.001$ – $0.001$ ). Work-related variables associated with the *Sensitive* cluster when compared to the *Reserved* cluster were: working in the intrapartum/postpartum domain ( $p = 0.001$ ), working in the antenatal/outpatient domain ( $p = 0.009$ ), rotating two- or three-shifts, and rotating between wards or tasks ( $p = 0.034$ ).

#### Factors most important to explain each cluster

To investigate which factors were most associated with membership in each cluster, the *Reserved* cluster was set as the reference group, and a logistic regression model was used. The remaining factors with statistically significant contributions to membership in the different clusters are presented in Table 3.

For midwives in the *Visionary* cluster, compared to the *Reserved* cluster, the most important factor explaining membership was having 0–3 years of experience in the midwifery profession ( $p = 0.005$ ). Work-related factors significantly contributing to cluster membership included working in the antenatal/outpatient domain ( $p < 0.001$ ), rotating morning and afternoon shifts ( $p = 0.006$ ), and rotating between wards or tasks ( $p < 0.001$ ).

In the *Sensitive* cluster, the strongest contributing variables compared to the *Reserved* cluster, were having 0–3 years ( $p = 0.001$ ) and having 4–10 years ( $p = 0.004$ ) of experience in the midwifery profession. Working in the intrapartum/postpartum domain ( $p = 0.015$ ), working in the antenatal/outpatient domain ( $p = 0.014$ ), and rotating morning and afternoon shifts ( $p = 0.017$ ) also explained cluster membership.

## Discussion

This study demonstrated that components of attitudes towards MCoC and levels of burnout were useful in identifying different clusters of midwives in this Swedish national sample. Three groups were identified: the *Reserved*, the *Visionary*, and the *Sensitive* clusters, with statistically significant differences in years of experience in the midwifery profession, work domain, working hours, and rotation of the workplace or tasks. The most important factor explaining cluster membership was the number of years in the profession.

#### The reserved cluster

Midwives in the *Reserved* cluster exhibited negative scores on the CBI, as well as negative scores on components of attitudes towards MCoC. This suggests that some midwives are not drawn to relationship-based midwifery but are instead content with their work circumstances, as reflected by the parameters measured. Membership in the *Reserved* cluster was associated with longer work-life experience, working in ‘other’ settings, working during night shifts only, and no rotation between wards or tasks. These findings align with previous studies, which have revealed that midwives with more years of experience in the profession tend to experience lower levels of burnout (Hildingsson et al., 2013; Hunter et al., 2019).

#### The visionary cluster

In the *Visionary* cluster, the scores on the *Relational* component were the highest, while burnout symptoms were reported at low level. Midwives in the *Visionary* cluster were more likely to work in the antenatal/outpatient clinic, a setting that includes an average of nine visits during pregnancy, according to the standardised Swedish care programme (Skogsdal et al., 2022). Such frequent interactions may facilitate the development of a trusting relationship between the midwife and the woman. The experience of building these trustful relationships appears to be highly valued and seen as something to strive for among midwives in the *Visionary* cluster, as indicated by their high scores on the



**Table 2**  
Characteristics of midwives in the three clusters.

	Reserved n = 417 n (%)	Visionary n = 655 n (%)	Sensitive n = 661 n (%)	Visionary vs Reserved # OR (95 % CI)	Sensitive vs Reserved # OR (95 % CI)
<b>Age group (years)</b>					
24–34	23 (5.6)	94 (14.7)	144 (26.1)	3.61 (2.18–5.97)***	9.9 (5.96–16.41)***
35–45	94 (22.9)	194 (30.4)	246 (37.8)	1.82 (1.32–2.54)***	4.14 (2.93–5.84)***
46–55	135 (32.9)	171 (26.8)	161 (24.7)	1.12 (0.82–1.53)	1.89 (1.34–2.65)***
56–70	158 (38.5)	179 (28.1)	100 (15.4)	1.0 Ref.	1.0 Ref.
<b>Civil status</b>					
Living with a partner	352 (85)	570 (87.7)	573 (87.7)	0.8 (0.56–1.14)	0.8 (0.56–1.13)
Not living with a partner	62 (15)	80 (12.3)	80 (12.3)	1.0 Ref.	1.0 Ref.
<b>Have children younger than 15 years</b>					
Yes	168 (43.9)	346 (56.9)	407 (72)	1.7 (1.31–2.19)***	3.3 (2.51–4.33)***
No	215 (56.1)	262 (43.1)	158 (28)	1.0 Ref.	1.0 Ref.
<b>Work-life experience as a midwife (years)</b>					
0–2	13 (3.1)	83 (12.7)	104 (15.8)	5.31 (2.86–9.85)***	12.07 (6.47–22.51)***
3–10	86 (20.8)	201 (30.9)	278 (42.2)	1.94 (1.41–2.68)***	4.88 (3.48–6.84)***
11–19	143 (34.5)	160 (24.6)	163 (24.7)	0.93 (0.69–1.26)	1.72 (1.24–2.38)***
20 or more	172 (41.4)	207 (31.8)	114 (17.3)	1.0 Ref.	1.0 Ref.
<b>Main area of work</b>					
Antenatal/outpatient domain	148 (35.7)	310 (48.1)	210 (31.9)	2.14 (1.52–3.02)***	1.62 (1.13–2.32)**
Intrapartum/postpartum domain	170 (41)	240 (37.2)	363 (55.2)	1.44 (1.02–2.03)*	2.44 (1.73–3.44)***
Other domain	97 (23.4)	95 (14.7)	85 (12.9)	Ref.	Ref.
<b>Working hours</b>					
Full time	244 (58.7)	421 (64.6)	400 (61.1)	0.74 (0.57–0.97)*	1.94 (0.98–3.86)
Part time	153 (36.8)	196 (30.1)	239 (36.5)	1.07 (0.6–1.9)	1.86 (0.93–3.72)
Casual	19 (4.6)	35 (5.4)	16 (2.4)	1.0 Ref.	1.0 Ref.
<b>Work distribution</b>					
Daytime only	227 (54.8)	369 (57)	267 (40.5)	2.3 (1.43–3.6)***	0.7 (0.47–1.04)
Morning and afternoon	64 (15.5)	124 (19.2)	177 (26.9)	2.74 (1.61–4.66)***	1.64 (1.04–2.59)*
Morning, afternoon, night	75 (18.1)	120 (18.5)	134 (20.3)	2.26 (1.34–3.82)**	1.06 (0.67–1.67)*
Night shift only	48 (11.6)	34 (5.3)	81 (12.3)	1.0 Ref.	1.0 Ref.
<b>Rotating between wards or tasks</b>					
Yes	135 (32.8)	282 (44.1)	291 (44.3)	1.61 (1.2–2.01)***	1.63 (1.26–2.1)***
No	276 (67.2)	358 (55.9)	366 (55.7)	1.0 Ref.	1.0 Ref.

# Reference group Reserved cluster.

Reference categories: age group 57–70, not living with a partner, not living with children, experiencing 20 years or more, work in ‘other’ domain, casual working hours, night shift only, not rotating between wards or tasks.

\* p<0.05,

\*\* p<0.001,

\*\*\* p<0.0001.

**Table 3**  
Logistic regression model explaining the most important factors contributing to midwives’ membership in the different clusters.

	Visionary vs Reserved # aOR (95 % CI)	Sensitive vs Reserved # aOR (95 % CI)
<b>Work-life experience as a midwife (years)</b>		
0–3	3.51 (1.47–8.38)**	4.26 (1.77–10.26)***
4–10	1.1 (0.65–1.88)	2.15 (1.28–3.61)**
<b>Main area of work</b>		
Antenatal/outpatient clinic	2.47 (1.65–3.69)***	1.71 (1.11–2.63)*
Intrapartum/postpartum	1.26 (0.72–2.19)	2.02 (1.15–3.6)*
<b>Work distribution</b>		
Rotating shifts morning or afternoon	2.34 (1.27–4.31)**	1.91 (1.12–3.24)*
<b>Rotating between wards or tasks</b>		
Yes	2.32 (1.66–3.23)***	

# Reference group Reserved cluster Adjusted for age, children younger 15 years, partner.

Reference categories: work experience 20 years or more, ‘other’ main area of work, working nightshift only, not rotating.

\* p<0.05,

\*\* p<0.001,

\*\*\* p<0.0001.

*Relational* component. An integrative review exploring why midwives remain in the profession highlighted that relationships with women were a key factor in their retention. The enjoyment of building these relationships and the sense of making a meaningful difference were seen as significant privileges (Bloxsome et al., 2020). In another study on midwifery work satisfaction, the possibility of being ‘with women’ was identified as both a source of satisfaction and a motivation for staying in the profession (Bloxsome et al., 2019). In an Australian study, midwives working in MCoC were the only group for whom empowerment was a statistically significant predictor of job satisfaction. This finding suggests that other work models may obstruct midwives from developing strong, empowering relationships with women (Mharapara et al., 2022). The importance of building trustful relationships could also explain why midwives in the *Visionary* cluster exhibit lower levels of burnout symptoms, despite known risk factors such as fewer years in the profession (Suleiman-Martos et al., 2020) and shift work (Albendín-García et al., 2021).

Simultaneously, whileas the *Relational* component was scored positively in the *Visionary* cluster, the *Practical and Organisational* component was scored negatively. This finding indicates that midwives in the *Visionary* cluster prioritise relationships but may overlook practical and organisational obstacles associated with MCoC. It suggests that this group of midwives has a strong willingness and readiness to work within the MCoC model. The results reveal that midwives with fewer years in the profession exhibit significant optimism towards midwifery continuity of care. This observation aligns with findings from other studies, which show that midwives of less work-life experience show a greater

interest in MCoC (Newton et al., 2021; Taylor et al., 2019). Extensive work-life experience does not seem to be a prerequisite for readiness to work in MCoC. Furthermore, these findings indicate that work-related risk factors for burnout, such as fewer years in the profession (Suleiman-Martos et al., 2020) and shift work (Albendín-García et al., 2021), may be mitigated by a meaningful work situation and other factors that enhance job satisfaction.

The finding that midwives with shorter work-life experience are more open-minded towards MCoC is particularly newsworthy, especially given the well-known fact that midwives with less experience are more susceptible to burnout. This is especially interesting because MCoC models have been identified as protective against burnout. It makes one wonder if midwives with shorter experience could experience reduced burnout and improved work-related health by they working within in a midwifery continuity of care model. A scoping review shows that newly graduated midwives working in MCoC feel supported, gain confidence, and engage more effectively in woman-centred care (Hopkinson et al., 2022).

The fact that midwives working in rotation between wards or tasks was associated with membership in the *Visionary* cluster, which is the most positive towards MCoC, is not a surprise. Such rotation may encourage midwives to adopt a open-minded approach towards the practical aspects of continuity, fostering a more positive attitude towards MCoC overall, as demonstrated in previous studies (Taylor et al., 2019).

#### The sensitive cluster

The midwives in the *Sensitive* cluster scored the highest on the *Practical and Organisational* component of MCoC and reported the highest levels of burnout symptoms. The *Relational* component was also positively scored, but just slightly. Midwives with shorter work-life experience, particularly those in the 0–3 and 4–10 years groups, were more likely to belong to the *Sensitive* cluster. This might be the group where the impact of work-life changes is the most significant, and where many midwives consider leaving the profession. As mentioned earlier, previous studies have shown an association between levels of burnout and years in the profession (Hildingsson, Westlund and Wiklund, 2013; Hunter et al., 2019; Suleiman-Martos et al., 2020). A Dutch study exploring the intention to leave the profession among midwives with fewer years of work experience identified organisational dissatisfaction and family demands as common reasons for considering an alternative career (Feijen-de Jong et al., 2022).

Furthermore, the midwives in the *Sensitive* cluster were more often employed in intrapartum/postpartum or the antenatal/outpatient domain. Previous studies regarding midwives' practical work environment in Sweden indicated that working in a hospital-based setting (mainly a labour ward) was associated with negative assessments of staffing and resources (Hildingsson and Fenwick, 2015). Higher levels of burnout have been observed among midwives working in settings comparable to Swedish intrapartum or postpartum wards, in the United Kingdom (Hunter et al., 2019) and in New Zealand (Dixon et al., 2017). Similarly, in Australia, midwives working in shift-based fragmented care models were found to be at greater risk of experiencing mental distress (Fenwick et al., 2018). The practical and organisational environment may significantly affect the midwives' overall work-related health, potentially contributing to the positive scoring of symptoms of burnout in the *Sensitive* cluster. Comparisons of midwives in New Zealand in different work domains show that autonomous practice is an integral part of the daily work situation for MCoC midwives, while midwives working in hospitals or other domains describe autonomy as important but more difficult to achieve (Clemons et al., 2021). A qualitative study identified working autonomously and reaching one's full potential as valuable aspects of job satisfaction. Support from colleagues and staff members, as well as from supervisors, was also described as an important aspect in fostering a positive work environment (Bloxsome et al.,

2019).

Midwives in the *Sensitive* cluster may recognise the benefits of MCoC, as indicated by the slightly positive scores on the *Relational* component; nonetheless, symptoms of burnout could hinder their ability to engage in relationship-based care. The high scores on the *Practical and Organisational* component within the *Sensitive* cluster could also be interpreted as scepticism or hesitance towards on-call work. This finding highlights the importance of designing and developing MCoC models with midwives' emotional and work-related well-being in mind. As shown in previous studies, working on-call can be particularly challenging. For midwives with no other options, on-call work was mentioned as one reason to question the continuity model or even to consider leaving the midwifery profession (Stoll and Gallagher, 2019; Wakelin and Skinner, 2007). When not handled carefully, especially in combination with a lack of days off, on-call work can have a negative impact on the levels of burnout, as shown in a Canadian study (Stoll and Gallagher, 2019). On the other hand, Canadian midwives report higher levels of burnout overall compared to Swedish midwives (Hildingsson et al., 2013; Stoll and Gallagher, 2019).

Midwives in the *Sensitive* cluster more often rotated shifts between mornings and evenings. In a Swedish labour ward, nearly all midwives primarily work shifts, at least during the mornings and evenings, sometimes in combination with night shifts. As mentioned previously, higher burnout levels are associated with shift work (Albendín-García et al., 2021), which may partly explain the higher levels of burnout symptoms observed in the *Sensitive* cluster.

#### Strengths and limitations

Cluster analysis is primarily a descriptive, non-inferential method. When based on a specific sample, no generalisable conclusions can be drawn for a larger population. Cluster membership is dependent on various elements of the procedure, and by altering one or more elements, different solutions can be obtained. Regardless of any structure in the data, the analysis will always generate clusters but the finding of clusters does not validate their existence (Hair et al., 2006).

To achieve internal validity, the survey was piloted both online and in hard copy versions among Swedish-speaking midwives, resulting in a few minor refinements. However, it is difficult to determine the extent to which the questions accurately measure Swedish midwives' attitudes towards MCoC, given that this study is the first on this topic. Reliability was assessed by calculating Cronbach's alpha values, which exceeded the recommended limit of 0.7 (Pallant, 2020). External validity was enhanced by successful efforts to reach midwives in all 21 community regions, which is a notable strength of this national study. However, due to the self-selecting nature of participation, it is possible that midwives interested in the topic were more willing to answer the survey. On the other hand, the total proportion of midwives interested in working in MCoC would likely have been much higher if only midwives with an interest in this topic had responded (Hildingsson et al., 2023b). Despite these limitations, a cross-sectional design was deemed the most appropriate way to answer the research question.

The digital survey format enabled midwives to participate without direct contact with the researchers, which strengthened the objectivity of the study. To achieve full anonymity, the responses were collected without any connection to the responding midwife, and as a result, REDCap did not provide any possibility of saving unfinished records. Consequently, the cleaning of the data included checking for duplicate records, as well as deleting incomplete records from midwives who initially accessed the survey but returned later to complete it. The extent of the survey, in combination with the inability to save answers and return later, may have discouraged some midwives from participating and likely contributed to the internal dropout rate.

Midwives were invited to participate through union organisations, but not all midwives are union members. Therefore, recruitment efforts were supplemented by spreading information about the survey in

specific groups on Facebook, as well as through e-mail lists targeting employed midwives across all Swedish community regions. While there is no information about the midwives who chose not to participate or were unaware of the survey, the sample is representative of midwives in Sweden in terms of age, gender, and workplace (The National Board of Health and Welfare 2024).

According to a recently published report, in the year 2020, Sweden had roughly 8,000 registered midwives, of whom almost 6,100 worked as midwives in the healthcare sector (National Health Competence Council, 2023). A sample of 1,983 represents almost 25% of the total number of registered midwives and 32% of the estimated number of employed midwives in the healthcare sector. The relatively large sample size (Newton et al., 2021; Taylor et al., 2019) is considered a strength of the study.

This study is hypothetical in its design, which limits its conclusions to a theoretical view. It is possible that midwives could change their opinions when they are exposed to working in MCoC. Since some Swedish healthcare regions have developed MCoC models after the survey was completed, the results can only be seen as representative of the specific time period in question.

## Conclusion

Based on components of attitudes towards midwifery continuity of care and an assessment of the Copenhagen Burnout Inventory, three distinct clusters of midwives were identified, with different factors contributing to membership in each cluster. The midwives in these three clusters displayed varying levels of burnout symptoms and had distinctly different attitudes towards MCoC. Work experience and work domain were the primary factors influencing cluster membership, although work distribution and rotation also played significant roles. This study suggests that MCoC may be particularly beneficial for midwives with less work-life experience, as they are more likely to experience burnout. Understanding midwives' attitudes and preferences can facilitate the implementation and expansion of MCoC models in Sweden, thus improving the work-related health of Swedish midwives.

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## CRediT authorship contribution statement

**Hanna Fahlbeck:** Writing – review & editing, Writing – original draft, Project administration, Methodology, Formal analysis, Data curation, Conceptualization. **Ingegerd Hildingsson:** Writing – review & editing, Supervision, Formal analysis, Data curation, Conceptualization. **Birgitta Larsson:** Writing – review & editing, Supervision. **Margareta Johansson:** Writing – review & editing, 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.

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## References

- Albendín-García, L., Suleiman-Martos, N., Cañadas-De la Fuente, G.A., Ramírez-Baena, L., Gómez-Urquiza, J.L., De la Fuente-Solana, E.I., 2021. Prevalence, related factors, and levels of burnout among midwives: A systematic review. *J. Midwif. Women's Health* 66 (1), 24–44. <https://doi.org/10.1111/jmwh.13186>.
- Allen, J., Kildea, S., Tracy, M.B., Hartz, D.L., Welsh, A.W., Tracy, S.K., 2019. The impact of caseload midwifery, compared with standard care, on women's perceptions of antenatal care quality: Survey results from the M@NGO randomized controlled trial for women of any risk. *Birth: Issu. Perin. Care* 46 (3), 439–449. <https://doi.org/10.1111/birt.12436>.
- Bloxsome, D., Bayes, S., Ireson, D., 2020. I love being a midwife; it's who I am!': A Glaserian Grounded Theory Study of why midwives stay in midwifery. *J. Clin. Nurs.* 29 (1–2), 208–220. <https://doi.org/10.1111/jocn.15078>.
- Bloxsome, D., Ireson, D., Doleman, G., Bayes, S., 2019. Factors associated with midwives' job satisfaction and intention to stay in the profession: An integrative review. *J. Clin. Nurs.* 28 (3–4), 386–399. <https://doi.org/10.1111/jocn.14651>.
- Bradford, B.F., Wilson, A.N., Portela, A., McConville, F., Fernandez Turienzo, C., Homer, C.S.E., 2022. Midwifery continuity of care: A scoping review of where, how, by whom and for whom? *PLOS. Glob. Public Health* 2 (10), e0000935. <https://doi.org/10.1371/journal.pgph.0000935>.
- Clemons, J.H., Gilkison, A., Mharapara, T.L., Dixon, L., McAracouper, J., 2021. Midwifery job autonomy in New Zealand: I do it all the time. *Women Birth.* 34 (1), 30–37. <https://doi.org/10.1016/j.wombi.2020.09.004>.
- Collins, C.T., Fereday, J., Pincombe, J., Oster, C., Turnbull, D., 2010. An evaluation of the satisfaction of midwives' working in midwifery group practice. *Midwifery.* 26 (4), 435–441. <https://doi.org/10.1016/j.midw.2008.09.004>.
- Dahlen, H.G., Ormsby, S., Staines, A., Kirk, M., Johnson, L., Small, K., Hazard, B., Schmied, V., 2022. A comparison of the Woman-centred care: strategic directions for Australian maternity services (2019) national strategy with other international maternity plans. *Women Birth.*
- Dalarna County Council. [Region Dalarna.], 2022. Dalarna County Council Invests in a New Project For Women With Fear of childbirth. [Region Dalarna satsar På Nytt Projekt För Förlossningsrädda]. <https://www.regiondalarna.se/press/nyheter-och-pressemeddelanden/region-dalarna-satsar-pa-nytt-projekt-for-forlossningsradda/> (accessed 15 March 2024).
- Dawson, K., Newton, M., Forster, D., McLachlan, H., 2018. Comparing caseload and non-caseload midwives' burnout levels and professional attitudes: A national, cross-sectional survey of Australian midwives working in the public maternity system. *Midwifery.* 63, 60–67. <https://doi.org/10.1016/j.midw.2018.04.026>.
- Dixon, L., Gülliland, K., Pallant, J., Sidebotham, M., Fenwick, J., McAracouper, J., Gilkison, A., 2017. The emotional wellbeing of new zealand midwives: comparing responses for midwives in caseload and shift work settings. *New Zealand colleg. Midwives J.* 53, 5–14.
- Elmir, R., Pangas, J., Dahlen, H., Schmied, V., 2017. A meta-ethnographic synthesis of midwives' experiences of adverse labour and birth events. *J. Clin. Nurs.* 26 (23–24), 4184–4200. <https://doi.org/10.1111/jocn.13965>.
- Feijen-de Jong, E.I., van der Voort-Pauw, N., Nieuwschepe-Enging, E.G., Kool, L., 2022. Intentions to leave and actual turnover of community midwives in the Netherlands: A mixed method study exploring the reasons why. *Women. Birth* 35 (6), e573–e582. <https://doi.org/10.1016/j.wombi.2022.02.004>.
- Fenwick, J., Sidebotham, M., Gamble, J., Creedy, D.K., 2018. The emotional and professional wellbeing of Australian midwives: A comparison between those providing continuity of midwifery care and those not providing continuity. *Women. Birth* 31 (1), 38–43. <https://doi.org/10.1016/j.wombi.2017.06.013>.
- Forster, D.A., McLachlan, H.L., Davey, M.-A., Biro, M.A., Farrell, T., Gold, L., Flood, M., Shafiei, T., Waldenström, U., 2016. Continuity of care by a primary midwife (caseload midwifery) increases women's satisfaction with antenatal, intrapartum and postpartum care: results from the COSMOS randomised controlled trial. *BMC. Pregnancy. ChildBirth* 16 (1), 28. <https://doi.org/10.1186/s12884-016-0798-y>.
- Haggerty, J.L., Reid, R.J., Freeman, G.K., Starfield, B.H., Adair, C.E., McKendry, R., 2003. Continuity of care: a multidisciplinary review. *BMJ* 327 (7425), 1219–1221. <https://doi.org/10.1136/bmj.327.7425.1219>.
- Hair, J., Black, W., Babin, B., Anderson, R., 2006. *Multivariate Analysis, 7th ed.* Pearson Education Limited, Harlow.
- Hansson, M., Dencker, A., Lundgren, I., Carlsson, I.M., Eriksson, M., Hensing, G., 2022. Job satisfaction in midwives and its association with organisational and psychosocial factors at work: a nation-wide, cross-sectional study. *BMC. Health Serv. Res.* 22 (1). <https://doi.org/10.1186/s12913-022-07852-3>.
- Harris, P.A., Taylor, R., Thielke, R., Payne, J., Gonzalez, N., Conde, J.G., 2009. Research electronic data capture (REDCap)—A metadata-driven methodology and workflow process for providing translational research informatics support. *J. Biomed. Inform.* 42 (2), 377–381. <https://doi.org/10.1016/j.jbi.2008.08.010>.
- Hildingsson, I., Fahlbeck, H., Larsson, B., Johansson, M., 2023a. Increasing levels of burnout in Swedish midwives - A ten-year comparative study. *Women. Birth.* <https://doi.org/10.1016/j.wombi.2023.10.010>, [10.1016/j.wombi.2023.10.010](https://doi.org/10.1016/j.wombi.2023.10.010).
- Hildingsson, I., Fahlbeck, H., Larsson, B., Johansson, M., 2023b. A perfect fit' - Swedish midwives' interest in continuity models of midwifery care. *Women. Birth* 36 (1), e86–e92. <https://doi.org/10.1016/j.wombi.2022.04.014>.
- Hildingsson, I., Fahlbeck, H., Larsson, B., Johansson, M., 2024. Swedish midwives' attitudes towards continuity models-a cross-sectional survey. *Sexual & Reprod. Health.* <https://doi.org/10.1016/j.srhc.2024.100957>.
- Hildingsson, I., Fenwick, J., 2015. Swedish midwives' perception of their practice environment – A cross sectional study. *Sexual & Reproductive Healthcare* 6 (3), 174–181. <https://doi.org/10.1016/j.srhc.2015.02.001>.

- Hildingsson, I., Westlund, K., Wiklund, I., 2013. Burnout in Swedish midwives. *Sex Reprod. Health* 4 (3), 87–91. <https://doi.org/10.1016/j.srhc.2013.07.001>.
- Homer, C.S.E., 2016. Models of maternity care: evidence for midwifery continuity of care. *Medical J. Australia* 205 (8), 370–374. <https://doi.org/10.5694/mja16.00844>.
- Hopkinson, M.D., Kearney, L., Gray, M., George, K., 2022. New graduate midwives' transition to practice: A scoping review. *Midwifery* 111, 103337. <https://doi.org/10.1016/j.midw.2022.103337>.
- Hunter, B., Fenwick, J., Sidebotham, M., Henley, J., 2019. Midwives in the United Kingdom: Levels of burnout, depression, anxiety and stress and associated predictors. *Midwifery* 79, 102526. <https://doi.org/10.1016/j.midw.2019.08.008>.
- Jepsen, I., Juul, S., Foureur, M., Sørensen, E.E., Nøhr, E.A., 2017. Is caseload midwifery a healthy work-form? – A survey of burnout among midwives in Denmark. *Sexual & Reproductive Healthcare* 11, 102–106. <https://doi.org/10.1016/j.srhc.2016.12.001>.
- Karolinska University Hospital [Karolinska Universitetssjukhuset.], 2024. My Midwife – Continuous Care During Pregnancy With a Team of midwives. [Min Barmorska - sammanhållen graviditetsvård Med Ett barmorsketeam.]. <https://www.karolinska.se/minbarmorska> (accessed 15 March 2024).
- Kashani, A., Ingberg, J.L., Hildingsson, I., 2021. Caseload midwifery in a rural Australian setting [Elektronisk resurs] A qualitative descriptive study. *Eur. J. Midwifery* 5, 1–9. <https://doi.org/10.1016/j.midw.2021.08.001>.
- Kristensen, T.S., Borritz, M., Villadsen, E., Christensen, K.B., 2005. The Copenhagen burnout inventory: A new tool for the assessment of burnout. *Work. Stress* 19 (3), 192–207. <https://doi.org/10.1080/02678370500297720>.
- Landau, S., Chis Ster, I., 2010. Cluster Analysis: Overview. In: Peterson, P., Baker, E., McGaw, B. (Eds.), *International Encyclopedia of Education* (Third Edition). Elsevier, Oxford, pp. 72–83.
- Mharapara, T.L., Staniland, N., Stadler, M., Clemons, J.H., Dixon, L., 2022. Drivers of job satisfaction in midwifery—A work design approach. *Women. Birth* 35 (4), e348–e355. <https://doi.org/10.1016/j.wombi.2021.07.004>.
- The National Board of Health and Welfare. [Socialstyrelsen.] Statistical database, health care practitioners. [Statistikdatabas för hälso- och sjukvårdspersonal.] [https://sdb.socialstyrelsen.se/if\\_per/val.aspx](https://sdb.socialstyrelsen.se/if_per/val.aspx) (accessed 15 March 2024).
- National Health Competence Council [Nationella Vårdkompetensrådet], 2023. Competence provision of midwives in health care with focus on maternity care - Assignment to propose initiatives to strengthen the attractiveness and competence supply of midwives in maternity care. [Kompetensförsörjning av barmorskor i hälso- och sjukvården med fokus på förlossningsvården - Uppdrag att föreslå insatser för att stärka attraktiviteten och kompetensförsörjningen av barmorskor i förlossningsvården] S2022/00902.
- National Maternity Review, 2016. *BETTER BIRTHS Improving outcome of Maternity Services in England*.
- Newton, M., Dawson, K., Forster, D., McLachlan, H., 2021. Midwives' views of caseload midwifery – comparing the caseload and non-caseload midwives' opinions. A cross-sectional survey of Australian midwives. *Women. Birth* 34 (1), e47–e56. <https://doi.org/10.1016/j.wombi.2020.06.006>.
- Newton, M.S., McLachlan, H.L., Forster, D.A., Willis, K.F., 2016. Understanding the 'work' of caseload midwives: A mixed-methods exploration of two caseload midwifery models in Victoria. *Australia. Women and Birth* 29 (3), 223–233. <https://doi.org/10.1016/j.wombi.2015.10.011>.
- Newton, M.S., McLachlan, H.L., Willis, K.F., Forster, D.A., 2014. Comparing Satisfaction and Burnout Between Caseload and Standard Care midwives: Findings from Two Cross-Sectional Surveys Conducted in Victoria, Australia, 14. *BMC pregnancy and childbirth*, pp. 1–16.
- Pace, C.A., Crowther, S., Lau, A., 2022. Midwife experiences of providing continuity of carer: A qualitative systematic review. *Women and Birth* 35 (3), e221–e232. <https://doi.org/10.1016/j.wombi.2021.06.005>.
- Pallant, J., 2020. *SPSS Survival manual: a Step By Step Guide to Data Analysis Using IBM SPSS*. Open University Press, McGraw-Hill, London.
- Perriman, N., Davis, D.L., Ferguson, S., 2018. What women value in the midwifery continuity of care model: A systematic review with meta-synthesis. *Midwifery* 62, 220–229. <https://doi.org/10.1016/j.midw.2018.04.011>.
- Sandall, J., Fernandez Turienzo, C., Devane, D., Soltani, H., Gillespie, P., Gates, S., Jones, L.V., Shennan, A.H., Rayment-Jones, H., 2024. Midwife continuity of care models versus other models of care for childbearing women. *Cochrane Datab. Syst. Rev.* 10. <https://doi.org/10.1002/14651858.CD004667.pub6>, 1002/14651858.CD004667.pub6(4).
- Sidhu, R., Su, B., Shapiro, K.R., Stoll, K., 2020. Prevalence of and factors associated with burnout in midwifery: A scoping review. *Eur. J. Midwifery* 4, 4. <https://doi.org/10.18332/ejm/115983>.
- Skogsdal Y, Conner P, Elvander C, Hed C, Ageheim M, Algovik M, Petersson K, Bjelke M, Granfors M, Svanvik T, 2023. On behalf of The Swedish Pregnancy Register, [På uppdrag av Graviditetsregistret]. Annual report 2023. [Graviditetsregistrets Årsrapport 2023]. <https://www.medscinet.com/GR/uploads/hemsida/Graviditetsregistrets%20%C3%85rsrapport%202023%201.0.pdf> (accessed 28 November 2024).
- Skåne County Council. [Region Skåne.] 2024. My Midwife Skåne. [Min barmorska Malmö] <https://vardgivare.skane.se/kompetens-utveckling/projekt-och-utvecklingsarbete/min-barmorska-malmo/> (accessed 5 March 2024).
- Stoll, K., Gallagher, J., 2019. A survey of burnout and intentions to leave the profession among Western Canadian midwives. *Women. Birth* 32 (4), e441–e449. <https://doi.org/10.1016/j.wombi.2018.10.002>.
- Suleiman-Martos, N., Albendín-García, L., Gómez-Urquiza, J.L., Vargas-Román, K., Ramírez-Baena, L., Ortega-Campos, E., De, La, Fuente-Solana, E.I., 2020. Prevalence and predictors of burnout in midwives: a systematic review and meta-analysis. *Int. J. Environ. Res. Public Health* 17 (2). <https://doi.org/10.3390/ijerph17020641>.
- Taylor, B., Cross-Sudworth, F., Goodwin, L., Kenyon, S., MacArthur, C., 2019. Midwives' perspectives of continuity based working in the UK: a cross-sectional survey. *Midwifery* 75, 127–137.
- Tran, T., Longman, J., Kornelsen, J., Barclay, L., 2017. The development of a caseload midwifery service in rural Australia. *Women. Birth* 30 (4), 291–297. <https://doi.org/10.1016/j.wombi.2016.11.010>.
- Wakelin, K., Skinner, J., 2007. Staying or leaving: a telephone survey of midwives, exploring the sustainability of practice as lead maternity carers in one urban region of New Zealand.
- World Health Organization, 2018. *WHO recommendations: Intrapartum Care For a Positive Childbirth Experience*. World Health Organization, Geneva.
- World Health Organization, nd. ICD-11 International Classification of Diseases 11th Revision. The global standard for diagnostic health information. <https://icd.who.int/en>. (Accessed 5th March 2024).
- World Medical Association, 2022. WMA declaration of helsinki - ethical principles for medical research involving human subjects. <https://www.wma.net/policies-post/wma-declaration-of-helsinki-ethical-principles-for-medical-research-involving-human-subjects/>. (accessed 15 March 2024).