Malta Journal of Health Sciences
https://doi.org/10.14614/STRESSMIDWIFERY/11/19
DOI: 10.14614/STRESSMIDWIFERY/11/19

Research paper

MIDWIVES' PERCEPTIONS OF WORK RELATED STRESS IN MIDWIFERY IN MALTA

Lauren Marie Grech, Christie Hili
Department of Midwifery, Faculty of Health Sciences, University of Malta

Abstract. Work-related stress (WRS) is a major issue in healthcare, with the midwifery profession ranked as one of the most stressful occupations. This issue in midwifery has not yet been addressed in local research. This study aimed to explore midwives' perceptions of WRS in midwifery practice in Malta, by identifying which factors contribute to WRS and how WRS affects the delivery of care and midwives' wellbeing.

A non-randomised cross-sectional study was conducted whereby a self-designed questionnaire was distributed to a sample of 50 midwives working at three obstetric wards, the delivery suite and the neonatal unit at a local state hospital. Quantitative data were analysed using simple descriptive statistics whilst content analysis was used to analyse answers from the open-ended questions.

The study yielded a response rate of 76% (n = 38). Participants identified lack of staff and resources, high patient load, daily rates of inductions of labour and caesarean sections as stress-contributing factors. Results also showed that WRS has a negative impact on midwives' provision of care and their physical and psychological wellbeing.

The study identified several stressful factors and found that these negatively impact local midwives' wellbeing and pose a threat to the delivery of midwifery care. Future research exploring the effects of WRS in more depth and using larger samples is recommended.

Keywords: midwives, perceptions, work-related stress, impact, delivery of care, wellbeing.

Correspondence to Christie Hili
(christie.hili@um.edu.mt)
Received: 15.02.19; Revised: 27.05.19; Accepted: 05.06.19;
Published: 30.12.19

1 INTRODUCTION

Stress is a humanistic reaction to environmental factors and life pressures (Moghadam et al., 2016). The human being is exposed to stress on a daily basis; however, whilst an adequate level of stress is necessary for life, higher levels than usual can threaten the physical, emotional and psychological wellbeing of the individual (Jahromi et al., 2016; Moghadam et al., 2016). Birch (2001) states that a person's occupation has the potential to generate major stress in an individual's life and refers to occupational or work-related stress (WRS) as when the working conditions and demands exceed the worker's ability to cope with them.

Midwives form a great proportion of health care professionals. This occupation ranks amongst the most highly stressful jobs due to the responsibility that comes with caring for mothers, conducting clinical procedures, encountering unpredictable emergencies whilst dealing with pain and loss (Foureur et al., 2013). Moreover, results from a five-year Danish cohort study on 2,391 human service work employees showed that midwives ranked the highest amongst professionals who suffer from high levels of stress and burnout (Borritz et al., 2006).

The constant emotional engagement with the mother and her family during the perinatal period is a key role in midwifery practice. Sorenson et al. (2017) argue that this relationship may lead to compassion fatigue and occasionally Post-Traumatic Stress Disorder (PTSD) in midwives, especially when witnessing traumatic birth events. The stress generated as a consequence to such burden may not only threaten the midwife's wellbeing but also the ability to provide sensitive and holistic care to other women and their families in future practice (Foureur et al., 2013).

Whilst there exists published literature addressing work-related stress in midwifery (Fenwick et al., 2017; Mollart et al., 2013; Oncel, Ozer & Efe 2007), this has not yet been researched in the local context. In view of this research gap, this study aimed to explore midwives' perceptions of WRS in midwifery practice in Malta. The study objectives were to identify factors contributing to WRS, to explore the impact of WRS on midwifery practice and determine the implications of WRS on midwives' physical, emotional and psychological wellbeing.

2 METHODS

A prospective, cross-sectional research design was used to conduct the study. A thorough search in electronic databases was conducted using a set of keywords specific to the study topic, to explore the literature related to this area of research. Databases included Google Scholar, Medline and PubMed. Based on the reviewed literature, a questionnaire was designed by the authors; which comprised of 24 closed- and open-ended questions. The main outcomes were factors contributing to WRS in midwives, the impact of WRS on the midwife's delivery of care and the impact on the midwife's physical, emotional and psychological wellbeing.

A pilot study was performed to test the feasibility of the designed questionnaire with five midwives, one from each of the five maternity and neonatal wards at the local general hospital. Pilot participants were given an evaluation form to provide feedback on the questions being asked. By answering the questionnaire, participants automatically consented to participate in the pilot study. Based on the evaluation forms, all questions were understood well; hence no additional changes were made to the original questionnaire. Answers from the pilot work were not included in the main study.

The sample comprised of 50 midwives recruited by convenience sampling from three Obstetric Wards, a Central Delivery Suite (CDS) and a Neonatal and Paediatric Intensive Care Unit (NPICU) at a general public hospital in Malta. Including outpatient midwifery settings would have required a larger sample and due to time constraints placed on this study, these were excluded. Participants were included if they were midwives who delivered maternal and neonatal care in the specified setting with at least one year of experience. Midwives possessing managerial roles who did not deliver midwifery care and those with less than one year of working experience were excluded. This was due to the fact that managerial roles of Charge Midwives and midwifery managers predispose midwives to different stress factors. Moreover, midwives with more than one year of clinical experience would have had more work exposure to base their answers on.

The Charge Midwives of each ward acted as an intermediary and distributed the questionnaire to midwives who fitted the inclusion criteria. The completed self-administered questionnaires were collected in a blank envelope by the Charge Midwives, who then returned the completed questionnaires to the first author, who was thus blinded to the participants' identity. In this way, the researcher was blinded to the participants. Data was collected over a one-month period in January 2018.

Data from the closed-ended questions were inputted in a spreadsheet and analysed quantitatively using simple descriptive statistics and presented visually in bar graphs. Answers from the open-ended questions were analysed using content analysis, by coding and grouping similar answers in specific categories which emerged from the data. This method is particularly used to analyse open-ended questions in quantitative surveys, which enables quantifying answers as presented in the results below (Dawson, 2009).

This study was approved by the Faculty of Health Sciences Research Ethics Committee and the University Research Ethics Committee, after gaining all institutional permissions. Anonymity was ensured by asking participants not to provide any personal information on any part of the questionnaire. Confidentiality was ascertained by providing an envelope for participants to enclose the questionnaire and to return to the Charge Midwife. Furthermore, collected data was stored in a password-protected computer, accessed only by the first author.

3 RESULTS

In total, 38 questionnaires were completed, yielding a response rate of 76%. Participants' characteristics of employment are presented in Table 1.

Table 1. Participant characteristics of employment

Characteristics of employment		Cohort *n* (%)
Years of **midwifery work experience**	1-5	13 (34%)
	6-10	8 (21%)
	11-15	2 (5%)
	16-20	5 (13%)
	21-25	6 (16%)
	25+	4 (11%)
Years of experience in **current work setting**	0-5	21 (55%)
	6-10	9 (23%)
	11-15	2 (5%)
	16-20	4 (11%)
	21-25	1 (3%)
	25+	1 (3%)
Employment	Full-time	31 (82%)
	Reduced hours	7 (18%)
Length of shift (hours)	12	31 (82%)
	Less than 12	7 (18%)
Type of shift	Day shifts only	16 (42%)
	Day & night shifts	22 (58%)
Patient allocation per midwife	1 to 2	17 (45%)
	3 to 4	19 (50%)
	5 or more	2 (5%)

3.1 Stress-contributing factors

The most frequently reported stress-contributing factor at the place of work was 'lack of staff' (n=35, 95%), followed by 'high patient load' (n=29, 76%) and 'daily rates of medical inductions (MI) and caesarean sections (CS) (n=21; 55%). Other chosen factors are reported in Figure 1. Some respondents (n=7, 18%) stated other factors not listed on the questionnaire to choose from, which included: teaching rotating midwives, lack of training, high rate of patient turnover, liaising with bed management and other wards, simultaneous ward rounds and difficulty to reach medical staff. Moreover, participants were asked to state which obstetric or neonatal complication/s they perceive as stressful. Neonatal death was perceived most stressful across all wards (n=26; 68%), followed by Intrauterine Death (IUD) and stillbirths (n=23; 61%). Other perceived stressful complications are presented in Figure 2.

3.2 Impact on midwifery care

In this study, 66% (n=25) of participants agreed that WRS impacts midwifery care. The main answers from participants on how WRS impacts care were related to 'lack of appropriate provision of care' (n=10; 40%) and 'lack of time' (n=4; 16%). Only 56% (n=14) of participants provided answers as to how they thought WRS impacted care. They explained how due to stressful factors such as lack of staff, midwives do not have enough time to dedicate to each patient and cannot focus as a result. Moreover, 63% (n=24) of participants agreed that WRS also affected colleague interaction mainly due to conflict and tension amongst staff (n=13; 54%), arising due to stressful issues at work.

3.3 Impact on physical, emotional and psychological wellbeing

Participants were asked about the impact of WRS on their physical wellbeing. They were asked to answer by choosing between the terms 'often', 'sometimes' and 'rarely'. The physical ailments most often experienced by participants were 'physical exhaustion' (n=27; 71%) and 'bodily pains' (n=21; 55%).

The majority of participants (n=35; 92%) believed that their emotional and psychological wellbeing was affected by WRS. The latter related to feelings of 'self-blame' and 'guilt' after traumatic events or busy days and 'psychological burnout' due to working under pressure and having a high workload. In the following open-ended question, participants were also asked whether WRS affected their personal life at home. Sixty-eight per cent (n=26) elaborated how feelings of psychological distress impacted on their personal life. Listed effects included quarrelling with relatives and absence at personal and social events.

4 DISCUSSION

The aim of this study was to explore midwives' perceptions of WRS in midwifery practice.

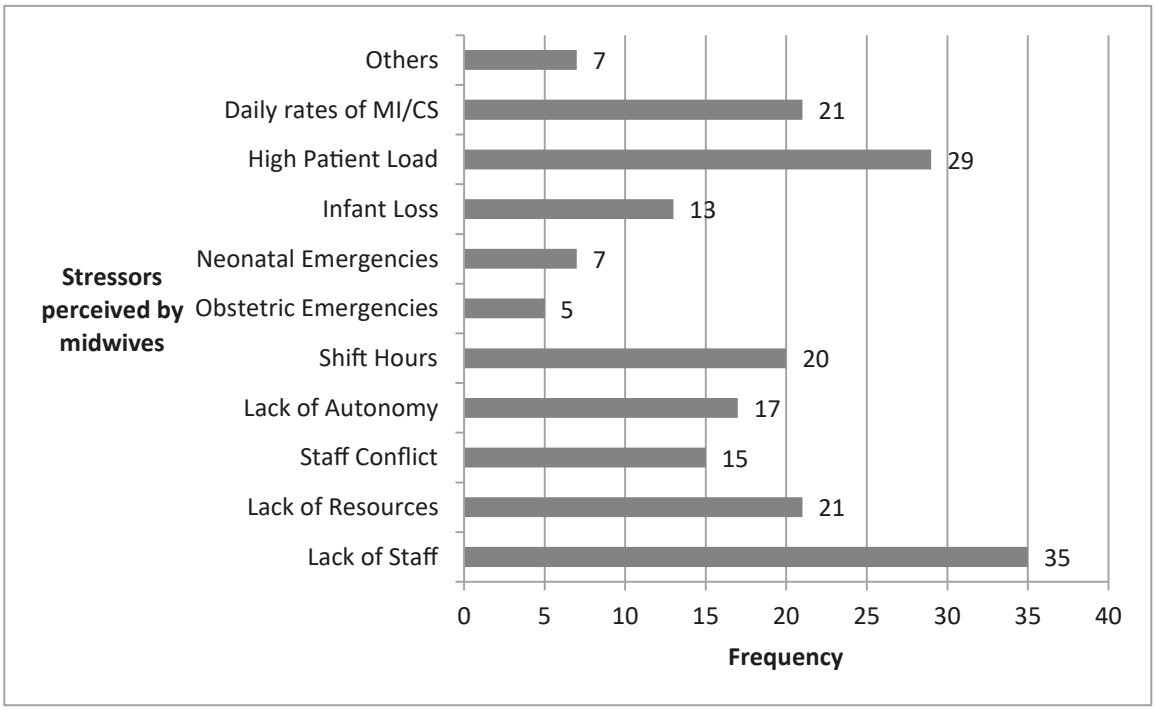

Figure 1: Stress factors as perceived by midwife participants

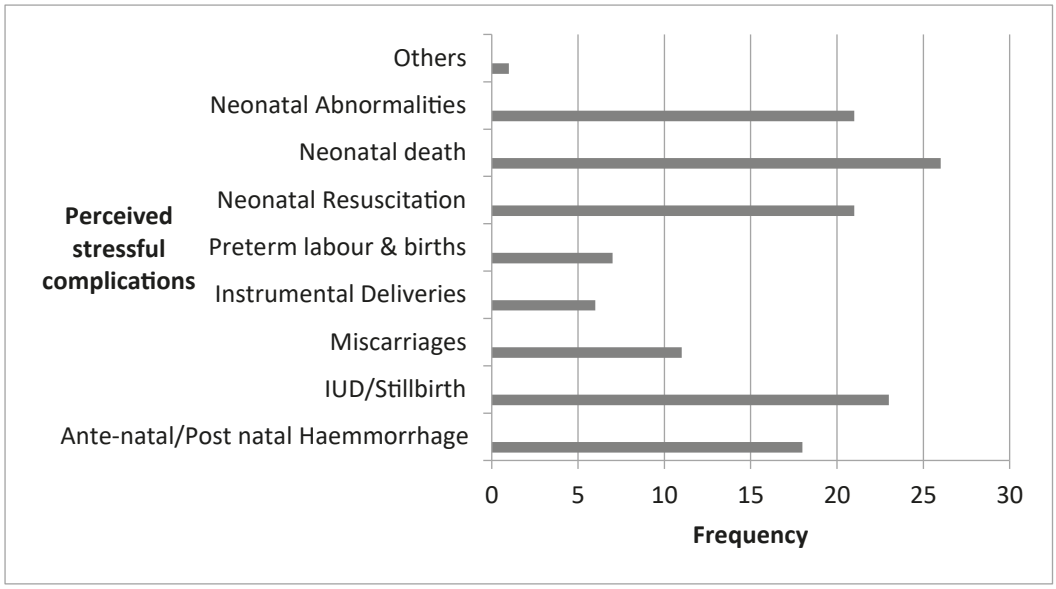

Figure 2: Participants' perceived stressful obstetric and neonatal complications

Previous studies investigating WRS found that midwives who lacked experience were more stressed when compared to experienced midwives, possibly due to an increased coping competency (Hildingsson et al., 2013; Jordan et al., 2013; Mollart et al., 2013; Oncel, Ozer, & Efe, 2007). In this present study, the majority of participants had less than five years of midwifery experience. Whilst overall results may indicate that stress impacts midwives negatively, a statistical association between years of experience and stress was not investigated. Hence, we cannot conclude that midwives who lack experience are more stressed since more statistical evidence is required to address this aspect. Nonetheless, the majority of responses came from participants with less than five years of midwifery experience (n=13; 34%) and who were negatively affected by stress at work. This sheds light on the need to further investigate WRS amongst young midwives.

The majority of this study's participants worked both day and night shifts, both lasting 12 hours. In fact, in a study by Mollart et al. (2011), midwives working mixed shifts showed higher burnout levels and more difficulty to cope with stress. Working during the night may influence the individual's biological system such as the body's circadian rhythm and hence could also alter sleeping patterns (Augusto Landa et al., 2008; National Sleep Foundation, 2018); affecting the midwife's overall wellbeing. The findings from this study suggest that an association between shift work and WRS may be present; however, further research needs to be carried out using statistical analyses in order to determine whether a relationship between these two variables exists.

4.1 Stress factors and the impact on midwifery care

The primary factor perceived most stressful among participants in the current study was 'lack of staff and resources' (n=35; 92%). This corresponds to previous literature findings where lack of staff was reported as a major contributor to WRS amongst hospital midwives, which consequently led to burnout (Hildingsson et al., 2013; Knezevic et al., 2011). In a study by Yoshida and Sandall (2013), hospital midwives also described inadequate staffing and the resultant workload as stressful factors as they restricted them from carrying out all their duties effectively. This may pose a threat to the woman's and baby's welfare because a high workload is likely to lead to lack of focus and increased risk of negligence or malpractice, which as a result might exacerbate morbidity or cause mortality. In fact, 66% (n=25) of participants across all ward settings agreed that WRS negatively impacts their delivery of care due to time restraints to caring for patients (n=4; 16%) and lack of optimal care provided (n=10; 40%). In this study, 'lack of staff' emerged as the main contributor to stress amongst midwives impacting the delivery of optimal midwifery care by restricting the time dedicated to caring for patients holistically and on a one-to-one basis.

Another factor which was frequently perceived as stressful amongst midwives in the present study was the daily rates of inductions of labour and caesarean sections (n=21; 55%) and high patient load (n=29; 76%). According to the National Obstetric Information System (NOIS) Annual Report for the year 2017, 29.5% (n=1275) of women who gave birth in Malta had their labours induced by drugs or by artificial rupture of membranes while 16.2% (n=700) gave birth by an elective caesarean section (Gatt & Borg, 2018). This translates into having an average of four inductions of labour and two elective caesarean sections per day. Additionally, according to the same report (Gatt & Borg, 2018), a total of 4325 births for 2017 is equivalent to an average of 10 births per day. This amount of daily elective deliveries in addition to women presenting with spontaneous labour impacts workload and may affect the one-to-one care which midwives are expected to give to labouring women. This is an issue, considering that the average amount of midwives per shift at the Central Delivery Suite is that of eight; excluding midwives on vacation or sick leave. This factor was not highlighted as a stress-contributing factor in the literature reviewed for this study.

Working in hospital settings was found to be stressful in previous studies (Fenwick et al., 2017; Henriksen & Lukasse 2016) as opposed to working in the community, where having more autonomy caused less stress to midwives (Yoshida & Sandall, 2013). In line with findings by Yoshida & Sandall (2013), in our study 'lack of autonomy' was perceived stressful by 17 (45%) midwives, where all participants worked in a hospital setting. Community midwives had more autonomy in decision-making about workload, showed higher job satisfaction and fewer stress levels (Yoshida & Sandall, 2013). However, since the current study did not include midwives working in outpatient clinics and in the community, results cannot be compared. Future research is required to understand whether different work settings in midwifery practice affect stress levels amongst midwives.

Moreover, in our study, the obstetric complication which contributed mostly to WRS and negatively impacted participants' wellbeing was dealing with perinatal deaths. This was similar to findings from a study by Banovcinova and Baskova (2014), where death of patients resulted as the most stressful factor among midwives working in obstetric departments in Slovakia; however, this related to maternal not neonatal deaths. The maternal mortality ratio in hospitals of the Slovak Republic between 2007 and 2012 was 14 per 100,000 live births, resulting in Slovakia having one of the highest maternal mortality ratios in the European Union (Korbel et al., 2017). In Malta, only four maternal deaths occurred between the year 2000 and 2017; while 27 perinatal deaths occurred in 2017 alone (Gatt & Borg, 2018). Perceived stressful complications being related to the foetus or neonate rather than the mother could either be due to the low maternal mortality rate; i.e. maternal deaths were encountered less, or it could indicate that midwives were less confident to deal with neonatal emergencies. However, in certain instances, perinatal deaths in cases of prematurity or stillbirth are beyond the midwife's control. This factor might pose feelings of helplessness in addition to WRS among the midwife. In view of these factors, seminars and regular simulation training workshops on dealing with emergencies are recommended.

Results from this study correspond to Kordi et al.'s (2014) and Knezevic et al.'s (2011) research findings whereby midwives who were severely stressed showed reduced work ability associated with sick leave and health. WRS resulted from insufficient staff and resultant lack of time to appropriately care for patients (Kordi et al., 2014). These studies investigating work ability amongst midwives did not show that stress directly impacts midwifery care itself. However, high uptake of sick leave in view of increased WRS leads to daily shortages of staff which, consequently, affect workload and resultant midwifery practice. Furthermore, the results from the current study show that stressful issues such as lack of staff were indeed affecting the midwife's ability to perform work efficiently and deliver appropriate care.

4.2 Impact of WRS on the midwife's physical, emotional and psychological wellbeing

According to the National Institute for Occupational Safety and Health (NIOSH) (2008), occupational stress can adversely affect the physical wellbeing of the worker. Effects include headaches, blood pressure changes, gastrointestinal tract disturbances, sleeping problems and tiredness (Dorrian et al., 2011; NIOSH, 2008). In the present study, experiencing physical exhaustion and bodily pains (55%; n=21) were the most common ailments reported by participants in relation to WRS. In studies by Kordi et al. (2013) and Moghadam et al. (2017), it was reported that stressed midwives experienced dysmenorrhea and musculoskeletal disorders in the neck, shoulders and lower back which consequently necessitated physiotherapy and led to increased uptake of sick leave. Although these consequences might have resulted from WRS, they could have also been a possible result of a lack of skill in moving and handling patients.

Feelings of guilt or self-blame experienced by midwives in this study were also reported in previous research by Creedy et al. (2017) and Leinweber et al. (2017). Here, these feelings, as well as post-traumatic stress disorder (PTSD), emerged after witnessing complications or traumatic events at work. PTSD is comprised of distressing and involuntary recollection of the traumatic event such as flashbacks, avoidance of event reminders and a negative emotional state due to guilt, fear or shame (Lavoie, Talbot, & Mathieu, 2011; Sheen, Spiby & Slade, 2015, 2016).

Although in the current study PTSD was not investigated, 92% (n = 35) of midwives all agreed that WRS has an impact on the midwife's mental wellbeing. The main themes that resulted were self-blame, emotional and psychological burnout and feelings of guilt. It is known that WRS factors can ultimately lead to feelings of decreased confidence, hopelessness, anxiety and depression (Moghadam et al., 2016; NIOSH 2008). Apart from feeling guilt and self-blame after witnessing traumatic events, according to participant responses, these feelings also arose from experiencing stressful busy days where the workload was high. Midwives claimed to feel guilty after not having enough time to deliver optimal midwifery care due to a shortage of staff.

Additionally, midwives in the present study were also asked to state how WRS impacted their personal life. 68% (n=26) of participants agreed that WRS affected their personal life, mainly by experiencing more family quarrels, having less leisure time due to fatigue and exhaustion and experiencing lack of focus as a result of tiredness and constant thinking about work, even on off days. This shows that in addition to impacting the personal wellbeing, WRS has the potential to threaten the midwife's life outside the place of work. These factors were not highlighted in literature pertaining to WRS effects on midwives. This further highlights the need to manage stress factors at work, as this shows that WRS has the potential to cause an unhealthy state of the human's overall quality of life.

4.3 Study strengths and limitations

The questionnaire used in this study was developed by the first author, after reviewing the relevant literature. Whilst it was assessed for content validity and a pilot study was carried out, the tool used would have ideally been assessed for validity using specific validity tests. Other reliability tests were considered such as the test-retest method. These measures were not implemented due to time constraints and lack of resources. Additionally, the tool used in this study was self-designed since there were no previously validated tools investigating WRS which best answered all objectives of the present study.

The questionnaire designed for the study as the main data collection tool posed many advantages such as reaching more participants, while ensuring more honest answers about such a sensitive subject due to participants remaining anonymous. It also contained open-ended questions, allowing the participants to explain their answers or to add additional comments.

The questionnaires were distributed to participants and collected in blank envelopes by the Charge Midwives who acted as an intermediary between the authors and participants. This method ensured confidentiality and anonymity of the participants. While the 50 questionnaires were distributed evenly between the five wards which comprised the study setting, there was a discrepancy in response between wards. Hence, results could not be analysed independently but instead, responses had to be collectively represented across all ward settings. Nonetheless, the aim of the study was not to compare results between wards but to explore this issue on a general level.

One major limitation in this study was the small sample size and the resultant response rate. Since the sample was recruited by a non-random sampling technique, the findings cannot be generalised to the whole, local midwifery population but may serve to shed light on this issue in the local context.

This study yielded a response rate of 76% (n=38). Not obtaining a full response rate might be attributed to the fact that the subject of work-related stress (WRS) might be found disturbing to midwives, especially to those who are in fact stressed. In our study, questionnaires were distributed

to midwives on wards who deliver maternal or neonatal care. It might have been challenging for midwives to answer the questionnaire on the ward while dealing with workload pressures. The fact that some open-ended questions were not answered might have been due to them being perceived as time-consuming and were skipped as a result. The Charge midwives should have been instructed to distribute the questionnaire at the beginning of a shift since later on during the day or night, midwives might lose interest in participation. This measure was not done and might have contributed to the resultant response rate.

No information was collected about the participants' physical or psychological health status. Hence, midwives' responses about fatigue or psychological effects of WRS could have been influenced by medical history or coexisting physical or mental conditions which were unknown during data collection. In view of this, the relationship between WRS and wellbeing could not be determined but only suggested.

5 CONCLUSION

Apart from stress-contributing factors, most notably lack of staff and high patient load, this study highlights that WRS negatively impacts midwives' delivery of care and their physical, emotional and psychological wellbeing. Whilst these findings cannot be generalised to the local midwifery population, they may still provide insight about this issue. Further research to investigate WRS in midwives is recommended on a larger sample of midwives.

Nevertheless, there are several recommendations that can be put forward based on the findings of this study. Primarily, staffing issues and midwife-mother ratios need to be addressed on a managerial level. Strategies to control daily rates of medical inductions and elective caesarean sections should also be considered. Additionally, educational seminars and workshops should be held to teach employed midwives how to deal with stress effectively. Promoting the clinical psychology services for staff at the local hospital would also be of significant benefit to midwives requiring further psychological assistance to manage WRS.

6 ACKNOWLEDGEMENTS

Sincere gratitude goes to all midwife participants and all personnel who granted permission to conduct this study.

7 FUNDING

This research has received no specific grant from any funding agency in the public, commercial or non-profit sectors.

8 CONFLICTs OF INTEREST

The authors report no conflicts of interest.

References

Alparslan, O. & Doganer, G. 2009, Relationship between levels of burnout of midwives who work in Sivas, Turkey province centre and identified socio-demographic characteristics, *International Journal of Nursing and Midwifery,* vol.1, no.2, pp. 19-28.

Augusto Lando, J., Lopez-Zafra, E., Berrios Martos, M. & Aguilar-Luzon, M. 2008, The relationship between emotional intelligence, occupational stress, and health in nurses: A questionnaire survey, *International Journal of Nursing Studies,* vol. 45, pp. 888-901.

Banovcinova, L. & Baskova, M. 2014, Sources of work-related stress and their effect on burnout in midwifery, *Procedia- Social and Behavioural Sciences,* vol. 132, pp. 248-254.

Birch, L. 2001, Stress in midwifery practice: an empirical study, *British Journal of Midwifery,* vol. 9, no. 12, pp. 730-734.

Borritz, M., Regulies, R., Bjorner, J., Villadsen, E., Mikkelsen, O. & Kristensen, T. 2006, Burnout among employees in human service work: design and baseline findings of the PUMA study, *Scandinavian Journal of Public Health,* vol. 34, pp. 49-58.

Creedy, D., Sidebotham, M., Gamble, J., Pallant, J. & Fenwick, J. 2017, Prevalence of burnout, depression, anxiety and stress in Australian midwives: a cross-sectional survey, *BMC Pregnancy and Childbirth,* vol. 17, no. 13, pp. 1-8.

Dawson, C. (2009). Introduction to research methods: *A practical guide for anyone undertaking a research project (4th ed.).* UK: How To Books.

Dorrian, J., Paterson, J., Dawson, D., Pincombe, J., Grech, C. & Rogers, A. 2011, Sleep, stress and compensatory behaviours in Australian nurses and midwives, *Rev Saude Publica,* vol. 45, no. 5, pp. 922-923-930.

Fenwick, J., Lubomski, A., Creedy, D.K. & Sidebotham, M. 2017, Personal, professional and workplace factors that contribute to burnout in Australian midwives, *Journal of Advanced Nursing*.

Foureur, M., Besley, K., Burton, G., Yu, N. & Crisp, J. 2013, Enhancing the resilience of nurses and midwives: pilot of a mindfulness-based program for increased health, sense of coherence, and decreased depression, anxiety and stress, *Contemporary Nurse,* vol. 45, no. 1, pp. 114-125.

Gatt, M. & Borg, M. 2018, *NOIS Annual Report 2017*, National Obstetric Information System, Directorate for Health Information & Research, Malta. Available at: https://deputyprimeminister.gov.mt/en/dhir/Pages/Registries/births.aspx

Henriksen, L. & Lukasse, M. 2016, Burnout among Norwegian midwives and the contribution of personal and work-related factors: a cross-sectional study, *Sexual & Reproductive Healthcare,* vol. 9, pp. 42-47.

Hildingsson, I., Westlund, K. & Wiklund, I. 2013, Burnout in Swedish Midwives, *Sexual & Reproductive Healthcare,* vol. 4, no. 3, pp. 87-91.

Jahromi, M., Minaei, S., Abdollahifard, S. & Maddahfar, M. 2016, The effect of stress management on occupational stress and satisfaction among midwives in obstetrics and gynaecology hospital wards in Iran, *Global Journal of Health Science,* vol. 8, no. 9, pp. 91-98.

Jordan, K., Fenwick, J., Slavin, V., Sidebotham, M. & Gamble, J. 2013, Level of burnout in a small population of Australian midwives, *Women and Birth,* vol. 26, pp. 125-132.

Knezevic, B., Milosevic, M., Golubic, R., Belosevic, L., Russo, A. & Mustajbegovic, J. 2011, Work-related stress and work ability among Croatian university hospital midwives, *Midwifery,* vol. 27, pp. 146-153.

Korbeľ, M., Krištúfková, A., Dugátová, M., Daniš, J., Némethová, B., Kaščák, P., & Nižňanská, Z. (2017). Analysis of maternal morbidity and mortality in slovak republic in the years 2007–12. *Ceska Gynekol, 82*(1), 6-15.

Kordi, M., Mohamadirizi, S. & Shakeri, M. 2013, The relationship between occupational stress and dysmenorrhea in midwives employed at public and private hospitals and health care centres in Iran (Mashad) in the years 2010 and 2011, *Iranian Journal of Nursing and Midwifery Research,* vol. 18, no. 4, pp. 316-322.

Kordi, M., Mohamadirizi, S., Shakeri, M., Gharavi, M. & Fadardi, J. 2014, The relationship between occupational stress and work ability among midwives in Mashad, Iran, *Journal of Midwifery and Reproductive Health,* vol. 2, no. 3, pp. 188-194.

Lavoie, S., Talbot, L. & Matthieu, L. 2011, Post-traumatic stress disorder symptoms among emergency nurses: their perspective and a 'tailor-made' solution, *Journal of Advanced Nursing,* vol. 67, no. 7, pp. 1514–22.

Leinweber, J., Creedy, D., Rowe, H. & Gamble, J. 2017, Responses to birth trauma and prevalence of posttraumatic stress among Australian midwives, *Women and birth,* vol. 30, no. 1, pp. 40-45.

Moghadam, S., Emkani, M., Mohamadyan, M., Moosazadeh, M., Khanjani, N., Layegh, M. & Rahmanzadeh, E. 2017, Musculoskeletal disorders and its relation with job stress in midwives, *International Journal of Occupational Hygiene,* vol. 9, no. 1, pp. 38-45.

Moghadam, S., Moosazadeh, M., Mohamadyan, M., Emkani, M., Khanjani, N. & Tizabi, M. 2016, Psychological Health and its relation with Occupational Stress in midwives, *International Journal of Occupational Hygiene,* vol. 8, pp. 217-222.

Mollart, L., Skinner, V., Newing, C. & Foureur, M. 2013, Factors that may influence midwives work-related stress and burnout, *Women and Birth,* vol. 26, no. 1, pp. 26-26-32.

National Institute for Occupational Safety and Health (NIOSH) 2008, *Exposure to Stress: Occupational Hazards in Hospitals*. Available: https://www.cdc.gov/niosh/docs/2008–136/default.html.

National Sleep Foundation 2018, *What is circadian rhythm?*. Available: https://sleepfoundation.org/sleep-topics/what-circadian-rhythm.

Oncel, S., Ozer, Z. & Efe, E. 2007, Work-related stress, burnout and job satisfaction in Turkish midwives, *Social Behaviour and Personality: An international journal*, vol. 35, no. 3, pp. 317-328.

Sheen, K., Spiby, H. & Slade, P. 2016, What are the characteristics of perinatal events perceived traumatic by midwives?, *Midwifery*, vol. 40, pp. 55-61.

Sheen, K., Spiby, H. & Slade, P. 2015, Exposure to traumatic perinatal experiences and posttraumatic stress symptoms in midwives: prevalence and association with burnout, *International Journal of Nursing Studies*, vol. 52, no. 2, pp. 578-587.

Sorenson, C., Bolick, B., Wright, K. & Hamilton, R. 2017, An evolutionary concept analysis of compassion fatigue, *Journal of Nursing Scholarship*, pp. 1-7.

Yoshida, Y. & Sandall, J. 2013, Occupational burnout and work factors in community and hospital midwives: A survey analysis, *Midwifery*, vol. 29, no. 8, pp. 921-922-926.