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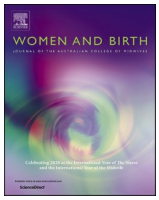

A mixed-methods stress audit with midwives in the United Kingdom

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ABSTRACT

Problem: UK midwives report high work-related stress, which can negatively impact their health and wellbeing, with many considering leaving the profession.
Background: An occupational stress audit guides the implementation of stress management intervention, by identifying which stressors have the most negative impact and why, and highlighting "at risk" groups.
Aim: To conduct a concurrent mixed-methods stress audit with UK midwives in an NHS Trust.
Methods: Seventy-one midwives (M_{age} = 39 years, SD = 11) completed a survey assessing stressors (e.g., relationships), stress appraisals (i.e., challenge vs. threat), coping strategies (e.g., avoidance-focused), and outcomes (i.e., mental health, performance, and intention to leave). Ten midwives (M_{age} = 42 years, SD = 10) participated in semi-structured interviews.
Findings: Quantitative data revealed that more work-related demands, poorer peer support and relationships, and threat appraisals predicted worse mental health. Moreover, less control and more work-related demands predicted poorer performance, while less control, poorer manager support, more change-related demands, and threat appraisals predicted greater intention to leave. Qualitative data generated three themes: organisational pressures exacerbated by unexpected changes; individualised responses but largely debilitative emotions; and personal coping and power of social support.
Discussion and conclusion: This study offered a comprehensive and novel insight into the stress experiences of UK midwives, highlighting targets for future stress management interventions, including key stressors (e.g., manager support), underlying mechanisms (e.g., stress appraisals), and "at-risk" groups (e.g., night shift workers). Practical recommendations are provided for stakeholders operating at multiple levels (e.g., midwife, trust, policy) to better support midwives with work-related stress.

Statement of Significance

Problem or Issue

Work-related stress is high in midwifery, with many leaving the profession.

What is already known

Many stressors (e.g., high workloads, inability to provide good care) exist for midwives.

What this paper adds

For midwives, this study identifies: (1) which stressors (e.g., poor manager support) are most negatively impacting outcomes (e.g., intention to leave), (2) why this impact occurs (i.e., via threat appraisals or sustained feelings of 'overwhelm'), and (3) which staff are most "at risk" of negative stress-related outcomes (e.g., night shift workers).

1. Introduction

Feeling unwell as a result of occupational stress is particularly prevalent among midwives (66 %) and this workforce report the second highest rate of burnout in the National Health Service (NHS) [1]. Levels

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of stress, anxiety, and depression are significantly higher in UK midwives than the general population, and higher than in other countries [2,3]. Midwifery stress and compromised well-being has not only led to a shortage of midwives in England, with ~70 % considering leaving the profession, but it also compromises patient care [3,4].

To better support UK midwives with occupational stress and implement more effective interventions [5,6], this study aimed to conduct a stress audit which has three main components [7]. Specifically, a stress audit can help: (1) identify which stressors (i.e., demands or pressures) have the most negative impact on outcomes (e.g., well-being), (2) understand why this impact may occur (e.g., via appraisals, emotions, etc.), and (3) which groups are most "at risk". Taking the first component (i.e., impactful stressors encountered), previous research has revealed excessively high workloads and inadequate staffing as key reasons for midwives leaving the profession [8,9]. Other stressors have included being unable to provide a good standard of patient care and a lack of manager support [10]. Notwithstanding the importance of this research, it is not well documented which are the most pertinent stressors midwives face and which have the greatest impact on key outcomes (e.g., midwives' intentions to leave).

The second component of a stress audit is to understand how and why stressors are having an impact. According to the transactional conceptualisation of stress [11], two variables that can help answer this question are cognitive appraisals and coping. Appraisal involves an individual's subjective evaluation of important situations [12]. When personal coping resources are limited, individuals typically appraise stressful situations as more of a threat (i.e., situational demands exceed personal coping resources) than a challenge (i.e., personal coping resources match or exceed situational demands). Outside of midwifery, threat appraisals have been linked to poorer health (e.g., depression; [13]) and well-being [14]. Turning to coping, defined as cognitive and behavioural efforts to manage situations appraised as stressful [15], this can help explain whether positive or negative outcomes occur, and evidence suggests how an individual copes may be more important to well-being than the presence of a stressor itself [16]. Little research, however, has explored the importance of stress appraisals and coping in midwifery and, furthermore, there is no evidence on how these responses in midwives predict important outcomes (e.g., well-being).

The third component of a stress audit is to identify which groups are most "at risk" of negative stress-related consequences (e.g., mental ill-health). Research that has explored the role of individual factors (e.g., age, job grade) on the health and wellbeing of midwives has revealed mixed findings and some research has shown no 'at-risk' groups [17]. However, other research has found that younger [18] and early career [8] midwives are at greater risk of mental ill-health and poor wellbeing. There have also been mixed results about the effects of the type of care model midwives provide (e.g., continuity of care [CoC] vs. more standard shift-based care) on midwives' wellbeing [17,19,20]. Further research is therefore required to clarify which midwives are most "at risk" (e.g., work location, working pattern, on-call availability). To underpin the stress audit, it is necessary to consider appropriate theories and models. Predominantly, we draw from transactional stress theory [11] which considers how an individual transacts with the situations they find themselves in, making appraisals and endeavoring to cope with the stressors encountered and emotions that arise. However, we also consider further models that account for the important role of contextual factors such as work environment and/or culture (e.g., transdisciplinary model of stress [21]). Underpinned by these theories, this study aimed to conduct a stress audit with UK midwives to identify which stressors are having the most negative impact (i.e., on mental health, performance, intention to leave), understand why this impact is occurring (i.e., via appraisals and/or coping), and explore which groups are most "at risk" of deleterious outcomes (e.g., on-call). Given the exploratory nature and participatory approach of a stress audit [7], it was not deemed appropriate to test specific hypotheses.

2. Methods

A convergent mixed-methods design was used. A mixed-methods design approaches the complex picture of work stress by interweaving quantitative and qualitative data to meaningfully answer research questions with sufficient depth and breadth [22]. In a convergent design, quantitative and qualitative data are collected and analyzed independently in a similar timeframe, before being integrated [23]. Thus, both methods are prioritized equally. Areas of convergence, divergence, and explanation are then explored between the datasets [24].

2.1. Quantitative Component

2.1.1. Participants

Midwives employed by one Hospital NHS Foundation Trust (i.e., a public organisation that provides health services for one geographical area) and who could adequately understand written English were recruited. The Trust covers one large city and surrounding rural areas in the South-West of England and the Midwifery Department at the time of data collection provided both acute and community care. Seventy-one midwives (M_{age} = 39 years; SD = 11) participated in the survey, which represented ~40 % of the Trust's midwife community (n = 197). Their characteristics can be found in Supplementary Material (Table 1).

2.1.2. Procedure

Following institutional ethical approval, midwives were recruited. The survey was piloted with three research midwives. After minor revisions, the survey was distributed to midwives in paper-format or online via JISC online survey between 17th May and 3rd August 2021. All participants were informed of their ethical rights (e.g., voluntary participation, right to withdraw) and provided written informed consent before completing the survey.

2.1.3. Measures

Stressors. The Health and Safety Executive Management Standards Indicator Tool (HSE-MS IT; [25]) assesses stressors that, if not properly managed, are associated with poorer health and lower productivity [26]. Thirty two of the 35 items were used in this study to assess six stressors: (1) Demands (e.g., I have unachievable deadlines); (2) Control (e.g., I can decide when to take a break); (3) Support (e.g., If work gets difficult, my colleagues will help me); (4) Relationships (e.g., There is friction or anger between colleagues); (5) Role (e.g., I am clear what is expected of me at work); and (6) Change (e.g., Staff are always consulted about change at work). All items were rated on a 5-point Likert scale anchored between 1 *(strongly disagree)* and 5 *(strongly agree)*. Scores for items relating to each stressor (or subscale) were summed, with higher scores reflecting better standards and thus lower work-related stress. The HSE-MS IT's validity has been shown previously [27] and most subscales displayed acceptable reliability via Cronbach alphas (i.e., Demands =.80, Control =.84, Manager support =.86, Peer support =.80, Relationships =.62, Role =.77, Change =.76).

Appraisals. Two self-report items from the Cognitive Appraisal Ratio were used to assess evaluations of situational demands and personal coping resources [28]. Demand evaluations were assessed by asking 'How demanding do you generally find working as a midwife?', while resource evaluations were assessed by asking 'How able are you to cope with the demands of being a midwife?' Both items were rated on a 6-point Likert scale anchored between 1 (*not at all*) and 6 (*extremely*). A score was calculated by subtracting demands from resources, with zero and a positive score reflecting a challenge appraisal (i.e., resources match or exceed demands), and a negative score indicating a threat appraisal (i.e., demands exceed resources). This measure is commonly used to assess stress appraisals [29].

Coping. Coping was measured using 14 items from the Brief COPE, which is an abbreviated version of the COPE (Coping Orientation to

Table 1
Results of independent *t*-tests to examine differences in outcomes and stress- and coping-related variables for work and demographic characteristics.

Outcome	Work/Demographic Characteristics	*t*	*df*	*p*	*d*
Depression	Age	0.91	62	.365	0.23
	Band	-0.44	66	.661	-0.11
	Experience	-0.17	66	.863	-0.04
	Location	0.12	66	.903	0.03
	Previous support	1.14	67	.257	0.28
	Caring Responsibilities	0.18	67	.860	0.04
	Work Capacity	0.86	67	.395	0.21
	Night shift availability	-0.52	66	.607	-0.13
	On-call availability	-1.97	66	.053	-0.49
Anxiety	Age	-0.85	62	.398	-0.22
	Band	-0.07	66	.942	-0.02
	Experience	0.58	66	.954	0.14
	Location	-0.39	66	.702	-0.10
	Previous support	2.72	67	.008**	0.66
	Caring Responsibilities	0.14	67	.891	0.03
	Work Capacity	0.20	67	.845	0.05
	Night shift availability	-0.50	66	.619	-0.12
	On-call availability	-0.97	66	.335	-0.24
Individual Performance	Age	0.45	62	.667	0.11
	Band	0.60	66	.552	0.15
	Experience	0.20	67	.839	0.05
	Location	0.58	66	.565	0.14
	Previous support	-1.18	67	.241	-0.29
	Caring Responsibilities	1.18	67	.241	0.29
	Work Capacity	-0.40	67	.690	-0.10
	Night shift availability	-1.08	66	.286	-0.27
	On-call availability	-1.76	66	.083	-0.43
Intention to Leave	Age	-2.96	62	.004**	-0.75
	Band	-0.58	66	.563	-0.15
	Experience	-2.72	66	.008**	-0.67
	Location	-0.82	66	.414	-0.20
	Previous support	1.98	67	.052	0.48
	Caring Responsibilities	0.05	67	.961	0.01
	Work Capacity	-0.12	67	.905	-0.03
	Night shift availability	-0.75	66	.455	-0.18
	On-call availability	-1.34	66	.186	-0.33
Stress- and Coping-related Variables	**Work/Demographic Characteristics**				
HSE Demands	Age	0.85	61	.400	0.21
	Band	0.51	63	.611	0.30
	Experience	1.86	63	.067	0.47
	Location	0.40	64	.692	0.10
	Previous support	-1.21	64	.231	-0.30
	Caring Responsibilities	1.42	64	.162	0.36
	Work Capacity	-0.27	64	.782	-0.07
	Night shift availability	0.90	63	.371	0.23
	On-call availability	-0.34	63	.734	-0.09
HSE Control	Age	-0.25	63	.805	-0.06
	Band	-2.72	66	.008**	-0.67
	Experience	-1.49	66	.140	-0.36
	Location	-1.09	66	.278	-0.27
	Previous support	0.25	67	.806	0.06
	Caring Responsibilities	-1.45	67	.151	-0.35
	Work Capacity	-0.55	67	.583	-0.13
	Night shift availability	-4.87	66	.000***	-1.20
	On-call availability	-0.55	66	.585	-0.14
HSE Manager Support	Age	-1.16	62	.249	-0.29
	Band	-2.10	65	.040*	-0.52
	Experience	-0.66	65	.511	-0.16
	Location	0.54	65	.591	0.13
	Previous support	-0.73	66	.468	-0.18
	Caring Responsibilities	0.62	66	.537	0.15
	Work Capacity	0.24	66	.812	0.06
	Night shift availability	-3.80	65	.000***	-0.94
	On-call availability	0.93	65	.355	0.23
HSE Peer Support	Age	0.06	64	.952	0.02
	Band	0.37	67	.716	0.09
	Experience	0.38	67	.708	0.09
	Location	-0.08	67	.936	-0.02
	Previous support	-2.76	68	.007**	-0.67
	Caring Responsibilities	1.21	68	.232	0.29
	Work Capacity	-0.13	68	.998	-0.03
	Night shift availability	0.50	67	.617	0.12
	On-call availability	-0.59	67	.555	-0.14
HSE Relationships	Age	0.82	63	.413	0.21
	Band	0.25	66	.802	0.06
	Experience	1.62	66	.110	0.40
	Location	-0.96	67	.341	-0.23
	Previous support	-1.56	67	.123	-0.38
	Caring Responsibilities	0.12	67	.907	0.03
	Work Capacity	-0.37	67	.712	-0.09
	Night shift availability	-0.13	66	.893	-0.03
	On-call availability	0.14	66	.158	0.03
HSE Role	Age	-1.30	63	.199	-0.39
	Band	0.03	66	.929	0.01
	Experience	-1.06	66	.292	-0.26
	Location	-0.37	67	.712	-0.09
	Previous support	0.30	67	.763	0.07
	Caring Responsibilities	0.86	67	.391	0.07
	Work Capacity	0.19	67	.850	0.05
	Night shift availability	-0.88	66	.383	-0.22
	On-call availability	0.11	66	.910	0.03
HSE Change	Age	-1.08	64	.283	-0.27
	Band	-4.31	67	.000***	-1.05
	Experience	-1.34	67	.186	-0.33
	Location	0.19	67	.847	0.05
	Previous support	-1.18	68	.242	-0.29
	Caring Responsibilities	-1.16	68	.249	-0.29
	Work Capacity	0.78	68	.440	0.19
	Night shift availability	-3.62	67	.000***	-0.88
	On-call availability	0.29	67	.772	0.07
Stress appraisal	Age	1.72	63	.091	0.43
	Band	-0.61	67	.543	-0.15
	Experience	0.70	67	.484	0.17
	Location	-0.52	67	.603	-0.50
	Previous support	-2.06	68	.043*	-0.37
	Caring Responsibilities	-1.54	68	.129	-0.03
	Work Capacity	-0.12	68	.903	-0.18
	Night shift availability	-0.72	67	.474	0.18
	On-call availability	0.73	67	.478	0.09
Problem-focused coping	Age	0.36	60	.720	-0.31
	Band	-1.22	64	.227	-0.03
	Experience	-0.11	64	.911	-0.43
	Location	-1.70	64	.094	-0.00
	Previous support	-0.01	65	.995	-0.37
	Caring Responsibilities	-1.51	65	.142	0.17
	Work Capacity	0.67	65	.503	-0.16
	Night shift availability	-0.64	64	.523	0.04
	On-call availability	0.15	64	.883	0.26
Emotion-focused coping	Age	1.02	61	.313	0.26
	Band	-0.47	65	.641	-0.12
	Experience	0.65	65	.516	0.16
	Location	-1.34	65	.183	-0.33
	Previous support	-0.06	66	.951	-0.01
	Caring Responsibilities	0.31	66	.760	0.08
	Work Capacity	1.85	64	.067	0.46
	Night shift availability	0.11	66	.910	0.03
	On-call availability	0.61	65	.541	0.15
Avoidance coping	Age	0.75	62	.468	0.19
	Band	-0.80	66	.427	-0.20
	Experience	1.28	66	.206	0.32
	Location	-1.71	66	.092	-0.42
	Previous support	-0.02	67	.983	-0.00
	Caring Responsibilities	0.21	67	.837	0.05
	Work Capacity	-0.23	67	.821	-0.06
	Night shift availability	-0.11	66	.910	-0.03
	On-call availability	-0.36	66	.722	-0.09

* p<.05.
** p <.01.
*** p <.001.

Problems Experienced) Inventory [30]. Participants rated the extent to which they used various coping strategies over the past month on a 4-point Likert scale ranging from 1 (*not at all*) to 4 (*a lot*). Six strategies were categorized as 'problem-focused' (e.g., active coping); six were

categorized as 'emotion-focused' (i.e., seeking social support); and two were categorized as 'avoidance' (i.e., self-distraction). The scores for items from each subscale were summed, with higher scores indicating greater utilisation of the coping strategy. The Brief COPE has been validated [31], and Cronbach's alpha in this study was.51 for avoidance, .84 for problem-focused, and.68 for emotion-focused coping.

Depression and Anxiety. The Depression, Anxiety, and Stress Scale (DASS-21, [32]) was used to assess depression (seven items; e.g., "I felt that life was meaningless") and anxiety (seven items; e.g., "I was aware of dryness in my mouth") over the past month. All items were rated on a 4-point Likert scale ranging from 0 (*not at all*) to 3 (*a lot*). The scores for items from each subscale were summed, with higher scores reflecting greater depression or anxiety. The DASS-21 is valid [33] and Cronbach's alphas were.90 for depression and.86 for anxiety.

Performance satisfaction. Participants rated their satisfaction with their work performance via one item (i.e., 'Over the past month, how satisfied have you been with your individual performance at work?') on an 8-point Likert scale ranging from 0 (*not at all)* to 7 (*extremely satisfied*), with higher scores reflecting greater performance satisfaction.

Intention to leave. Participants indicated their intention to leave via one item (i.e., 'I want to leave midwifery') on a 5-point Likert scale ranging from 0 (*strongly disagree*) to 5 (*strongly agree*), such that higher scores reflected greater intention to leave.

Work and demographic variables. Work (i.e., band level, length of time as a midwife, primary work location, working hours, night shift and on call availability) and demographic (i.e., sex, age, ethnicity, caring responsibilities) data were collected.

2.1.4. Data analysis

Quantitative data was analyzed using SPSS version 26. First, means, standard deviations, and intercorrelations were calculated for all variables. Next, independent *t*-tests examined differences in stress and coping-related variables (i.e., stressors, appraisals, coping) and outcomes (i.e., depression and anxiety, performance satisfaction, intention to leave) based on work and demographic variables (i.e., age, band level, experience, access to previous support, and availability for night shifts). Subsequently, bivariate linear regression analyses (model 1) investigated the relationships between stress and coping-related variables and outcomes. Finally, forced entry multiple linear regression analyses (model 2) examined if the relationships between stress and coping-related variables and outcomes remained while controlling for key covariates identified from *t*-test results (i.e., age, band level, experience, access to previous support, and availability for night shifts). Work and demographic variables were coded dichotomously to simplify analyses and aid interpretation, including age (i.e., $\leq$ 49 years = 0, $\geq$ 50 years = 1), band level (i.e., Band 5/6 = 0, Band 7/8 = 1), experience (i.e., $\leq$ 9 years = 0, $\geq$ 10 years = 1), accessed previous occupational support (i.e., Yes = 0, No= 1), and night shift/on-call availability (i.e., Yes = 0, No = 1). For all analyses, alpha was set at $p < .05$.

2.2. Qualitative component

2.2.1. Participants

Ten female midwives (M_{age} = 42 years, *SD* = 10) took part in the qualitative component. Their characteristics can be found in Supplementary Material (Table 2).

2.2.2. Procedure

Midwives who agreed in the survey to be contacted for further research were invited to an interview. Before being interviewed, participants provided written informed consent. All interviews were conducted by the corresponding author online (e.g., via Zoom) between 24th June and 12th July 2021, and were digitally recorded in their entirety and transcribed verbatim. The interviewer had no prior relationship with the participants and was not an employee of the NHS Trust. The interviews lasted an average of 60 minutes (*SD* = 6 minutes) and all participants received a £10 gift card.

Table 2
Bivariate and multiple linear regression models examining if stress and coping-related variables predicted depression before (Model 1), and after adjusting for age, band level, experience, previous support, and night shift working (Model 2).

	R^2	*B*	*SE*	β	*t*	95 % CI
Model 1						
HSE demands	0.00	0.20	1.68	0.02	0.12	-3.16 to 3.57
HSE control	0.00	-0.20	1.42	-0.02	-0.14	-3.03 to 2.63
HSE manager support	0.47	-2.30	1.29	-0.22	-1.78	-4.88 to 0.28
HSE peer support	0.11	-6.05	2.10	-0.33*	-2.88	-10.25 to −1.85
HSE relationships	0.17	-6.08	1.65	-0.41*	-3.69	-9.37 to −2.79
HSE role	0.32	-3.34	2.24	-0.18	-1.49	-7.82 to 1.14
HSE change	0.12	-1.14	1.26	-0.11	-0.90	-3.65 to 1.38
Stress appraisal	0.28	-1.04	0.75	-0.17	-1.39	-2.54 to 0.46
Problem-focused coping	0.00	0.57	1.66	0.04	0.35	-2.75 to 3.89
Emotion-focused coping	0.00	-0.88	2.07	-0.05	-0.43	-5.01 to 3.24
Avoidance-focused coping	0.03	1.95	1.30	0.18	1.50	-0.65 to 4.54
Age	0.00	0.03	0.10	0.03	0.26	-0.18 to 0.23
Band level	0.00	1.13	2.57	0.05	0.44	-3.99 to 6.25
Experience	0.00	0.37	2.15	0.02	0.17	-3.92 to 4.66
Location	0.00	-0.27	2.19	-0.02	-0.12	-4.64 to 4.10
Previous support	0.19	-2.41	2.11	-0.14	-1.14	-6.62 to 1.80
Caring responsibilities	0.00	-0.39	2.20	-0.02	-0.18	-4.79 to 4.01
Work capacity	0.11	-1.80	2.11	-0.10	-0.86	-6.01 to 2.40
Night shift working	0.00	1.18	2.29	0.06	0.52	-3.39 to 5.76
On-call availability	0.55	7.22	3.67	0.24	1.97	-0.10 to 14.54
Model 2						
HSE peer support	0.18	-6.30	2.51	-0.33**	-2.52	-11.32 to −1.28
Age		-5.19	3.05	-0.24	-1.70	-11.31 to 0.93
Band level		2.08	2.85	0.10	0.73	-3.63 to 7.79
Experience		1.50	2.58	0.09	0.58	-3.67 to 6.67
Previous support		-0.81	2.46	-0.05	-0.33	-5.74 to 4.13
Night shift working		1.85	2.55	0.10	0.73	-3.26 to 6.97
HSE relationships	0.25	-6.68	1.90	-0.44*	-3.52	-10.48 to −2.87
Age		-4.58	2.88	-0.21	-1.59	-10.36 to 1.20
Band level		1.10	2.73	0.05	0.40	-4.38 to 6.58
Experience		-0.80	2.48	-0.05	-0.32	-5.77 to 4.18
Previous support		-1.64	2.24	-0.10	-0.73	-6.13 to 2.85
Night shift working		2.42	2.42	0.13	1.00	-2.43 to 7.26

* $p < .05$.
** $p < .01$.

2.2.3. Interview guide

The semi-structured interviews incorporated questions that explored, in-depth, the lived stress experiences of midwives. After building rapport, the interview progressed to topics in line with the aim of this study, including pressures at work that had a potentially negative impact on the midwives (e.g., Can you tell me about a typical day at work and what creates pressure for you?) and why they felt this impact occurred (e.g., "Why do you feel this pressure had an impact on you? What impact did this place on you and how did you react?). The interview guide is available from the corresponding author upon request.

2.2.4. Data analysis

The qualitative data was analyzed using reflexive thematic analysis [34,35]. First, the lead author read and re-read all transcripts to immerse themselves with the data, made some initial notes and next, generated multiple inclusive codes on the transcripts to identify important features of the data that related to the study aim. In line with reflexive thematic

analysis, coding was open and organic and did not require the use of a codebook or coding frame [36]. Authors then worked together to review all themes, asking questions such as "Can these themes be collapsed into one?". Themes were then defined, named, and written-up with illustrative quotes and a more deductive approach was adopted, utilizing prior literature and conceptualizations to name themes. After analysing the datasets separately, qualitative data were compared with the quantitative data to validate (convergence), broaden the explanatory model (divergence, contradiction), or explain (explanatory; [24]).

2.2.5. Rigor and trustworthiness

Our approach to rigor and quality involved careful consideration of quality markers in qualitative research [37] (e.g., worthy topic, meaningful coherence).

3. Results

3.1. Quantitative findings

3.1.1. Descriptive statistics

Means, standard deviations, and intercorrelations for all variables can be found in Supplementary Material (Table 3).

3.1.2. Independent t-test analyses

Table 1 displays the results of independent *t*-tests that examined differences in outcomes and stress- and coping-related variables for given work and demographic characteristics. Older midwives (≥ 50 years) expressed greater intention to leave ($M = 3.69$, $SD = 1.38$) than younger midwives (≤ 49 years; $M = 2.53$, $SD = 1.24$). More experienced midwives (≥ 10 years) also reported greater intention to leave ($M = 3.24$, $SD = 1.29$) than less experienced midwives (≤ 9 years; $M = 2.35$, $SD = 1.20$). Lower band (5/6) compared to higher band midwives (7/8) reported more stressors associated with control ($M = 2.75$, $SD = 0.78$ vs. $M = 3.32$, $SD = 0.64$), change ($M = 2.54$, $SD = 0.74$ vs. $M = 3.54$, $SD = 0.76$), and manager support ($M = 3.05$, $SD = 0.83$ vs. $M = 3.54$, $SD = 0.70$).

Compared to midwives who had not previously accessed support, midwives who had accessed support reported greater anxiety ($M = 12.40$, $SD = 7.02$ vs. $M = 7.64$, $SD = 7.41$), more stressors associated with peer support ($M = 3.34$, $SD = 0.43$ vs. $M = 3.64$, $SD = 0.47$) and threat appraisals ($M = 1.16$, $SD = 1.44$ vs. $M = -0.49$, $SD = 1.30$). Compared to midwives who did not work night shifts, midwives who worked night shifts reported more stressors related to control ($M = 3.49$, $SD = 0.72$ vs. $M = 2.65$ $SD = 0.63$), manager support ($M = 3.69$, $SD = 0.82$ vs. $M = 2.93$, $SD = 0.72$), and change ($M = 3.27$, $SD = 0.85$ vs. $M = 2.56$, $SD = 0.72$).

No other differences were significant. Given these results, age, band, experience, previous support, and nightshift working were entered as covariates in subsequent analyses.

3.1.3. Bivariate and multiple linear regression analyses

Peer support and relationship stressors significantly predicted depression (model 1, Table 2). Midwives reporting greater stressors linked to peer support and relationships reported higher depression. After controlling for covariates, both associations remained significant (model 2, Table 2).

Demand, peer support, and role stressors as well as stress appraisals significantly predicted anxiety (model 1, Table 3). Midwives reporting greater stressors linked to demands, peer support, and role, and who appraised their job as a threat, reported higher anxiety. After controlling for covariates, associations remained significant between role stressors and stress appraisals and anxiety (model 2, Table 3).

Control, relationship, and role stressors as well as stress appraisals significantly predicted performance satisfaction (model 1, Table 4). Midwives reporting less stressors linked to control, relationships, and role, and who appraised their job as a challenge, reported greater performance satisfaction. After controlling for covariates, associations remained significant between control and role stressors and performance satisfaction (model 2, Table 4).

Demand, control, manager support, relationship, and change stressors as well as stress appraisals significantly predicted intention to leave (model 1, Table 5). Midwives reporting more stressors linked to demands, control, manager support, relationships, and change, and who

Table 3
Bivariate and multiple linear regression models examining if stress and coping-related variables predicted anxiety before (Model 1), and after adjusting for age, band level, experience, previous support, and night shift working (Model 2).

	R^2	*B*	*SE*	*β*	*t*	*95 % CI*
			Model 1			
HSE demands	0.61	-2.95	1.46	-0.25 *	-2.03	-5.86 to −0.04
HSE control	0.00	-0.06	1.22	-0.01	-0.05	-2.50 to 2.38
HSE manager support	0.01	-0.85	1.14	-0.09	-0.75	-3.11 to 1.42
HSE peer support	0.87	-4.68	1.85	-0.30 *	-2.53	-8.37 to −0.99
HSE relationships	0.44	-2.72	1.57	-0.21	-1.74	-5.86 to 0.41
HSE role	0.68	-4.32	1.96	-0.26 *	-2.20	-8.24 to −0.40
HSE change	0.01	-0.85	1.09	-0.09	-0.78	-3.03 to 1.34
Stress appraisal	0.19	-2.39	0.59	-0.44 *	-4.02	-3.57 to −1.20
Problem-focused coping	0.00	0.70	1.45	0.06	0.48	-2.20 to 3.60
Emotion-focused coping	0.00	0.07	1.80	0.01	0.04	-3.52 to 3.66
Avoidance-focused coping	0.05	2.09	1.11	0.23	1.89	-0.12 to 4.30
Age	0.02	0.10	0.09	0.14	1.08	-0.08 to 0.28
Band level	0.00	0.16	2.18	0.01	0.07	-4.19 to 4.51
Experience	0.00	-0.11	1.86	0.01	-0.06	-3.82 to 3.61
Location	0.00	0.75	1.95	0.05	0.38	-3.14 to 4.64
Previous support	0.10	-4.76	1.75	-0.32 *	-2.72	-8.26 to −1.27
Caring responsibilities	0.00	-0.26	1.89	-0.02	-0.14	-4.04 to 3.52
Work capacity	0.00	-0.36	1.84	-0.02	-0.20	-4.03 to 3.30
Night shift working	0.00	0.99	1.99	0.06	0.50	-2.97 to 4.96
On-call availability	0.01	3.08	3.17	0.12	0.97	-3.25 to 9.41
			Model 2			
HSE demands	0.21	-2.67	1.56	-0.22	-1.71	-5.80 to 0.46
Age		0.09	0.13	0.12	0.68	-0.17 to 0.35
Band level		0.83	2.50	0.04	0.33	-4.20 to 5.85
Experience		-3.11	2.77	-0.20	-1.12	-8.68 to 2.45
Previous support		-5.72	2.09	-0.37 *	-2.74	-9.91 to −1.53
Night shift working		1.59	2.34	0.09	0.68	-3.12 to 6.29
HSE peer support	0.20	-3.29	2.15	-0.20	-1.53	-7.61 to 1.02
Age		0.08	0.12	0.11	0.66	-0.17 to 0.33
Band level		0.83	2.32	0.05	0.36	-3.84 to 5.49
Experience		-2.47	2.62	-0.16	-0.94	-7.72 to 2.78
Previous support		-5.02	2.10	-0.33 *	-2.39	-9.24 to −0.81
Night shift working		1.81	2.19	0.11	0.82	-2.59 to 6.21
HSE role	0.29	-6.08	2.08	-0.35 *	-2.92	-10.25 to −1.90
Age		0.08	0.12	0.11	0.68	-0.16 to 0.32
Band level		0.64	2.26	0.03	0.29	-3.89 to 5.18
Experience		-2.62	2.51	-0.17	-1.04	-7.65 to 2.41
Previous support		-6.70	1.92	-0.43 *	-3.49	-10.55 to −2.85
Night shift working		2.92	2.16	0.17	1.35	-1.41 to 7.25
Stress appraisal	0.30	-2.04	0.65	-0.38 *	-3.15	-3.34 to −0.74
Age		0.03	0.12	0.04	0.23	-0.21 to 0.26
Band level		1.34	2.17	0.07	0.62	-3.02 to 5.69
Experience		-1.97	2.47	-0.13	-0.80	-6.92 to 2.97
Previous support		-4.44	1.93	-0.29 *	-2.30	-8.32 to −0.57
Night shift working		2.10	2.06	0.13	1.02	-2.04 to 6.23

* $p < .05$.

Table 4
Bivariate and multiple linear regression models examining if stress and coping-related variables predicted performance satisfaction before (Model 1), and after adjusting for age, band level, experience, previous support, and night shift working (Model 2).

	R^2	*B*	*SE*	*β*	*t*	*95 % CI*
Model 1						
HSE demands	0.00	0.10	0.21	0.06	0.47	-0.33 to 0.53
HSE control	0.08	0.42	0.17	0.29 *	2.43	0.08 to 0.77
HSE manager support	0.01	0.10	0.17	0.07	0.59	-0.24 to 0.44
HSE peer support	0.05	0.50	0.28	0.22	1.81	-0.05 to 1.05
HSE relationships	0.06	0.47	0.23	0.24 *	2.04	0.01 to 0.92
HSE role	0.06	0.60	0.29	0.25 *	2.09	0.03 to 1.17
HSE change	0.05	0.29	0.16	0.22	1.85	-0.02 to 0.61
Stress appraisal	0.06	0.20	0.09	0.25 *	2.10	0.01 to 0.38
Problem-focused coping	0.04	-0.33	0.21	-0.19	-1.57	-0.75 to 0.09
Emotion-focused coping	0.01	-0.23	0.26	-0.11	-0.88	-0.76 to 0.29
Avoidance-focused coping	0.01	-0.13	0.17	-0.09	-0.76	-0.46 to 0.21
Age	0.00	0.00	0.01	-0.03	-0.24	-0.03 to 0.02
Band Level	0.01	-0.19	0.32	-0.07	-0.60	-0.83 to 0.45
Experience	0.00	-0.06	0.27	-0.03	-0.20	-0.59 to 0.48
Location	0.01	-0.06	0.27	-0.03	-0.20	-0.59 to 0.48
Previous support	0.02	0.32	0.27	0.14	1.18	-0.22 to 0.85
Caring responsibilities	0.02	-0.33	0.28	-0.14	-1.18	-0.87 to 0.22
Work capacity	0.00	0.11	0.27	0.05	0.40	-0.43 to 0.65
Night shift working	0.02	0.31	0.29	0.13	1.08	-0.27 to 0.90
On-call availability	0.05	0.83	0.47	0.21	1.76	-0.11 to 1.77
Model 2						
HSE control	0.19	0.55	0.21	0.37 *	2.66	0.01 to 0.14
Age		0.01	0.02	0.09	0.59	0.56 to −0.02
Band level		-0.51	0.33	-0.20	-1.52	0.13 to −1.17
Experience		-0.39	0.36	-0.18	-1.08	0.28 to −1.10
Previous support		0.37	0.28	0.17	1.32	0.19 to −0.19
Night shift working		0.05	0.34	0.02	0.15	0.88 to −0.63
HSE relationships	0.15	0.44	0.26	0.23	1.72	0.09 to −0.07
Age		0.02	0.02	0.17	1.01	0.32 to −0.07
Band level		-0.43	0.34	-0.16	-1.24	0.22 to −1.11
Experience		-0.40	0.37	-0.18	-1.08	0.29 to −1.13
Previous support		0.23	0.29	0.11	0.79	0.44 to −0.36
Night shift working		0.50	0.32	0.22	1.57	0.12 to −0.14
HSE Role	0.47	0.85	0.30	0.35 *	2.85	0.01 to 0.25
Age		0.01	0.02	0.10	0.66	0.51 to −0.02
Band level		-0.43	0.33	-0.17	-1.32	0.19 to −1.09
Experience		-0.40	0.35	-0.19	-1.13	0.26 to −1.10
Previous support		0.40	0.28	0.18	1.44	0.16 to −0.16
Night shift working		0.38	0.31	0.16	1.22	0.23 to −0.24
Stress appraisal	0.13	0.16	0.10	0.22	1.64	0.11 to −0.04
Age		0.02	0.02	0.16	0.97	0.34 to −0.02
Band level		-0.39	0.34	-0.15	-1.17	0.25 to −1.07
Experience		-0.38	0.37	-0.18	-1.04	0.30 to −1.12
Previous support		0.25	0.30	0.12	0.83	0.41 to −0.35
Night shift working		0.42	0.32	0.18	1.32	0.19 to −0.22

* $p < .05$.

appraised their job as a threat, reported higher intention to leave. After controlling for covariates, associations remained significant between demand, control, manager support, and change stressors and stress appraisals and intention to leave (model 2, Table 5).

4. Qualitative findings

Twelve sub-themes and three overarching themes were generated (see Fig. 1).

4.1. Organisational pressures exacerbated by unexpected changes

This theme comprised five sub-themes which described the organisational pressures that midwives faced and how they could be exacerbated by unexpected changes. The sub-themes were: staff shortages, work overload, change and communication, COVID-19, and role-specific stressors. All midwives raised staff shortages as a key workplace stressor, which negatively impacted how they performed:

> *They're cramming the women in too much and I don't feel like they're often getting the care and the time that they need …it's just really unsettling. You also get really paranoid that you've forgotten, or you've missed something. That's really terrifying because it's a safety thing then. (Participant 5)*

The COVID-19 pandemic intensified staff shortages, with many midwives off work sick. Likewise, a CoC model of care being introduced in the Trust added to these pressures. Midwives who participated in this model of care were committed to providing continuity of care for some women and no longer available to assist with standard shift care workloads, adding to the perception of staff depletion.

While staff depletion increased workload, work overload (e.g., overrun wards) also existed in the absence of staff shortages. Not having sufficient breaks was a commonly reported pressure, with midwives describing how they were often 'pulled' into other tasks, leaving no time for important administration. Considerable changes had recently occurred for midwives, and particularly community midwives, including closing community units for births; shift pattern alterations; changes to the on-call system; introduction of the CoC model; and COVID-19 restrictions. Midwives noted not being satisfied with the communication of these changes (just 'lip service'), with many feeling they had no input.

COVID-19 placed additional demands such as donning and doffing of

Table 5
Bivariate and multiple linear regression models examining if stress and coping-related variables predicted intention to leave before (Model 1), and after adjusting for age, band level, experience, previous support, and night shift working (Model 2).

	R^2	*B*	*SE*	*β*	*t*	*95 % CI*
Model 1						
HSE demands	0.07	-0.58	0.26	-0.27*	-2.24	-1.09 to −0.06
HSE control	0.06	-0.45	0.22	-0.25*	-2.05	-0.88 to −0.01
HSE manager support	0.11	-0.55	0.20	-0.33*	-2.77	-0.94 to −0.15
HSE peer support	0.04	-0.60	0.35	-0.21	-1.73	-1.29 to 0.09
HSE relationships	0.08	-0.68	0.29	-0.28*	-2.37	-1.25 to −0.11
HSE role	0.05	-0.64	0.36	-0.22	-1.79	-1.35 to 0.07
HSE change	0.07	-0.49	0.19	-0.30*	-2.53	-0.87 to −0.10
Stress appraisal	0.17	-0.41	0.11	-0.42*	-3.73	-0.63 to −0.19
Problem-focused coping	0.01	-0.14	0.26	-0.07	-0.54	-0.66 to 0.38
Emotion-focused coping	0.03	-0.46	0.32	-0.18	-1.44	-1.09 to 0.18
Avoidance-focused coping	0.00	-0.08	0.21	-0.05	-0.37	-0.49 to 0.34
Age	0.13	0.05	0.02	0.41*	3.53	0.02 to 0.08
Band Level	0.01	0.23	0.40	0.07	0.58	-0.56 to 1.02
Experience	0.10	0.88	0.32	0.32*	2.72	0.24 to 1.53
Location	0.01	0.29	0.35	0.10	0.82	-0.41 to 0.99
Previous support	0.06	-0.65	0.33	-0.24	-1.98	-1.31 to 0.01
Caring responsibilities	0.00	-0.02	0.35	-0.01	-0.05	-0.71 to 0.68
Work capacity	0.00	0.04	0.34	0.02	0.12	-0.63 to 0.71
Night shift working	0.01	0.27	0.36	0.09	0.75	-0.45 to 0.99
On-call availability	0.03	0.79	0.59	0.16	1.34	-0.39 to 1.97
Model 2						
HSE demands	0.22	-0.53	0.25	-0.26*	-2.13	0.04 to −1.03
Age		0.02	0.02	0.14	0.91	0.37 to −0.02
Band level		0.25	0.40	0.08	0.62	0.54 to −0.56
Experience		0.56	0.43	0.21	1.30	0.20 to −0.30
Previous support		-0.32	0.33	-0.12	-0.96	0.34 to −0.99
Night shift working		-0.03	0.38	-0.01	-0.07	0.94 to −0.79
HSE control	0.36	-0.82	0.23	-0.45*	-3.57	0.00 to −1.27
Age		0.03	0.02	0.21	1.50	0.14 to −0.01
Band level		0.48	0.37	0.15	1.29	0.20 to −0.27
Experience		0.59	0.40	0.22	1.49	0.14 to −0.21
Previous support		-0.35	0.31	-0.13	-1.12	0.27 to −0.97
Night shift working		0.55	0.38	0.18	1.44	0.16 to −0.22
HSE manager support	0.34	-0.66	0.21	-0.41*	-3.15	0.00 to −1.07
Age		0.03	0.02	0.26	1.68	0.10 to −0.01
Band level		0.38	0.37	0.12	1.02	0.31 to −0.37
Experience		0.36	0.42	0.14	0.86	0.39 to −0.48
Previous support		-0.18	0.32	-0.07	-0.56	0.58 to −0.82
Night shift working		0.48	0.39	0.16	1.22	0.23 to −0.31
HSE relationships	0.21	-0.33	0.31	-0.14	-1.08	0.29 to −0.96
Age		0.02	0.02	0.15	0.90	0.38 to −0.02
Band level		0.10	0.40	0.03	0.25	0.80 to −0.71
Experience		0.46	0.43	0.18	1.07	0.29 to −0.41
Previous support		-0.39	0.34	-0.15	-1.13	0.26 to −1.08
Night shift working		0.12	0.38	0.04	0.30	0.76 to −0.65
HSE change	0.35	-0.73	0.21	-0.46*	-3.47	0.00 to −1.15
Age		0.03	0.02	0.28	1.89	0.06 to 0.00
Band level		0.77	0.39	0.25	1.98	0.05 to −0.01
Experience		0.44	0.40	0.17	1.10	0.28 to −0.36
Previous support		-0.21	0.31	-0.08	-0.66	0.51 to −0.84
Night shift working		0.41	0.37	0.14	1.11	0.27 to −0.33
Stress appraisal	0.31	-0.33	0.11	-0.36*	-2.97	0.00 to −0.55
Age		0.02	0.02	0.14	0.94	0.35 to −0.02
Band level		0.30	0.37	0.10	0.80	0.43 to −0.45
Experience		0.59	0.41	0.22	1.44	0.16 to −0.23
Previous support		-0.12	0.33	-0.04	-0.35	0.73 to −0.78
Night shift working		0.04	0.36	0.01	0.11	0.92 to −0.68

* $p < .05$.

personal protective equipment, increased workload, COVID-19 fear, lack of knowledge, and women and their families' negative reactions to restrictions. Many reported stressors which were associated with their specific role. For instance, the unknown relating to the shift ahead when working on-call was deemed particularly taxing. Similarly, sleep disruptions due to night shifts were identified as a stressor that negatively impacted health (e.g., headaches). Stressors reported specifically by community midwives included: home or on-call births, working in an acute setting, dealing with organisational change (e.g., closure of birthing centres), and COVID-19 pressures (e.g., applying PPE). In addition, community midwives often felt unwelcome in acute settings:

> *Well, the drive there, I actually feel quite sick. …Probably sends my blood pressure up and I tend to feel a bit overwhelmed by it. …But I feel that the core staff in [Name of acute setting] probably don't really understand what we do. I feel that they think that we're a bit stupid… some of them, you just get an underlying feeling that, 'sighs', community midwives don't know what they're doing'. (Participant 7).*

Both higher and lower band midwives noted role-specific stressors. Band 7 s revealed that seniority increased work burden and they were often interrupted from managerial work to offer clinical assistance. Contrastingly, Band 5 s reported a lack of manager support.

4.1.1. Individualised Responses but Largely Debilitative Emotions

This theme consisted of two sub-themes: appraisal and emotions.

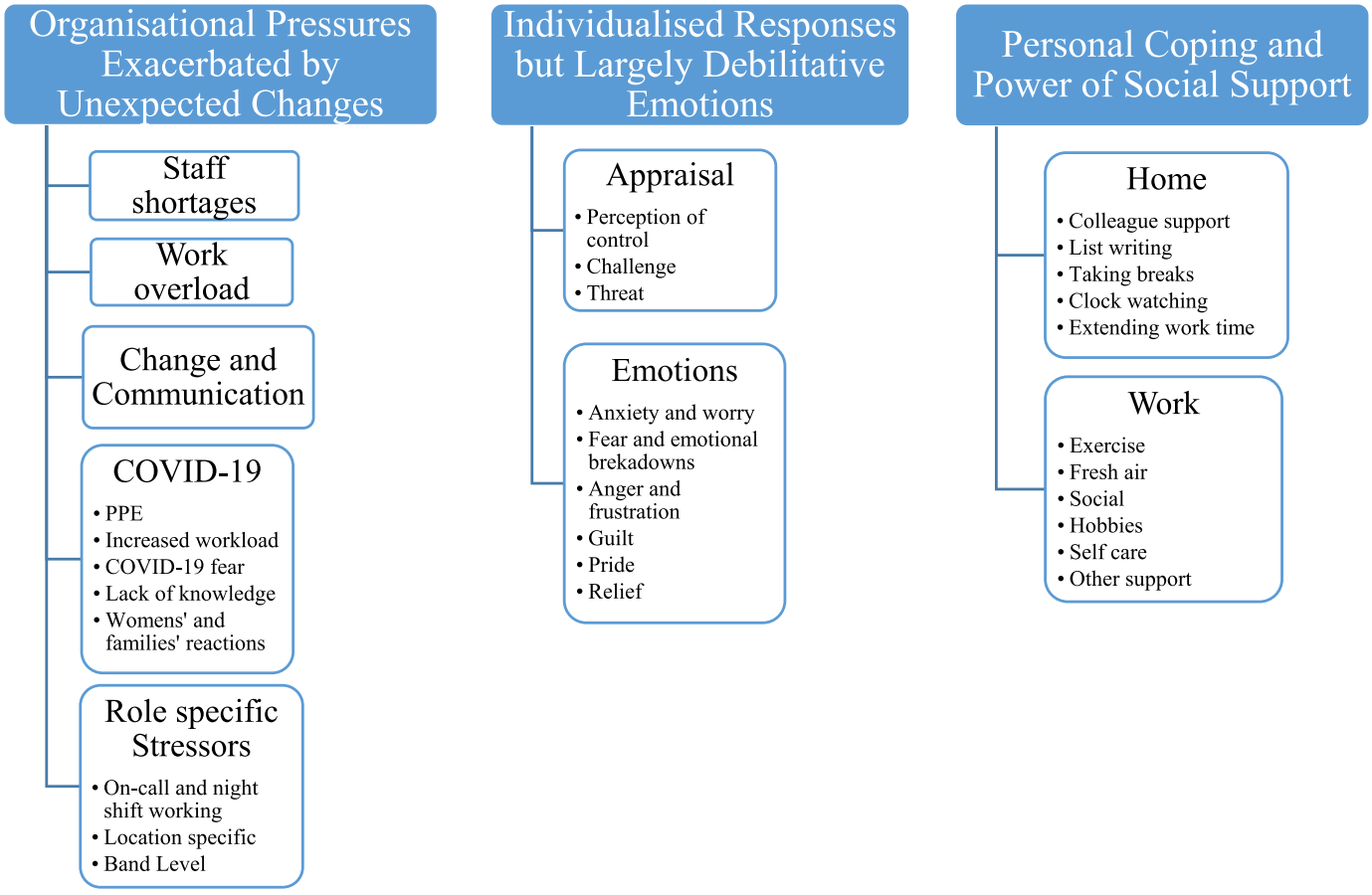

Fig. 1. Overarching themes and sub-themes.

Midwives discussed their appraisal of workplace demands in relation to control, noting they often felt a lack of control. However, some midwives also appraised work demands as a challenge, with one saying that you "rise up to the issues presented to you at work, remain strong, and know you will succeed". However, challenge appraisals were seen as circumstantial by one midwife:

> *I often see it as more as a challenge, unless I know that I'm on with all junior midwives. And then that [how the situation is viewed] can change. (Participant 8).*

Contrastingly, some midwives reported appraising workplace stressors as a threat, expressing that they felt overwhelmed and no longer able to cope with work demands.

The sub-theme of emotions comprised mostly negative emotions such as anxiety, worry, fear, anger, frustration, and guilt. Anxiety and worry were described as debilitating, unbearable, and often in the form of anticipatory anxiety, which was further heightened when, before their shift, midwives accessed a Facebook group used by midwife managers to recruit when they were short staffed. Fear and emotional breakdowns were also common, with midwives describing crying episodes and panic attacks:

> *I did sit in my car and just cried at the end of a particularly awful shift last week, which I've never done before. I just went out there and thought, what am I doing? Thinking I can't do this for another 20 years …the stresses are unbearable. (Participant 6).*

Midwives often reported experienced anger, frustration, and guilt, largely due to feeling they could not provide adequate patient care. While midwives mostly recalled negative emotions, a couple midwives discussed experiences of pride and relief. Specifically, one midwife spoke about experiencing pride in undertaking such an important job, whereas another discussed feeling relieved, particularly at the end of a shift when they were able to go home.

4.1.2. *Personal Coping and Power of Social Support*

This theme comprised two sub-themes: work and home coping strategies. At work, some midwives spoke about coping via list writing, taking breaks, clock watching, and extending working time. Others emphasized the power of social support from colleagues with midwives regularly talking, reflecting, venting, and seeking reassurance with colleagues, as well as encouraging each other to take breaks and hydrate. However, some midwives starting a new shift noted that they would keep away from colleagues finishing the previous shift to avoid hearing about the stress of that shift:

> *When I go in… I often don't talk to many people…because often the first thing you get approached is: 'Oh good luck tonight, it's a really bad shift'. (Participant 8).*

List writing involved the prioritization of tasks before and during shifts which helped midwives with their time management, and, in turn, could support the management of work demands. Midwives also discussed how they took breaks when possible, by finding a quiet place, taking a walk, or making a hot drink. Clock watching helped some midwives 'survive' a shift, and some explained how they often extended their shift to cope with work demands. Midwives also used strategies at home to cope with work stressors, including exercise, getting out in nature, and hobbies. Social (e.g., family) and formal (e.g., therapy) support were both used as well as self-care strategies (e.g., diary writing).

5. Discussion

High work stress in midwifery has been well documented [1,3]. However, there is a need to better understand midwives' full stress process (i.e., stressors, appraisals, and coping) so that optimal stress management support can be designed and implemented. To help achieve this, the present study involved a stress audit to: (1) identify which stressors most negatively impacted midwives' health, performance, and intention to leave, (2) understand why this impact occurred (e.g., appraisals), and (3) determine who is most 'at-risk'.

Taking aim one first, the stressor that had the most negative impact on midwives was work demands. Quantitative data revealed that experiencing more demands predicted mental ill-health (i.e., higher anxiety) and stronger intentions to leave. Qualitative findings converge with this result, with 'work overload' generated as a key theme. This is consistent with past research, with high workloads and inadequate staffing deemed key stressors linked to midwife attrition [8,9] burnout [2], and anxiety [38]. Additional factors identified in the present study which exacerbated work demands were specific job role pressures (e.g., community midwives being asked to work in an unfamiliar acute setting) and the COVID-19 pandemic. COVID-19 pressures on midwives have been well documented and better workforce planning (e.g., access to support) for such a crisis in the future has been recommended [39].

While demands and change were key stressors identified in both datasets (an area of convergence), there was divergence in relation to manager support. Quantitatively, poor manager support predicted greater intention to leave. However, evidence for this stressor qualitatively was mixed. On one hand, some midwives reported good manager support, but others, particularly more junior staff, noted a lack of support which has been linked to burnout [20]. Other areas of divergence included relationships and peer support, which were identified as key stressors quantitatively but were not as present in the qualitative data. To elaborate, quantitatively, poorer relationships and peer support were associated with higher depression; however, issues with conflict, bullying, and relationships were not raised as key stressors in the qualitative data despite past literature [38]. With regards to practice, staff shortages are not easily modifiable [40], but better communication of change and manager support could be tackled without delay and should be the focus of interventions.

Turning to aim two, the results help to better understand why the stressors encountered by midwives can impact key outcomes (e.g., mental health). A key explanatory mechanism was stress appraisal, which was the strongest predictor of anxiety and intention to leave. Specifically, midwives who appraised their job as a threat (i.e., work demands exceed personal coping resources), reported higher anxiety and greater intent to leave. This was convergent with the qualitative data, with midwives expressing that they felt overwhelmed and unable to cope with work demands. While appraisals are a fundamental component of transactional stress theory [15], to our knowledge, this is the first study to illuminate their role in midwifery. Other responses identified qualitatively were negative emotions (e.g., fear), which, if experienced chronically and repeatedly over time, could negatively impact outcomes (e.g., health; [12]).

There was divergence around the role of coping in explaining the impact of stressors on outcomes (e.g., performance). Quantitatively, coping did not predict any outcomes. However, qualitative data suggested that midwives used various coping strategies at work (e.g., colleague support, taking breaks) and home (e.g., exercise, family support). These strategies were largely emotion-focused, but some avoidance- (e.g., avoiding staff from the previous shift) and problem- (e.g., list making) focused strategies were also noted. Avoidant coping styles from midwives (e.g., choosing to work in agency-based job to avoid negative culture) have been reported because of repeated exposure to moral distress at work [41]. Although problem-focused coping is deemed more beneficial for mental health than emotion-focused and avoidance coping [42], emotion-focused coping can be useful in situations when people lack control [43,44], and midwives reported experiencing many uncontrollable stressors (e.g., staff shortages, work overload). Taken together, the findings suggest that individual-level stress management interventions could be designed and implemented to help midwives optimally respond to stressors (i.e., if-then planning to promote challenge appraisals; [45]).

In relation to aim three, while the quantitative data revealed that older and more experienced midwives had greater intentions to leave, no themes surrounding age or experience were generated in the qualitative data. Although a key reason for leaving for this group may be retirement [46], this was not raised in the interviews. However, the datasets did converge in relation to band level. Specifically, quantitative data revealed that lower band midwives reported more control- and change-related stressors than higher band midwives, and qualitative findings illuminated that lower band midwives reported a lack of manager support, while higher band midwives noted multiple requests from lower band midwives as a stressor. Previous studies have also presented mixed findings with regards to age and band [3,8]. A further at-risk group were night shift workers, who quantitatively reported more stressors associated with control, manager support, and change. Qualitative data also illustrated that being on-call was taxing, disrupting sleep before shifts. This is consistent with past research where midwives have noted being on-call as detrimental to health (e.g., anxiety; [47]). The quantitative results revealed few differences between acute and community midwives, but consistent with past research [48], the qualitative findings revealed unique role-specific stressors for community midwives (i.e., working in unfamiliar acute settings, organisational change). The findings on at-risk groups can help develop proactive, tailored stress management interventions for those most in need (e.g., community midwives also working in acute settings, night-shift workers).

In terms of strengths, this is the first mixed methods stress audit of UK midwives, providing a more comprehensive understanding of the most impactful stressors, underlying mechanisms (e.g., appraisals), and most at-risk midwives than past research. Indeed, the findings of this study support theory (e.g., transdisciplinary model of stress; [21]), highlighting the interacting nature of contextual (e.g., work culture/environment) and personal (e.g., coping strategies) factors in explaining midwives' responses to occupational stress (and its potentially negative ramifications for health, performance, and well-being). It should be noted, however, that despite a relatively good response rate (~40 % of population), the sample was limited to the midwives from one NHS Trust in England, limiting generalizability. Thus, future research should replicate this study with a more diverse and nationally-representative sample. Additionally, certain outcomes were assessed via single-item measures (e.g., intention to leave). Despite some concerns relating to poor psychometric properties (e.g., lower reliability), these expedient measures were used to minimise burden on the midwives and aid response rates [49]. Finally, the cross-sectional design is a limitation, particularly given the dynamic nature of the stress process. Thus, future research should use stronger designs (e.g., longitudinal) with methods more suitable in naturalistic settings (e.g., think aloud protocol; [50]).

Turning to the implications for practice, the key findings of this study speak to the importance of both an individual- (e.g., stress appraisals) and organisation- (e.g., optimally communicating change) level focus, suggesting that midwife practitioners and policy makers should consider implementing multi-level stress management interventions that target both levels [6]. For example, at the individual level, evidence-based interventions could help midwives appraise (or view) the stressors they encounter more favourably, as a challenge rather than a threat (e.g., if-then planning [45,51]). However, optimal job design (e.g., midwifery breaks, manager training) is still important to mitigate work stress, and despite the perceived complexity of implementing organisation-level interventions, even minor alterations can significantly enhance the experiences of NHS staff [52]. Additionally, future

practices to address work-related stress could target identified "at risk" groups, and include midwives having more autonomy over, and better communication of, organisational change (e.g., CoC model of working). Linked to this, it is advisable to involve midwives in the co-production of interventions so they can effectively tackle stress [53].

6. Conclusion

A comprehensive mixed-methods stress audit was conducted with midwives in a UK NHS Trust. The findings identified key stressors (e.g., change, manager support, staff shortages) which most strongly predicted mental ill-health, low performance satisfaction, and greater intention to leave. The findings also highlighted underlying mechanisms (e.g., stress appraisals, emotions) linking stressors to outcomes. Finally, the findings identified midwives most 'at-risk', including those working on-call and night shifts, older and more experienced midwives (in terms of leaving the profession), and lower band midwives. The results of this study can help inform the development of evidence-based and multi-level (i.e., individual *and* organisation) interventions aimed at tackling work-related stress among midwives.

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Ethical statement

Ethical approval to proceed with the study was given by the Research Ethics Approval Committee for Health at the University of Bath [reference: 19/20 042] and the Health Research Authority (HRA) [15/07/2020, IRAS ID: 283752].

CRediT authorship contribution statement

Zoe Anchors: Conceptualization, Formal Analysis, Investigation, Writing Original Draft and Reviewing and Editing. Rachel Arnold & Lee Moore: Conceptualization, Formal Analysis, Investigation, Writing - Reviewing and Editing, Supervision, Funding Acquisition. Sara Burnard, Catherine Bressington & Annette Moreton: Conceptualization, Project Administration and Writing - Reviewing and Editing.

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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Appendix A. Supporting information

Supplementary data associated with this article can be found in the online version at doi:10.1016/j.wombi.2024.101639.

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