



Exploring the relationship between midwives' work environment, women's safety culture, and intent to stay

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ABSTRACT

Background: The shortage of midwives is a concern for healthcare systems as it compromises the quality maternity care. Various studies argue that a favorable work environment increases nurses' job satisfaction and intention to continue working at their current workplace.

Aim: To analyze the work environment and its relationship with women's clinical safety culture and midwives' intention to stay in their current job and the midwifery profession.

Methods: A cross-sectional, correlational study was performed on N = 218 midwives working in Spain. Standardized instruments were used, including The Practice Environment Scale of the Nursing Work Index (PES-NWI) and the Hospital Survey on Patient Safety Culture (HSOPSC). Descriptive and bivariable statistics were used. The study followed the STROBE guidelines.

Results: The work environment in the labor wards was mixed, according to the PES-NWI classification. The mean total score of the PES-NWI significantly and positively correlated with the mean total score of the HSOPSC ($r_s = 0.498$, $p < 0.001$), indicating that as the quality of midwives' work environment increased, women's clinical safety increased. Significant correlations were observed between the midwives' intent to stay in the hospital where they work and features of women's safety culture.

Conclusion: The results of this study showed significant relationships between the work environment, women's safety culture, and midwives' intentions to leave their job/profession. Creating a favorable working environment could be a potentially effective strategy that encourages improvement in the women's safety culture in healthcare organizations and greater intention of midwives to stay at their current job.

Statement of significance

Problem

Currently, the shortage of nurses and midwives puts the provision of safe and high-quality care in the future at risk and calls for effective recruitment and retention strategies.

What is already known?

The work environment influences the satisfaction and retention of

nurses, as well as quality healthcare outcomes. However, little is known about the impact of the work environment on midwives' intentions to stay in their job and profession and its relationship with women's safety culture in labor & delivery wards.

What this paper adds?

This study shows significant relationships between work environment, safety culture for women and midwives' intentions to stay that could assist managers and leaders in decision-making to effectively control the midwifery shortage and ensure quality of care for women and babies in the future.

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1. Introduction

Midwives are internationally recognized as a cornerstone of the health and wellbeing of women and their newborns [1]. Their relevance in delivering safe, effective and efficient care is becoming increasingly recognized with studies supporting consistent evidence of improved outcomes for women and babies [2]. Therefore, the role of the midwifery workforce is essential to high-quality maternity care [3].

According to the World Health Organization (WHO), midwives play a crucial role in maternal-fetal health care and safety, preventing 80% of deaths derived from childbirth and reducing premature births by 24% [4]. Also, midwife-led care has been linked to the perception of better care and increased satisfaction among expectant women [5,6]. Most European countries are committed to integrating the figure of the midwife as an essential professional in the high-quality maternity care of their healthcare systems [1]. Therefore, a well-educated stable and sustainable midwifery workforce is required [7]. However, the number of midwives needed is in jeopardy due to the global crisis in available human resources for health that is expected in coming years [8]. Specifically, there is expected to be an estimated shortage of 7.6 million nurses and midwives in 2030 [4]. This problem has become one of the main concerns of healthcare organizations that is worsened by the aging of midwives and dissatisfaction with the work environment [7,9].

1.1. Background

The work environment is defined as “the organizational characteristics of the work setting that facilitate or limit professional practice” [10]. Several studies show that characteristics of the work environment influence the satisfaction and retention of health professionals [11,12], as well as health outcomes and the quality of care provided to the patient [13,14]. Midwives are responsible for ensuring the safety and care of both mother and child, facing a twofold challenge that has been exacerbated by the Covid-19 pandemic [15]. Therefore, understanding the influence of the work environment on clinical safety is crucial for midwives, given their high commitment to maternal and fetal safety during prenatal, labor and postpartum care [16,17].

On the other hand, clinical safety is defined as “reducing the risk of harm associated with healthcare to an acceptable minimum” [18]. In this context, it is the conscious attempt by healthcare professionals to avoid causing injury to the woman during their healthcare practice [19]. The degree to which an organization promotes, supports, and commits to safe practices is known as clinical safety culture [20]. This term encompasses the beliefs, values, and norms that all members of the professional team share and that influence their behavior and actions [21]. Organizations with a strong safety culture are able to prevent adverse effects and quickly correct errors before harm occurs through good communication and interprofessional trust, awareness of the importance of safety, and the implementation of effective preventive measures [21, 22].

The potential influence of the work environment on safety culture and midwives' intention to leave is well documented. Previous research has associated a favorable work environment with a lower risk of injuries in the workplace [23], and a lower rate of morbidity and mortality [24]. There are also studies showing favorable results in the clinical safety of labor wards and lower rates of maternal-fetal mortality due to the improvement of the work environment and quality of maternity care [17,25,26]. However, the understanding about associations between work environment and the clinical safety culture in labor wards is scarce and requires investigation in future research [27,28,29]. Evidence suggests that the work environment might be also decisive in midwives' outcomes, including the intent of those within the profession to remain in their position [30]. There is a growing body of literature that suggests many midwives suffer from work-related burnout, stress and emotional

distress, and as a result are making decisions to leave the profession [7, 31,32]. Despite the urgent need to propose strategies to recruit and retain midwives, the relationship between the work environment and the intention to stay of midwives needs further analysis. The lack of studies on the influence of midwives' work environment on the clinical safety culture of their hospitals, as well as on the intention of midwives to remain working there and in the midwifery profession motivated the development of this research. The objective of this study was to analyze the work environment and its relationship with women's clinical safety culture and midwives' intention to stay in their current job and midwifery profession.

2. Methods

2.1. Study design

A cross-sectional, correlational study was carried out following the STROBE checklist [33].

2.2. Study context and participants

In Spain, there are 508 hospitals which maternity care, of which 54.7% are public (278 hospitals) and 45.3% are private (230 hospitals). Those hospitals are distributed throughout the 17 autonomous communities into which Spain is geographically and politically divided [34].

In this context, the study explored the perspectives of midwives who worked in public and private general hospitals in Spain, and specifically in 15 (see Table 1) of the 17 autonomous communities. The potentially eligible study subjects were Spanish midwives who worked in the labor & delivery ward. There was a potential population of 7184 midwives working in labor and delivery suites in the 15 hospital autonomous communities [35]. A sample of 218 participants was obtained through intentional snowball sampling; thus, the response rate was 3.03%. The inclusion criteria were the following: (1) being a midwife, (2) currently working in the labor & delivery ward, (3) and signing the informed consent form. The exclusion criteria were: (1) working in a non-hospital setting, (2) working outside of Spain, and (3) not having a good command of spoken and written Spanish.

2.3. Variables and instruments

The following sociodemographic variables were collected: sex, age, education, years of professional experience, hospital autonomous community, hospital denomination (public or private), work shift (day/evening, rotating, nights), intention to stay in the hospital where they currently work and intention to stay in the midwifery profession the following year. The midwives' were working on a full time basis, working 40 h per week. The working shifts were categorized into: day/evening (five 8-h day/evening shifts), rotating (two 8-h day shifts, two 8-h evening shifts and one 10-h night shift) and nights (four 10-h night shifts). Midwives' intention to stay in their current hospital/profession was measured using the question: ‘Do you plan to stay in your current hospital/profession during the following year?’.

2.3.1. The Practice Environment Scale of the Nursing Work Index (PES-NWI)

The Spanish version of the PES-NWI validated by Fuentelsaz-Gallego ($\alpha = 0.90$) [36] was used to measure the nursing practice environment. The PES-NWI consists of 31 items classified into five subscales or factors: F1: Staffing and resource adequacy; F2: Collegial nurse/midwife-physician relationships; F3: Nurse/midwife manager ability, leadership and support of nurses/midwives; F4: Nursing/Midwifery foundations for quality of care; F5: Nurse/Midwife participation in hospital affairs. The answers were measured using a 4-point Likert scale (1 = completely disagree, 2 = disagree, 3 = agree, 4 = completely agree). A high score indicates a high degree of agreement with the

Table 1
Sociodemographic characteristics of the sample.

Variable	n	%
Sex		
Female	198	90.8
Male	20	9.2
Age	35.63 ^a	8.83 ^b
Education level		
Midwife Certification	174	79.8
Master	37	17
PhD	7	3.2
Years of professional experience	9.48 ^a	8.92 ^b
Hospital autonomous community		
Andalucía	118	54.1
Aragón	3	1.4
Islas Baleares	1	0.5
Islas Canarias	7	3.2
Castilla La Mancha	1	0.5
Castilla León	1	0.5
Cataluña	21	9.6
Extremadura	2	0.9
Galicia	6	2.8
Madrid	3	1.4
Melilla	6	2.8
Murcia	5	2.3
Navarra	10	4.6
País Vasco	19	8.7
Comunidad Valenciana	15	6.9
Healthcare system		
Public	215	98.6
Private	3	1.4
Work shift		
Rotating	189	86.7
8-h day/evening shift	21	9.6
10-h night shift	8	3.7
Intention to stay in their hospital workplace		
Yes	189	86.7
No	29	13.3
Intention to stay in the midwifery profession		
Yes	217	99.5
No	1	0.5

^a Mean.

^b Standard deviation.

corresponding item. Considering the version used in this study refers to nurses, midwives were asked to respond to the items from a professional midwifery perspective to minimize potential bias. The PES-NWI classifies a hospital as favorable if it has four or five factors with a mean score greater than or equal to 2.5, mixed if it has two or three factors with a mean score greater than or equal to 2.5, and unfavorable if it has one or no factors with an average score greater than or equal to 2.5. In this study, Cronbach's alpha was 0.90.

2.3.2. Hospital Survey on Patient Safety Culture (HSOPSC)

The Spanish version of the HSOPSC was used, validated by the Agency for Healthcare Research and Quality [37], with a Cronbach's alpha of 0.77. This instrument consists of 28 items classified in 12 dimensions: D1: Teamwork, D2: Pressure and pace of work, D3: Organizational learning – Continuous improvement, D4: Response to errors, D5: Support given by supervisors, directors, or clinical managers for patient safety, D6: Communication and information on errors, D7: Communication and responsiveness, D8: Reporting on events related to patient safety, D9: Support given by administrators for patient safety, D10: Transfer and exchange of information, D11: Number of reported incidents, and D12: Patient safety rating. The responses of the subjects were measured on a 5-point Likert scale with values that vary from one item to another. Negative questions were converted to positive equivalents for the scale analysis. In general, the responses to the questionnaire

were recorded into three categories: *negative* – completely disagree/never, disagree/rarely; *neutral*– neither agree nor disagree/sometimes; and *positive* – agree/almost always, completely agree/always. This coding made it possible to subsequently classify the items and dimensions of the instrument as strengths and opportunities for improvement.

2.4. Data collection

Data collection was carried out between November 2020 and January 2021 through an online questionnaire created by the researchers using Google Forms. The questionnaire consisted of the following sections: (1) study information and informed consent, (2) sociodemographic characteristics of the participants, (3) PES-NWI, and (4) HSOPSC. The questionnaire was dispersed online by posting on social networks and via email. Midwives from different Spanish hospitals (see Table 1 for the list) were contacted to request their collaboration in the study and were asked to share the questionnaire with other potentially eligible midwives. In addition, reminders were sent to participants to encourage participation. The estimated amount of time to complete the questionnaire was 15–20 min. The completion of the questionnaires implied the participants' acceptance of online consent.

2.5. Ethical aspects

This study was approved by the corresponding Ethics and Research Commission (Registration no.: XXXX). The midwives were informed on the purpose of the study and the voluntary and anonymous nature of their participation. The data collected was treated confidentially at all times by the researchers. Participating subjects indicated their willingness to participate through an online informed consent form, maintaining the right to withdraw from the study at any time. The ethical principles of the Declaration of Helsinki were followed [38].

2.6. Statistical analysis

The data were coded and analyzed using the statistical program SPSS v. 26. Percentages and frequencies were calculated for the categorical variables and measures of central tendency (mean) and dispersion (standard deviation, maximum, and minimum) for the quantitative variables. The Kolmogorov-Smirnov (K-S) test was performed to explore the normality of the variables. Depending on the distribution of the variables, parametric tests (t-Student and ANOVA) and non-parametric tests (Mann-Whitney U and Kruskal Wallis) were carried out. The Spearman correlation coefficient was calculated to analyze the relationship between variables. The confidence level was 95% considering $p < 0.05$ as significant.

3. Results

3.1. Sociodemographic characteristics

The study sample consisted of a total of 218 subjects (N = 218), of which 90.8% (n = 198) were female, and 9.2% (n = 20) were male. The average age of the participants was 35.63 (SD=8.83), with a minimum age of 25 and a maximum age of 59. Regarding education, only 17% (n = 37) midwives had a master's degree and 3.2% (n = 7) had completed their Phd studies. The average amount of work experience was 9.48 (SD = 8.92) years, with a minimum of one year and a maximum of 39 years. The majority of midwives (98.6%; n = 215) worked in public hospitals, had a rotating shift (86.7%; n = 189), and had the intention to continue working for the same hospital (86.7%; n = 189) and in the midwifery profession (99.5%; n = 217) over the coming year. There was only one midwife, who intended to leave the profession. The rest of the sociodemographic characteristics of the participants are detailed in Table 1.

The Chi-square test showed statistically significant associations between the work shift and the intention to remain in the hospitals where

they work ($X^2(2) = 9.52, p = 0.009$) and in the midwifery profession ($X^2(2) = 9.424, p = 0.009$). The intention to stay in their current hospital and midwifery profession was significantly greater in midwives working rotating shifts ($n = 169, 89.4\%$ and $n = 15, 7.9\%$) compared to those working on a day/evening shift schedule ($n = 5, 2.6\%$ and $n = 189, 87.1\%$) or night shifts ($n = 20, 9.2\%$ and $n = 8, 3.7\%$).

3.2. The Practice Environment Scale of the Nursing Work Index (PES-NWI)

The mean scores for the factors and the total of the PES-NWI are shown in Table 2. The mean total score of the PES-NWI was 2.47 (SD = 0.43). The PES-NWI factors with the highest mean scores were “Collegial nurse/midwife-physician relationships” (M = 2.69, SD = 0.67) and “Staffing and resource adequacy” (M = 2.58, SD = 0.63). On the contrary, the factor “Nurse/Midwife participation in hospital affairs” obtained the lowest mean score (M = 2.18, SD = 0.52). The hospitals were found to be mixed (neither unfavorable or favorable) according to the PES-NWI classification, as only two of the five factors obtained a mean score greater than or equal to 2.5.

When comparing the mean scores, statistically significant associations were found for the mean score of the factor “Staffing and resource adequacy” with respect to sex (U = 1347, Z = 2.371, p = 0.018) and work shift ($X^2(2) = 7.791, p = 0.020$). The females’ perception (M = 2.61, SD = 0.62) of the endowment and adequacy of resources was significantly higher than that of the males (M = 2.25, SD = 0.62). The midwives who worked a rotating shift (M = 2.62, SD = 0.62) showed significantly higher scores for this factor than those who worked the day/evening shift (M = 2.29, SD = 0.58) or nights (M = 2.25, SD = 0.69). No statistically significant associations were observed when comparing the total mean scores of the PES-NWI questionnaire with the rest of the sociodemographic variables of the sample (p > 0.05). Nor were there significant associations in the intention of the midwives to remain working in their hospitals and in the profession according to the PES-NWI scores (p > 0.05).

3.3. Hospital Survey on Patient Safety Culture (HSOPSC)

The total mean score of the questionnaire was 3.01 (SD = 0.28). The HSOPSC dimensions with the highest mean scores were “Patient safety rating” (M = 3.58, SD = 0.74) and “Teamwork” (M = 3.40, SD = 0.46). On the contrary, the dimensions “Number of reported incidents” and “Organizational learning-Continued improvement” obtained the lowest mean scores, with values of 1.55 (SD = 0.69) and 2.77 (SD = 0.64), respectively. The percentages of positive and negative responses, as well as the mean scores of the HSOPSC are detailed in Table 3.

Statistically significant associations were obtained when comparing the mean scores of the HSOPSC. The mean of the dimension “Transfers and exchange of information” varied significantly with respect to sex (U = 1402.50, Z = -2.185, p = 0.029), being higher in males (M = 3.12, SD = 0.77) than in females (M = 2.74, SD = 0.59). Therefore, male midwives perceived safer transfers and exchange of information than females. The dimension “Organizational learning-Continuous improvement” was negatively correlated with age (rs = -0.175, p = 0.010);

Table 2
Mean and standard deviation for the PES-NWI.

PES-NWI	M (SD)
F1. Staffing and Resource Adequacy	2.58 (0.63)
F2. Collegial Nurse/Midwife-Physician Relations	2.69 (0.67)
F3. Nurse/Midwife Manager Ability, Leadership and Support of Nurses	2.46 (0.76)
F4. Nursing/Midwifery Foundations for Quality of Care	2.46 (0.52)
F5. Nurse/Midwife Participation in Hospital Affairs	2.18 (0.52)
Total	2.47 (0.43)

M (SD): Mean (Standard deviation).

PES-NWI: The Practice Environment Scale of the Nursing Work Index.

Table 3
HSOPSC means and percentages of positive and negative responses.

HSOPSC composite measures	% positive response	% negative response	M (SD)
D1. Teamwork	75.00	6.60	3.40 (0.46)
D2. Staffing and Work Pace	37.72	33.60	3.08 (0.54)
D3. Organizational Learning—Continuous Improvement	33.03	30.73	2.77 (0.64)
D4. Response to Error	29.12	34.15	3.07 (0.59)
D5. Supervisor, Manager, or Clinical Leader Support for Patient Safety	52.46	19.73	2.92 (0.62)
D6. Communication About Error	47.40	20.60	3.35 (0.91)
D7. Communication Openness	53.80	17.45	3.19 (0.48)
D8. Reporting Patient Safety Events	39.00	22.00	3.22 (0.92)
D9. Hospital Management Support for Patient Safety	42.03	22.16	3.25 (0.58)
D10. Handoffs and Information Exchange	55.80	17.73	2.77 (0.61)
D11. Number of Events Reported	90.40	0.50	1.55 (0.69)
D12. Patient Safety Rating	94.00	0.90	3.58 (0.74)

M (SD): Mean (Standard Deviation).

HSOPSC: Hospital Survey on Patient Safety Culture.

meaning that at a younger age, midwives tend to perceive a better learning environment and continuous improvement in women’s safety. In addition, a negative correlation was found between the years of professional experience and the dimensions “Pressure and pace of work” (rs = -0.183, p = 0.007) and “Organizational learning” (rs = -0.214, p = 0.002). Therefore, the less experience one has, the greater the feeling of pressure and a faster pace of work, and a greater intention to become trained in organizational culture. The dimensions “Pressure and pace of work” and “Patient safety rating” showed significant associations depending on the education level of the midwives (See Table 4). Specifically, the most highly-educated midwives reported lower work pressure and better women’s safety rates. Likewise, the dimensions “Organizational learning-continuous improvements” and “Support given by supervisors, directors or clinical managers for patient safety” varied significantly according to the work shift (See Table 4). Midwives working on day/evening shifts perceived lower organizational learning-continuous improvements and greater support by leaders for women’s safety than those working on rotating or night shifts. On the other hand, the dimension “Teamwork” showed significant associations according to the type of system (public or private). Midwives from public hospitals (M = 3.41, SD = 0.46) had a greater awareness of teamwork than those from private organizations (M = 2.89, SD = 0.19). There were no significant associations found between the intention of midwives to remain working in their hospitals and in their profession according to the HSOPSC scores (p > 0.05).

3.4. Correlations between the PES-NWI, HSOPSC, and the intention of midwives to stay in their current job and profession

The total mean score of the PES-NWI significantly and positively correlated with the total mean score of the HSOPSC (rs = 0.498, p < 0.001), indicating that as the quality of the midwives’ work environment increases, the women’s clinical safety culture increases (See Table 5). The HSOPSC dimension “Support given by supervisors, directors, or clinical managers for patient safety” showed a strong, positive and significant correlation with the PES-NWI factor “Nurse/midwife manager ability, leadership and support of nurses/midwives” (rs =

Table 4
HSOPSC mean scores according to educational level and working shift.

Educational level (Mean ± SD)	HSOPSC dimension		Midwives (N = 174)	Master (N = 37)	PhD (N = 7)	χ^2	df	p
	D2	D12						
			3.06 ± 0.54	3.32 ± 0.74	4.29 ± 0.75	6.828	2	0.033 ^a
			3.61 ± 0.73			11.031	2	0.004 ^b
Working shift (Mean ± SD)			rotation shift (N = 189)	day/evening shift (N = 21)	Night shift (N = 8)			
	D3		2.76 ± 0.64	2.69 ± 0.66	3.33 ± 0.43	6.665	2	0.036 ^a
	D5		2.87 ± 0.59	3.38 ± 0.71	2.92 ± 0.62	12.108	2	0.002 ^b

SD: Standard deviation.

^a $p < 0.05$ derived from Kruskal-Wallis test.

^b $p < 0.01$ derived from Kruskal-Wallis test.

Table 5
Spearman correlation coefficient between PES-NWI and HSOPSC.

HSOPSC	PES-NWI					
	F1	F2	F3	F4	F5	
D1	r. s.	,058	,171 ^a	,028	,323 ^b	,111
	Sig.	,394	,012	,681	,000	,102
D2	r. s.	,001	,111	-,236 ^b	,125	,016
	Sig.	,989	,101	,000	,066	,816
D3	r. s.	,164 ^a	,150 ^a	,048	,439 ^b	,418 ^b
	Sig.	,015	,027	,482	,000	,000
D4	r. s.	-,112	-,122	-,388 ^b	-,029	-,090
	Sig.	,098	,071	,000	,667	,184
D5	r. s.	,085	,060	,632 ^b	,146 ^a	,310 ^b
	Sig.	,212	,375	,000	,032	,000
D6	r. s.	,295 ^b	,262 ^b	,373 ^b	,439 ^b	,468 ^b
	Sig.	,000	,000	,000	,000	,000
D7	r. s.	,207 ^b	,298 ^b	,247 ^b	,299 ^b	,303 ^b
	Sig.	,002	,000	,000	,000	,000
D8	r. s.	,205 ^b	,062	,162 ^a	,200 ^b	,213 ^b
	Sig.	,002	,366	,016	,003	,002
D9	r. s.	,187 ^b	,194 ^b	,163 ^a	,409 ^b	,349 ^b
	Sig.	,006	,004	,016	,000	,000
D10	r. s.	-,163 ^a	-,003	-,199 ^b	-,174 ^a	-,250 ^b
	Sig.	,016	,968	,003	,010	,000
D11	r. s.	-,033	,026	-,145 ^a	,015	,033
	Sig.	,626	,707	,032	,830	,629
D12	r. s.	,336 ^b	,224 ^b	,286 ^b	,291 ^b	,293 ^b
	Sig.	,000	,001	,000	,000	,000

r.s. Spearman correlation coefficient.

^a $p < 0.05$ (two-tailed).

^b $p < 0.01$ (two-tailed).

0.632, $p < 0.001$). The HSOPSC dimensions “Communication of errors”, “Communication and responsiveness”, “Support from administrators for patient safety” and “Patient safety rating” correlated significantly and positively with all of the factors of the PES-NWI.

Midwives’ intention to stay in the midwifery profession was not associated with any other variable. However, the intention of midwives to remain in the hospital where they currently work was correlated with the item “A10: When staff make mistakes, this unit focuses on learning instead of looking for someone to blame” ($r_s = -0.134$, $p = 0.049$), of the dimension “Response to errors” and with the items “F5: During shift changes, important information about patient care is frequently lost” ($r_s = 0.154$, $p = 0.023$), and “F6: During shift changes, there is enough time to exchange all important information about patient care” ($r_s = -0.149$, $p = 0.028$), from the dimension “Transfers and Information Exchange” of the HSOPSC. No significant correlations were observed between the intention of midwives to continue working in their current hospital and the PES-NWI.

4. Discussion

The objective of this study was to analyze the work environment and

its relationship with women’s clinical safety culture and midwives’ intention to stay in their current job and the midwifery profession. This study contributes to the available literature by revealing the relationships between the work environment, women’s clinical safety culture, and midwives intention to stay. The results suggest that the improvement of the work environment promotes better results in the clinical safety of women. Likewise, achieving leadership and support for workers is crucial for successfully establishing a safety culture in healthcare organizations.

The work environment of the midwives in this study was mixed (neither unfavorable nor favorable), differing from the perceptions of Australian and Swedish midwives, according to previous studies [30, 39]. The scores obtained for the collegial nurse/midwife-physician relations factor were similar to those of other studies, in which it was the most highly valued [39,40]. These results support the relevance of good communication and relationships between professionals in labor wards for improving the quality of labor, birth and postpartum care for women [41]. Furthermore, staffing and resource adequacy was the second most valued factor in this study, unlike other research carried out with midwives [39] and professionals involved in the provision of maternity care [40], in which this factor obtained the lowest score. According to the literature [39,42], adequate staffing and resource adequacy help to reduce the intention of workers to leave their workplace, which could explain the high probability of midwives in this study to remain working in their workplace and in their profession in the coming years.

In general, the midwives’ perception of the work environment was significantly more unfavorable when they had night shifts. This may be because those who work night shifts need to alter their life routines and sleeping habits. In addition, night hours negatively influence the work capacity of healthcare personnel due to physical stress, changes in circadian rhythms, and reduced cognitive ability [43], which could explain the findings observed in this research study.

Women’s safety was rated in this study as very good or excellent by more than half of the midwives, showing better results in those observed in the study by Arrieta et al. [44] in Peruvian hospitals. In terms of dimensions, teamwork was a strong dimension of women’s safety culture, coinciding with the results of previous research [8,25]. On the contrary, the midwives showed their dissatisfaction with the notification of safety incidents and the response to adverse events by the professionals themselves, teammates, and managers. Despite being the worst-rated dimension, the average positive response rate in this study was higher than that found in studies conducted in other countries [45,46].

A positive and significant relationship was observed between perceived support from the supervisor and the midwives’ satisfaction with their work environment. Supervisors represent organizational leadership and influence the work environment [47]. The support received from supervisors influences productivity and job satisfaction, as well as the desire of midwives to continue working in the hospital by creating a favorable working environment [48,49]. Furthermore, the intention of midwives to continue working in their hospital was associated with response to errors and the transfer of women’s information.

Therefore, this study suggests that support from management when errors are made by personnel and the use of these errors as opportunities for learning and improvement not only provide the midwives with professional security in their job [50], but could also be considered a potential retention strategy. Likewise, having an adequate amount of time to transfer women's information during shift changes was associated with the safety and intention of the midwives to continue working in the hospital [51,52].

4.1. Implications for clinical practice

The findings of this research show associations that could be considered to create a safe and favorable working environment where a strong women's safety culture and institutional support is perceived that increases the midwives' commitment to their hospitals and their intention to continue working there. Considering these findings in decision-making could help to create effective recruitment and retention strategies in light of the anticipated shortage of midwives in the future.

4.2. Limitations and future research

The results of this study should be interpreted considering several limitations. The study sample was obtained by snowball sampling, a non-probability sampling technique, which limits the generalization of results. The nature of the study design enabled the establishment of relationships between the variables, but not causality; therefore, additional studies are required to confirm whether there is a causal relationship between the variables. Some issues should be considered with caution when drawing conclusions. The response rate based on the potential population of midwives. Associations based upon sex with only 20 male midwives compared to 198 female midwives as well as type of system (public or private) with only one midwife from the private sector. There was only one midwife who intended to leave the profession. The sample size of this subgroup was not large enough for significant results; thus, study associations should be carefully interpreted considering such limitations. The inclusion of hospitals from different geographical locations could generate dispersion in the data since the resources available to each hospital are different. More specifically, there was a wide dispersion of responses within each 'hospital autonomous community' with ten having less than 10 midwives represented, four having between 10 and 21 and only one dominating representation with 118 midwife responses. Given the sample size and the dispersion of the data used, it would be interesting to carry out future research to delve more deeply into this topic both nationally and internationally. During the study conceptualization, the use of the adapted version of the practice environment scale (PES) for midwifery [39] was considered. However, there is no adaptation and psychometric testing in the Spanish context and, thus, its use was limited in this study. Additional research should address the translation to other languages, cultural adaptation and psychometric analysis of the instrument in different contexts and midwives samples to allow a wider use worldwide. In addition, further studies should undertake multivariable analysis.

5. Conclusion

The midwives perceived a mixed (neither unfavorable nor favorable) work environment with good interprofessional relationships and adequate staffing and resources. The results of this study showed significant relationships between the work environment, women's safety culture, and midwives' intention to stay in their profession. These findings could assist midwife leaders in making decisions to reduce the expected shortage of midwives in the coming years and ensure high-quality maternity and newborn care. The creation of a favorable working environment could be a potentially effective strategy that encourages an improvement in women's safety culture in healthcare organizations and in the number of midwives who intend to stay in

hospitals.

Ethical Statement

This study was approved by the corresponding Ethics and Research Commission (Registration no.: EFM 129/2021). The midwives were informed on the purpose of the study and the voluntary and anonymous nature of their participation. The data collected was treated confidentially at all times by the researchers. Participating subjects signed the informed consent form, maintaining the right to withdraw from the study at any time. The ethical principles of the Declaration of Helsinki were followed.

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CRediT authorship contribution statement

MC Rodríguez-García: Conceptualization, Formal analysis, Investigation, Methodology, Visualization, Writing – original draft, Writing – review & editing. **IM Martos-López:** Formal analysis, Writing – original draft, Writing – review & editing. **G Casas-López:** Formal analysis, Writing – original draft, Writing – review & editing. **VV Márquez-Hernández:** Conceptualization, Formal analysis, Methodology, Supervision, Visualization, Writing – original draft, Writing – review & editing. **G Aguilera-Manrique:** Visualization, Writing – review & editing. **L Gutiérrez-Puertas:** Visualization, Writing – original draft, Writing – review & editing.

Conflict of interest

None declared.

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