**Welcome** to issue 16 of Midwifery Research Review.

While there is good evidence of the positive impact of midwifery, a recent discussion paper has revealed that midwives are disempowered by patriarchal structures and professional, sociocultural and economic barriers. We should consider this paper a call to action and consider how we can maximise the potential of midwifery in Australia. Following on, we discover that the Australian Maternity Care Classification System for classifying models of maternity care based on their characteristics is a valid system that will enable the legitimate evaluation of outcomes by different models of care. Other topics covered in this issue include the association among cervical dilation at admission, intrapartum care and birth mode, perspectives on post-abortion care in Uganda, care ethics for midwifery and the humanisation of birth, and caffeine exposure during pregnancy and neonatal outcome. We hope you enjoy reading this review and look forward to your comments and feedback.

Kind Regards,

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**Midwifery is a vital solution – What is holding back global progress?**

**Authors:** Renfrew MJ et al.

**Summary:** Despite evidence of the positive impact of midwifery, midwives are disempowered by patriarchal structures and barriers that are professional, sociocultural and economic. All levels of policy, health services, academia and funders misunderstand the role and scope of midwifery, with the effect of fragmenting care, generating inevitable safety and quality gaps, and impeding progress on universal health coverage and improvement of quality, equity and dignity.

**Comment (MS):** Midwives reading this important discussion paper will recall the papers published within the Lancet series on midwifery that provided evidence and tools to maximise the potential of midwifery globally. Mary Renfrew, the lead author, was a key member of the Lancet series team and has worked tirelessly across the globe disseminating the evidence emerging from the series and providing guidance on strategies to implement the findings. Yet as they point out in this paper, the systemic structural barriers to midwifery continue to delay progress. I would ask readers to see this paper as a call to action and to consider how we can maximise the potential of midwifery in Australia. Consider at a local, national and international level what contribution each of us can make. I would suggest we look to the three pillars of the ICM (education, association and regulation) to guide us. In this paper the authors acknowledge the contribution of high-quality midwifery education in leading transformation of services. The Australian midwifery education standards are currently under review, so be active now and have your say. Even at a local level ask how programs at your local university will build on the findings from the Lancet series. Are their programs enabling graduates to work to full scope of practice on graduation, if not why not? The paper highlights yet again the problems caused by the submersion of midwifery within nursing, acknowledging the difficulties “even in countries where midwifery is strong” for midwives to claim their identity, work to full scope of practice and be appointed into leadership positions. The ICM promote the strength of midwifery associations as a potential solution. A strong country level Midwifery Association brings like-minded midwives together, enabling a unique identity and philosophy to lead discussions at national level as to the contribution midwifery should, and can, make to maternity care provision. Are you a member of the Australian College of Midwives? Do you create opportunity to bring midwives together to speak with one voice? And finally, what can we do to ensure we have strong regulation that optimises the potential of midwifery? How can we use regulation to drive our contribution as midwives? Let’s start by using what we have. Let’s promote the newly released midwifery practice standards and ensure they are implemented and visible across all the work we do. Let’s become involved in regulation and governance locally — for instance you could look at how the National Safety and Quality Health Service comprehensive care standard will be implemented where you work. Then you could suggest that the best way for pregnancy is to promote caseload midwifery. In conclusion, together we can make a difference, let’s find a way to push the barriers out of the way and move forward.

**Reference:** Birth 2019; Jul 3[Epub ahead of print]

**Abstract**
A validation study of the Australian Maternity Care Classification System

Authors: Donnolley NR et al.

Summary: This multi-centre Australian study examined the accuracy, repeatability and reproducibility of the Maternity Care Classification System (MCCS) developed to classify models of maternity care using 3 randomly allocated model case-studies with repeat classifications 4-6 weeks later. Accuracy (90.8% correct), repeatability (intra-rater reliability; mean agreement 91.5%) and reproducibility (inter-rater reliability; mean agreement across 9 characteristics 83.6%) were high and there was moderate to substantial agreement between raters (Krippendorff’s alpha 0.4-0.8).

Comment (MS): This paper reports on the findings of a study designed to assess the “accuracy, repeatability and reproducibility” of the Australian MCCS. The study was undertaken across 71 maternity units in New South Wales. Using a participatory action approach, a representative from each unit used the scale to classify care from a series of case studies. They were asked to complete the exercise again 4-6 weeks later to test accuracy across time. The results indicate “the MCCS is a valid system for classifying models of care in Australia and will enable the legitimate evaluation of outcomes by different models of care”. Many midwives reading this will, I know, be concerned that this work may create yet more forms to complete and worry what support will be provided. Record keeping (especially electronic records) and reporting systems are said by some midwives in practice to complete and wonder what support will be provided. It is important that any new systems introduced should be effective, efficient and designed with a clear and useful purpose. It is encouraging therefore to see that this validation study provided insight as to how the scale can be used in practice and what guidance and training those applying the scale will need in order to be accurate in their assessment. This means midwives (and others) using the system in the future will have better support. I believe this is important work that we as midwives should support. The correct classification of models of care enables us to compare outcomes more accurately. It also provides the foundations for clarity around costing of services, and prediction of workforce needs. Midwives will be aware that world leaders in maternity care are saying there is a discrepancy in how maternity care is designed with some women receiving too little too late, while others receive too much too soon. Research accuracy in examining this phenomenon in Australia and globally has been hampered because of the lack of consistency in reporting systems across different jurisdictions. It will be interesting to see how momentum in research builds over the years if we have a tool that is able to accurately identify the who, what, when, where and how of maternity care when comparing outcomes for women and babies.

Reference: Women & Birth 2019;32:204-12

Abstract

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Women’s views and experiences of publicly-funded homebirth programs in Victoria, Australia: A cross-sectional survey

Authors: Forster DA et al.

Summary: This Australian, cross-sectional, questionnaire-based study examined 136 women’s experiences and views about publicly funded homebirth programs in Melbourne. The survey response rate was 71%. Most women rated care as ‘very good’ including during pregnancy (81%), labour and birth (90%) and in the early postpartum period (83%). They reported having low anxiety during labour and birth, being able to express feelings, feeling in control, and coping better than they had expected both physically and emotionally. Women also reported feeling supported by midwives and having very positive experiences of the homebirth programs.

Comment (MS): This small, cross-sectional design explored women’s views about their experience of homebirth via a publicly funded homebirth program in Victoria. In this particular study a fear of hospitals or having a previous negative birth experience were not considered a major influence on the women’s decision to elect for a home birth. Instead it was the desire for a natural birth, wishing to feel comfortable in their own environment and the need to feel that they had greater control over their own birth experience. All women accessing homebirth in this study were receiving care within a caseload model, where they “knew” their midwife. It will be of no surprise to most midwives reading this that women were very satisfied with the service. Their responses mirror findings in similar studies, highlighting how important it is to the woman to receive care within a relationship-based model. Women reported low levels of anxiety, felt in control and believed they coped better physically and emotionally than they expected they would. When asked how the model could be improved, the dominant response was to expand it. Not surprisingly the authors conclude by saying that the publicly funded program at the two study sites (started as a pilot) should be continued and expanded. There is clearly a demand for homebirth in Victoria. As reported in this study, 250 women had engaged the services of a private midwife to access homebirth, which represents most homebirths in the state. The paper also reports on previous studies that clearly show that if homebirth was an option, women would make the choice to birth at home. When looking at the demographics of women who accessed publicly funded homebirth in this study, they were all supported by a partner and the majority were educated to degree level. This is the case we see often when resources are scarce, the most informed women can gain access. As midwives, we should be thinking about what we can do to change the status quo of inequality and inertia and drive expansion. Before we can ensure all women who would like to access homebirth are able to we need some forward planning. What can we do to provide women with information about homebirth? What are we doing to enable midwives to feel they can safely and competently support women who want to birth at home? These are the questions that should be driving local discussions. I would therefore ask readers to consider what is happening in your state, in your jurisdiction. If you are in Queensland, why is it that women in Queensland are still unable to access publicly funded homebirth. What are you doing about it? What can we do to support each other in order to secure greater choice for women? Midwifery is political, lets exercise our political voice and use this study, yet further evidence, and lobby for greater access to midwifery care for all women in Australia regardless of where they live.

Reference: Women & Birth 2019;32:221-30

Abstract

AU Midwifery Research Review is an Australian College of Midwives CPD Recognised Course. Individuals are advised to undertake a process of reflective writing when using CPD. A template for undertaking a reflective activity after reading an article can be found on the ACM website at https://www.midwives.org.au/education

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Associations among cervical dilatation at admission, intrapartum care, and birth mode in low-risk, nulliparous women

Authors: Lobst SE et al.

Summary: This cross-sectional, observational study conducted from 2002-07 assessed associations among cervical dilatation at admission, intrapartum care, and birth mode among 21,858 pregnant women. At least one intrapartum intervention (amniotomy, epidural anaesthesia, oxytocin augmentation) occurred in 92.0% of cases and 22.7% received all interventions. Women were >2-fold more likely to receive amniotomy-epidural-oxytocin when admitted at 0-3 cm dilatation (RR 2.83; 95% CI 2.45-3.27) or 4-5 cm dilatation (2.49; 95% CI 2.15-2.89) as when they were 6-10 cm dilated. Adjusted caesarean likelihood was 5-fold higher among women admitted at 0-3 cm (RR 5.26; 95% CI 4.36-6.34) and 2-fold higher among those admitted at 4-5 cm dilated (RR 2.27; 95% CI 1.86-2.77) versus 6-10 cm.

Comment (MS): This cross-sectional, observational study of 21,858 nulliparous, singleton, term vertex births that occurred across nine hospitals in the USA looked at the association between cervical dilatation on admission and the use of amniotomy, oxytocin and epidural in labour. They also report on the association between cervical dilatation on admission and caesarean section delivery. The cascade of intervention was clearly linked to the stage of cervical dilatation when a woman presented herself in labour. Women who were admitted when cervical dilatation was assessed to be 3 cm or less were twice as likely to have all three interventions (amniotomy, oxytocin and epidural) and five times more likely to have a caesarean section. Midwives reading this paper will probably see that the findings mirror their own observational experience, especially when women are receiving care within fragmented non-relationship-based models. The authors conclude the paper saying, “to promote normal physiologic birth, low-risk, nulliparous women should be engaged in shared decision-making about timing of admission after spontaneous onset of labour”. In order to achieve this, we should be striving to increase access to primary maternity care models. Women who access continuity of care from a known midwife report feeling more confident in their birth choices and feel better prepared for labour and birth. This is because they are able to develop relationships with a known care provider where they build trust. This enables increased opportunity for discussion and planning and promotes informed decision-making. Women accessing care within these community-based models are more likely to be able to access early labour care at home, thus avoiding early admission. Every effort should be made to support women to have a safe fulfilling natural birth. We know from this study that being admitted to a birth suite in early labour will reduce the chances of that occurring. We should look then at our local practices and identify areas all along the way where we can make improvements. The first should be expanded access to continuity of midwifery care and out of hospital birth. When women are accessing hospital birth within a fragmented care system, who advises them and provides guidance as to when to come to hospital? We should audit our own practices in order to see why women are coming to hospital too early, what are the intervention levels in our unit, is the intervention necessary, then close the quality loop with improvements as to how interventions can be reduced.

Reference: Birth 2019;46(2):253-61

Morality versus duty – A qualitative study exploring midwives’ perspectives on post-abortion care in Uganda

Authors: Cleeve A et al.

Summary: This qualitative study used individual in-depth interviews and an inductive thematic analysis to explore 22 Ugandan midwives’ perspectives on post-abortion care (PAC). One main theme was identified, morality versus the duty to provide quality post-abortion care, and three sub-themes. Midwives were committed to saving lives but were conflicted about the morality of abortion. They were proud to provide PAC, but structural challenges, lack of supplies and equipment, and high patient loads, hampered good- quality care and left them frustrated. Abortion was implied to be immoral, but PAC experience appeared to shape views of legality, leading to an ambiguous, but more liberal, stance.

Comment (MS): This small qualitative study explores the experience and perspective of 22 midwives providing PAC in a busy public hospital in Kampala, Uganda. The midwives were diverse in terms of years of experience, and religion, but they shared a commitment to providing good care and saving lives. They also acknowledged “conflicting personal morality in relation to abortion and a sense of professional duty, which seemed to influence their quality of care”. Midwives report how their efforts to provide good quality care were restricted by lack of resources and lack of time. They described occasions of cases of self-induced abortion where care was delayed and women were treated without pain relief. Sadly, in some cases women died. This makes confronting reading, Australian midwives reading this paper may wonder why I have chosen it for this review. I think it is important that all midwives recognise the value in having midwives work to their full scope of practice, including being proficient in caring for women post-abortion (as indicated within the ICM scope and definition of the midwife). As women seek care from midwives earlier in pregnancy, and access pregnancy screening, we are more likely to be supporting women experiencing early pregnancy loss and termination of pregnancy. It is important that we are able to provide the individualised, care and support the woman needs. For many of us that will require access to appropriate education and upskilling. We may also need to examine our wider knowledge and personal attitude towards abortion as the midwives in this study did. Access to safe services saves women’s lives. It is of great concern to many people that as we strive to improve access to services in the developing world we are fighting to retain, and in some places gain access to, abortion services in the developed world. Women should have autonomy over their own body and while that may be confronting for some people to accept, what this paper reminds us is that they will exercise that autonomy covertly and lives will be at risk. Midwives are in a unique position to support women’s reproductive rights and should be willing to listen to women’s voices and consider their circumstances and needs as they consider their contribution to this important global debate.

Reference: Midwifery 2019;77:71-7

Abstract

Independent commentary by Associate Professors Mary Sidebotham & Kathleen Baird

Associate Professor Mary Sidebotham is a registered midwife and is currently employed by Griffith University as the Program Director of Primary Maternity Care degree programs. She is a visiting Associate Professor at the Gold Coast University Hospital Queensland, Mary is the Deputy Editor of the Nurse Education in Practice Journal where she leads the midwifery section of the journal. She contributes to maintaining professional standards through her work as a member of the Midwifery Accreditation Committee for the Australian Nursing and Midwifery Accreditation Council (ANMAC), and as an assessor for the Queensland Civil and Administrative Tribunal.

Associate Professor Kathleen Baird is a Midwifery Lecturer within the School of Nursing and Midwifery at Griffith University, Queensland, Australia and is the Director of Nursing and Midwifery Education, Women’s and Newborn Services, Gold Coast University Hospital. She is also joint director of the newly formed Centre for Women’s and Newborn Research, Gold Coast University Hospital and Menzies Health Institute Queensland. Kathleen is an educational program assessor for the Australian Midwifery Accreditation Council, and holds an appointment as a Senior Research Fellow with the University of the West of England.
Midwifery Research Review

Beyond autonomy: Care ethics for midwifery and the humanization of birth

Authors: Newnham E & Kirkham M

Summary: This opinion piece argues that the bioethical principle of respect for a person’s bodily autonomy is often ignored during maternity, as a result of the maternal two-in-one body (and obstetric focus on the fetus) and a history of medical paternalism in Western medicine. Respect for autonomy has become rhetorical and yet it hides unethical practices. Large institutions that prioritise a midwife-institution over a midwife-woman relationship are unethical and inimical to the midwifery philosophy of care. A focus on care ethics can remedy these problems by making power relationships visible and by prioritising relationships over abstract ethical principles.

Comment (KB): In this interesting and thought-provoking paper, the authors discuss the bioethical principle of autonomy with respect to maternity care and midwifery practice. Drawing on respective previous research findings, they argue that although autonomy and informed consent are central to education and practice principles, when women make decisions outside of recommendations, the principle of autonomy is suddenly invisible as women are bullied, coerced and sometimes forced into decisions they disagree with. This is not seen in other health care fields, where it is a given that people can refuse treatment at any time, in part because of the complicating factor of the maternal/infant dyad. The authors go on to discuss how this current disparity between the language and practice of ethics can conceal unethical and dehumanising practice. A solution to this is proposed in a focus on care ethics, an ethics that identifies power relationships (such as those that reveal themselves when women decline recommended care option) and focus on relationality rather than autonomy. If, they argue, there was a midwifery ethics that prioritised the relationship over the rules of the institution, then this problem could start to be resolved and midwifery’s claim to be ‘with-woman’ could be more than tokenistic. The authors acknowledge that where care is provided within continuity of midwifery care models then it is more likely that midwives are able to be with women. The authors conclude that the next steps include research into maternity services using a care ethical approach, to identify and describe current power relationships and their effects as they exist in maternity care.

Reference: Nurs Ethics. 2019 [Epub ahead of print]

Midwives’ perspectives of continuity based working in the UK: A cross-sectional survey

Authors: Taylor B et al.

Summary: This UK multicentre cross-sectional survey (n = 798; estimated response rate 20%) examined barriers and facilitators to continuity models of care (case load and/or team) and working patterns that midwives are willing and able to adopt. Willingness or ability to work in a continuity model was lowest where it required intrapartum hospital and/or home care (35%). Willingness increased as intrapartum care needs decreased (home births only 45%; no intrapartum care 54%). 24% reported a need to work on the same day each week, 31% were working only 12 hour shifts and 37% were unable to work any on-calls and/or nights. Qualitative analysis suggested multiple barriers to including caring responsibilities for children and others. Midwives suggested facilitator approaches including concessions in midwife role organisation including greater autonomy and working pattern choice.

Comment (KB): The evidence is now overwhelming that Continuity of Care (CoC) by a known midwife improves outcomes for mothers and their babies. However, regardless of the vast amount of evidence, implementing CoC models appears to be a challenge for policy and service planners in most countries. Currently, the UK is actively promoting CoC as a future-focussed model of care for all women, so this study, which explores some of the barriers to implementing CoC from the perspective of UK midwives, is very timely. The Maternity Review (2016) is strongly advocating CoC for all women, yet the findings from this study would seem to suggest that some midwives are opposed to and see many barriers to implementing this model of care. However, it should be noted that the survey response rate was very low at only 20% of midwives suggesting the findings cannot be generalised across the UK. Nevertheless, regardless of the response rate the results from the survey highlight some major barriers to the successful implementation of CoC for all women by the proposed timeline of 2021. Midwives who responded to the survey worked in a variety of models of care including community, hospital, case loading or team midwifery, with only 10% working within a home birth setting. Midwives identified several practical barriers to adopting and working within a CoC model, these included, child and family caring responsibilities, personal health issues, transport problems and unspecified responsibilities that would not suit the unpredictable of the CoC hours and being on-call for intrapartum care. Many midwives expressed concern about their own wellbeing and work-life balance with a small number stating they would leave midwifery if they were asked to work in a CoC model. Interestingly, midwives who were willing to provide CoC were younger, aged between 20-29 years, less experienced (qualified between 0-5 years) and were working across different settings within a rotational position. The results of this study confirm the importance of all midwives remaining skilled and working across the midwifery spectrum. This is the first study to access the willingness of the UK midwifery workforce to work in CoC models, and the findings certainly would seem to indicate that some UK midwives are not able or willing to work in CoC models. Midwives faced opposition from the medical profession, where some midwives faced persistent and sometimes disrespectful disagreement leading to a total refusal and opposition to adopt the practice change. Some midwives (n = 10) also faced managerial challenges, despite the initiative exemplifying best practice and advocating for improving the care provided to women and their babies. This resistance presents itself in a range of guises, including being suspicious about the change, being told it was unrealistic, there were other hospital needs that were a priority and funding constraints. Some midwives were told they could only implement the change if it would be resource neutral or make the service a saving or would generate income. The midwives were meet with mistrust, strong resistance, lack of resources and organisational support. In summary, the findings from this study would suggest that midwives not only need the evidence to implement a practice change, they also require support, guidance, as well as the resources. There is a need to create a shared belief that the change is necessary, encourage shared decision-making and develop the skill to enable open communication, not only among midwives but with other healthcare professionals.

Reference: Midwifery 2019;75:127-37

Australian midwives’ experiences of implementing practice change

Authors: Bayes S et al.

Summary: This study, using Glaserian Grounded Theory methodology, was conducted to investigate the experiences of 16 midwives leading practice change to incorporate reliable evidence into care provision. The problems experienced by respondents were labelled “So many barriers on so many levels”. While some were encouraged, supported and enabled, even when change was initiated by the practice site, a number of obstacles were experienced at many levels. This often meant that incorporation of best available evidence into practice took years or did not occur at all.

Comment (KB): This interesting paper describes the findings of a small, qualitative study that explored the challenges Australian midwives face when they try to implement a midwifery led practice change that incorporates the latest evidence and reflects best practice. All the midwives who participated in the study (n = 16) faced copious challenges when attempting to implement and embed the practice change. This is by no means a new challenge, nor is it unique to midwifery, in fact such challenges have led to the introduction of Implementation Scientists to promote the introduction and uptake of evidence-based practice. Some of the main challenges faced by the midwives included fierce opposition from colleagues, including fellow midwives, with some midwives refusing to adopt the change because they were too busy doing other day-to-day tasks. Many midwives faced opposition from the medical profession, where some midwives faced persistent and sometimes disrespectful disagreement leading to a total refusal and opposition to adopt the practice change. Some midwives (n = 10) also faced managerial challenges, despite the initiative exemplifying best practice and advocating for improving the care provided to women and their babies. This resistance presents itself in a range of guises, including being suspicious about the change, being told it was unrealistic, there were other hospital needs that were a priority and funding constraints. Some midwives were told they could only implement the change if it would be resource neutral or made the service a saving or would generate income. The midwives were meet with mistrust, strong resistance, lack of resources and organisational support. In summary, the findings from this study would suggest that midwives not only need the evidence to implement a practice change, they also require support, guidance, as well as the resources. There is a need to create a shared belief that the change is necessary, encourage shared decision-making and develop the skill to enable open communication, not only among midwives but with other healthcare professionals.

Reference: Midwifery 2019;70:38-45
Early-career midwives’ experiences of perineal assessment and repair after normal vaginal birth

Authors: Hunter C & Bick D

Summary: This qualitative semi-structured interview study analysed 6 early-career (<5 years after qualification) midwives’ experiences of performing perineal assessment and repair after normal vaginal birth with first- and second-degree perineal trauma. Interpretive phenomenological analysis identified two superordinate themes: “Working and learning in an imperfect environment”, inadequacies in pre-registration education on suturing, and lack of support for developing clinical skills after qualification; and “Knowing myself, understanding my women”, that highlighted suturing in terms of professional identity and competency, promotion of continuity and responsibility for patient wellbeing.

Comment (KB): Failure to correctly assess and repair trauma of the perineum following childbirth can have lasting and significant morbidities for women. Despite perineal repair being a core competency for the midwife, carrying out perineal repair has been reported as a great source of anxiety for some midwives, with many reluctant to take on this aspect of the midwives’ role. The overall aim of this small phenomenology study was to explore the experiences of newly qualified midwives (n = 6) performing perineal assessment and repair. All the participants had experience of perineal repair and all worked in a large, consultant-led teaching hospital. All participants reported that their pre-registration midwifery program failed to prepare them for perineal repair and felt it was given a low priority in the curriculum. In addition, once qualified, their preceptorship program failed to meet their expectations in preparing them for some of the essential midwifery skills such as perineal repair. However, in opposition, upon qualification the ability to perform perineal suturing was considered as an important and essential skill. Competing demands and heavy workloads continued to be a barrier to becoming proficient, and as time progressed with limited opportunity to perform perineal suturing the participants became more anxious about performing perineal repair. The midwives alluded to the shock of actually performing perineal repair in practice as opposed to simulated learning, stressing that the reality caused them some emotional distress, as they felt a great sense of responsibility. This study identifies that midwifery learning opportunities for developing the skill for perineal suturing can easily be sacrificed due to the busy demands of the birth suite and the learning needs of more senior midwives or doctors, resulting in everyone competing for learning experiences. Perineal suturing is an essential midwifery skill, and one that is of benefit to all women. Following birth it is considerate and kinder that a woman has a midwife who knows conduct her perineal assessment and repair than introducing another professional at such a personal and intimate time. Therefore, the skill of perineal suturing should be strengthened and embedded into all pre-registration midwifery programs, so that upon qualification newly qualified midwives are already skilled and competent in perineal assessment and repair and will only require a period of consolidation during their preceptorship year.

Reference: BJM 2019, Jan 8 [Epub ahead of print]

Abstract

Caffeine exposure during pregnancy, small for gestational age birth and neonatal outcome – results from the Norwegian Mother and Child Cohort Study

Authors: Modzelewska D et al.

Summary: This analysis of data from the Norwegian Mother and Child Cohort Study of 67,569 full-term singleton mother-infant pairs was conducted to explore associations between prenatal caffeine exposure (self-reported in gestational week 22) and neonatal health. Caffeine exposure was associated with small for gestational age (SGA) babies (OR 1.16; 95% CI 1.10-1.23) and SGA was associated with an increase in morbidity/mortality (OR 3.09; 95% CI 2.54-3.78) and a greater need for intervention (OR 3.94; 95% CI 3.50-4.45). However, prenatal caffeine exposure was not directly associated with either neonatal morbidity/mortality (OR 1.01; 95% CI 0.96-1.07) nor neonatal intervention (OR 1.02; 95% CI 1.00-1.05 per 100 mg increase in caffeine intake).

Comment (KB): Caffeine is found in many common foods such as coffee, tea, chocolate and soft drinks. Therefore, it is not uncommon for many women to continue to enjoy caffeine products during their pregnancy. Yet, maternal caffeine crosses the placenta where the fetus has to rely on maternal clearance, and a high caffeine intake during pregnancy may result in an increased level of catecholamine levels in the fetus. Researchers in this large Norwegian study (n = 67,569) examined the association of maternal caffeine intake and its link with SGA. Among the participants, caffeine intake varied between 0 and 1843 mg with a median value of 58 mg, with 75% of women consuming less than 123 mg. Daily caffeine intake varied according to maternal characteristics, for instance women who had a higher intake of caffeine, smoked, were older, had higher education qualifications and were in a higher income bracket. Whereas, women in the lower caffeine intake were younger, had a lower income bracket and were non-smokers. The source of caffeine intake also varied among women; among lower caffeine consumers the majority of their caffeine derived from chocolate, soft drinks and tea. Overall, the results from the study concluded that a total caffeine intake was not significantly associated with neonatal morbidity/mortality. There was no evidence of a nonlinear relationship between total caffeine intake and log odds of neonatal outcomes, neither did additional adjustment for SGA impact on the association between caffeine exposure and neonatal outcomes. When interpreting the overall results of the study, the authors of the paper stress the importance of acknowledging that 75% of the study population had a low caffeine consumption of below 123 mg/day with only 3% of women having a daily caffeine consumption of above 300 mg/day. It is also known that many women in early pregnancy will actually go on to develop an aversion to coffee, and as a result will have a much lower caffeine intake, this occurred in this particular cohort. This could account for the low level of caffeine intake among this particular cohort or it could just be nature’s way of ensuring that caffeine intake during pregnancy remains at a low and a safe level.


Abstract