Antenatal risk assessment and classification in maternity care: an integrative review

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Abstract

Problem

Antenatal risk assessment and classification dominates midwifery care but may not be improving outcomes and may introduce iatrogenic harm.

Background

Midwifery-led care and birth settings promote good birth outcomes and women's experiences. In the United Kingdom increasing numbers of women are classified as having high-risk pregnancies and therefore recommended to have obstetric-led care and birth settings, restricting the number of women accessing midwife-led care.

Aim

Evaluate and integrate literature on the effectiveness, justification and impact of antenatal risk assessment and classification as performed in the UK.

Methods

Integrative literature review of 16 articles from 2000 to 2025, from midwifery and obstetric perspectives.

Findings

Many antenatal risk assessments did not improve outcomes due to inconclusive tests, lack of treatment options and difficulties balancing risks. The assessments and proposed treatments were not clearly communicated to women and assumed benefit and acquiescence in the absence of evidence. Risk assessment processes could create physical and emotional iatrogenic harm to women.

Discussion

Reductive medical-model risk assessments and subsequent care pathways are not compatible with women-centred care and lead to known benefits of midwifery care being under-utilised. Biopsychosocial risk assessment could be culturally and value sensitive, better address social

determinants and inequalities, offer genuine choice and control for women and increase the use of women-centred midwifery services while enhancing safety.

Conclusion

UK antenatal risk assessment lacks efficacy in improving outcomes, risks iatrogenic harm and can negatively affect women's experiences. A shift to relational models of midwifery antenatal risk assessment could be more women-centred, personalised and culturally specific, possibly leading to better outcomes overall.

Keywords

Antenatal. Pregnancy, High-Risk. Midwifery. Pregnant Woman. Risk Assessment.

Statement of Significance

Problem

Antenatal risk assessments leading to increasing proportions of women being classified as high-risk and directed to obstetric-led birth settings are not improving outcomes, lack a clear evidence-base and can introduce iatrogenic harm.

What is Already Known

Midwifery and medical models of care are in tension. Women with straightforward pregnancies and moderate conditions fare better in midwifery-led care, but decreasing numbers of women are deemed eligible due to high-risk categorisation.

What this Paper Adds

This paper examines antenatal risk assessment as a key dimension of the current crisis in UK maternity care and proposes instead biopsychosocial- risk assessments in relational care models.

Antenatal risk assessment and classification in maternity care: an integrative review

Background

A large body of evidence supports the benefits of midwifery models of care with women-centred, personalised, culturally-adaptive care, continuity of carer, and salutogenic care that supports normality and possibly mitigates health inequalities.[1–4] The recent Cochrane review on midwifery continuity of care models showed reductions in caesarean and instrumental births, higher rates of positive experiences and lower financial costs, with equivalent fetal and neonatal outcomes.[5] Midwife-led birth settings similarly showed significant reductions in intervention rates and enhanced maternal safety without compromising neonatal safety[1,3] Midwifery-led care is recommended in the United Kingdom (UK) for women with low-risk pregnancies and recent initiatives have emphasised the importance of woman-centred midwifery care.[6–8] Women with intermediate risk factors also have better outcomes in midwifery-led care than those in obstetric care, while not recommended under current guidelines.[1,3,5,9]

The dominant obstetric framework extrapolates individual clinical and epidemiological risk from population-wide patterns. Individual women are increasingly risk-assessed against population data, labelling deviation as 'high-risk'. I.e. identified as having a having a higher likelihood of a future problem, that may in turn lead to a poor outcome. In the UK National Health Service (NHS), additional surveillance and / or intervention is then typically advised along with obstetric-led care, albeit with midwifery appointments. [6,10–12] These women are consequently "risk-assessed" out of access to midwifery-model antenatal care and midwifery-led birth settings, and into obstetric-led care in hospital settings with its attendant high rates of intervention and industrial-model care.[13] This can create a tension between the rhetoric and reality of personalised maternity care, restricting genuine choice of birth-place.[14] Increased screening and monitoring of pregnant women correlates with increased birth interventions.[3,15] Classifying pregnancies as high-risk may increase the chance of iatrogenic harm, both physically and psychologically.[1,16] Rising interventions increase the cost of maternity care and have been linked to high rates of attrition for midwives.[17–19]

Since the 2015 UK government target to halve stillbirth rates, perinatal risk management technologies and clinical governance have taken centre-stage in maternity care.[20,21] With a

primary focus on improving neonatal morbidity and mortality rates, recent UK initiatives have refined risk classification processes and increased monitoring and surveillance. [22–24] The Saving Babies Lives Care Bundles, for example, recommend increased surveillance of women at risk of fetal growth restriction.[23] Recent reports of avoidable poor outcomes and the current National Maternity and Neonatal Investigation often lead to increased governance and surveillance, regardless of the causes of the poor outcomes.[24] However, the NHS England Maternity Transformation Programme started in 2016 has not achieved the desired improvements in outcomes, with recommendations such as person-centred care and continuity of midwifery care poorly implemented.[5,25] Between 2012 and 2023, spontaneous labour rates declined from 64% to 43%, while inductions rose from 21% to 33% and caesarean births from 25% to 40%. Stillbirth rates fell modestly from 0.48% to 0.39% of births, missing the 50% reduction target, and neonatal mortality slightly increased from 0.28% to 0.3%. [22,24,26,27] Maternal deaths from direct causes rose by 33% between 2016–18 and 2019–21.[28]

Midwives play a key role in antenatal risk assessment, but the biopsychosocial model of midwifery approach differs from obstetrics. It involves supporting salutogenesis with ongoing vigilance for deviations from the norm, considering the woman's history and values. It considers the individual woman in her social setting, with the aim of supporting health (not the absence of disease) and can consider wider factors such as social and economic relations.[29,30] In doing so, risk assessment can remain grounded in the woman's embodied experience and social relations. Feminist critiques of medicalised risk assessment processes have examined the power relations and biopolitics implicit in the systems and mechanisms. These include the disempowerment that occurs for the woman in the context of the hospital building, the uniforms and hierarchy of the staff, and privileging the supposedly objective data of her own body gained from technological tests the medical experts alone can interpret.[31] These factors are exacerbated when intersecting with race and class.[32,33] Evaluation of antenatal risk assessment and classification (ARAC) needs to account for clinical outcomes for babies and women, *and* women's experience. Despite a body of literature on models of care, [5,29,30] and critiques of medicalisation and risk[10,11,11,20] especially regarding intrapartum risk assessment, [34,35] there is no existing review integrating outcomes, women's experiences and sociocultural analysis of ARAC.

In line with other places in the global north, current UK ARAC practice has an impact on who is able to access midwifery-led care, and therefore on intervention rates and consequent health

impacts, pregnancy and birth experiences, and NHS operation. Most of the authors are based in the UK, and experiences here are emblematic of global tendencies. We aimed to examine the rationale and evidence base for ARAC. Our question is whether the current practice of UK ARAC and the subsequent recommended interventions are effective, justifiable, and beneficial to women.

Terminology: In antenatal care, 'screening' is often used to mean screening for fetal congenital abnormalities. We use screening and ARAC in its broader sense of testing in the absence of symptoms.[12,36] We use the term high-risk to include the terms intermediate risk or complex care needs.

Positionality: The main author, AM, is a midwife and analyses maternity care from a feminist midwifery perspective. The other authors are midwives (EB, VF, RT, AA), or other health professionals applying woman-centred, biopsychosocial approaches (CM, KS, TD). This literature analysis is grounded in a women-centred and biopsychosocial midwifery framework.

Aim

To evaluate and integrate literature on the effectiveness, justification, and impact of antenatal risk assessment and classification as currently performed in UK maternity care. This will inform whether current UK ARAC improves birth outcomes and identify potential iatrogenic effects on women's experiences and health.

Integrative review method

The integrative review method, as outlined by Whittemore and Knafl[37] and Dhollande,[38] was selected as it facilitates the integration of diverse methodologies, research designs, and data sources, not possible with a systematic review. The aim was development of analysis with a defined focus, beyond the remit of a scoping review. Integrative review involves systematic searching and screening and enabled integration of midwifery and obstetric literature, quantitative and qualitative research, and studies on diverse ARAC systems.

Literature search

Search terms and inclusion and exclusion criteria were developed through an outline by AM based on commonly used terms, then by discussion with the co-authors initially and during the search process (tables 1 and 2).

The foci were the process, aim, experience, and outcomes of ARAC, excluding literature focusing on fetal abnormality screening. The search included studies from 2000 onwards,

enabling inclusion of analyses of key historical developments, and previous initiatives to refine the antenatal risk assessment and classification process.[39–43]

Table 1: Search terms

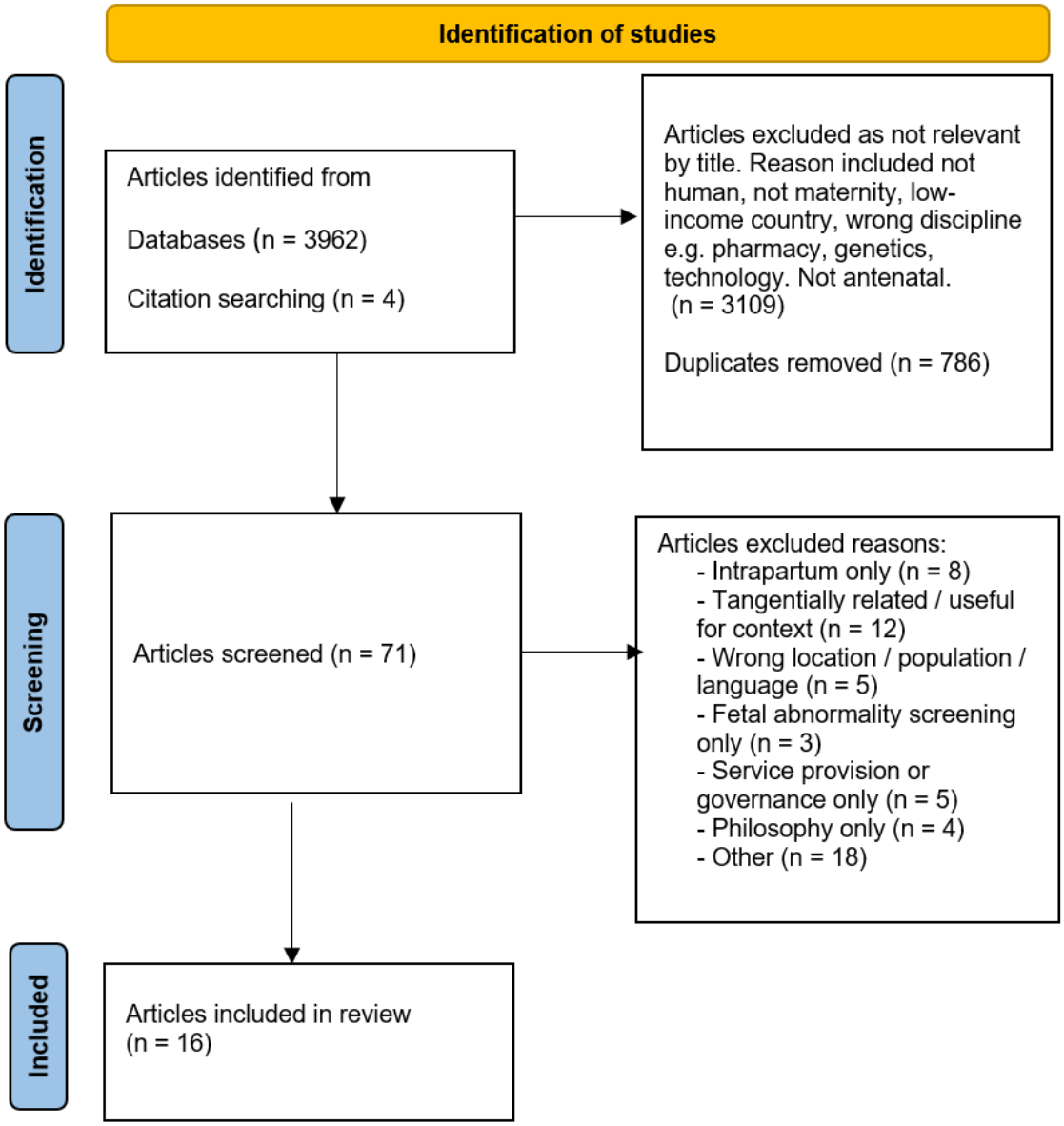
OR	AND	OR	AND	OR
Risk		Pregnan*		Catagor*
Chance		Antenatal		Clasifi*
Uncertainty		Maternit*		Manageme*
Liabil*		Prenatal		Pathway
Danger		Perinatal		

Table 2: Final agreed inclusion and exclusion criteria

Inclusion criteria	Exclusion criteria
Published in English language	Intrapartum, acute, urgent care, and postnatal settings
Women's and midwives' experience of risk classification	Genetic counselling and pre-conception risk assessments
Risk discourse in antenatal context	Fetal screening and fetal congenital abnormalities
Risk classification impacts and outcomes	Low-income countries or those with significantly different health or social systems from those in the UK.
	About organisational structures or clinical governance only
	Medical anthropology

Searches were conducted in October 2024 in CINAHL Plus, AMED and MEDLINE as the databases with the largest collection of relevant midwifery and obstetric literature. Through title screening AM selected a list of 71 articles. Two reviewers independently screened articles based on the abstract and full text using the Rayyan platform, resolving disagreements through discussion, for example exclusion of texts solely referring to clinical governance. Revised detailed selection guidance was provided after clarification through discussion with the text screening team (AM, TD, EB, VF, RT, AA).

Figure 1: PRISMA diagram of search results



Data evaluation and selection

Data evaluation included assessment for relevance and use of the Critical Appraisal Skills Programme Checklist (CASP).[44] Papers were selected for both methodological quality and theoretical relevance to ARAC from a midwifery perspective; for example whether the topic related to ARAC regarding outcomes, care, service culture, experience of midwives or women. No papers were rejected due to quality. Although our focus was on the UK, relevant literature was included from comparable high-income countries with reasonably accessible health provision. Due to the range of articles from discussion pieces [40,42,45], literature reviews [12,39] and qualitative and quantitative research [36,46–50] measures of relative importance were hard to

quantify to permit comparison. However, larger empirical studies were more heavily relied on in the analysis than shorter discussion pieces. The high CASP rating and the insights from primary research involving women's views made Baddington et al, Clark et al and Harris et al particularly pertinent for analysing ARAC in terms of women's experiences, and Breeze and Lees for examining the efficacy of ARAC.[36,46,47,51] Ten articles were written from a midwifery perspective.[12,36,40,42,45–50] Four articles were written from obstetric perspective. [41,43,51,52]

Literature inclusion. Table 3.

Table of the included literature showing the research question, research method and main findings as pertaining to ARAC.

Author (date) Country	**Issue / Focus**	**Research method**	**Findings**
Baddington et al (2023) New Zealand	Navigating ultrasound prediction of large babies.	Feminist poststructuralist qualitative. Interviews with 16 women.	Prediction of a 'large' baby negatively impacts on women's birth experiences.
Breeze & Lees (2007) UK	Prediction of fetal growth restriction and perinatal outcomes.	Evidence review and discussion.	Dopplers and biochemical screening good at prediction. Pre-term birth risk can outweigh in-utero demise risk.
Carter et al (2022) UK	Protocol for implementation evaluation of Tommy's Clinical Decision Tool.	Protocol for mixed method early implementation evaluation study.	Not applicable.
Clark et al (2024) UK	Midwives' and obstetricians' experiences of altered fetal movement.	Focused ethnographic study.	Heightened focus on fetal movement may increase anxiety and intervention.
Gomez & Young (2002) USA	Weighted risk index for antenatal prediction of perinatal outcome.	Trial of weighted antenatal risk score.	Good for predicting low birth weight. Less good for caesarean sections and Apgar's.
Harris et al (2004) Australia	Experience of ultrasound for primiparous women	Qualitative research; interviews with 34 women. Theoretical analysis.	Scans leading to terminations improves overall birth outcomes by removing babies with poor prognosis from birth outcomes. Seeing as knowledge and pleasure.
Jackson et al (2006) UK	Women's experiences of referral and attendance to hypertension antenatal clinic.	Qualitative interviews with 21 women. Thematic analysis.	Antenatal services need improvement for 'at risk' women.
Jordan & Murphy (2009) USA	Balance of risk assessment and risk distortion.	Discussion.	Exaggerated perception of pregnancy risk. Universal application of surveillance and risk management lacks evidence base.

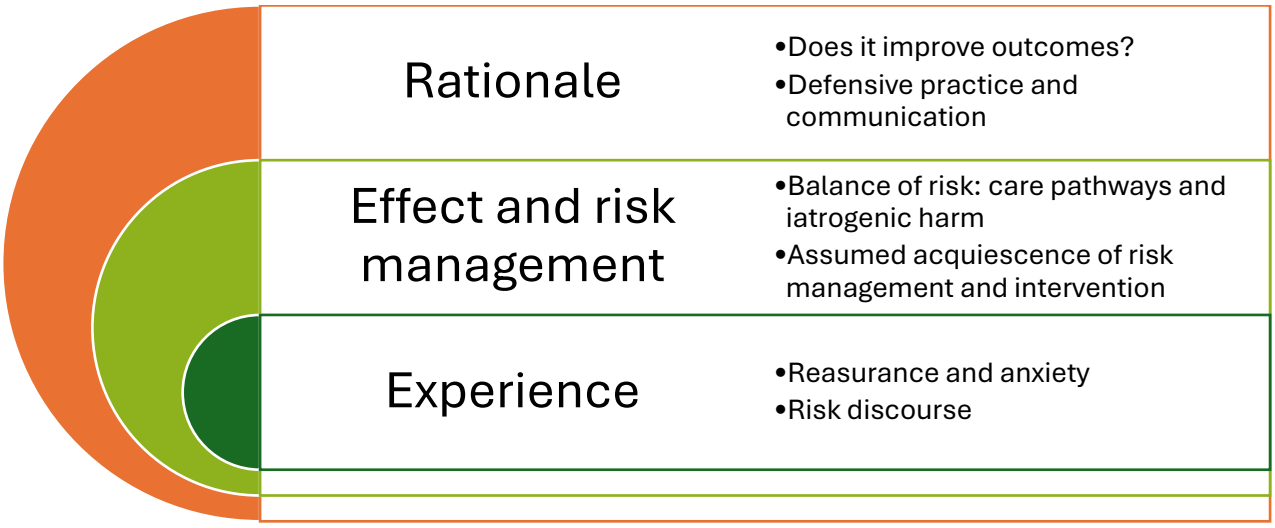
Kelly (2017) UK	Transferring care from midwives to obstetrician: an audit.	Audit of 98 randomly selected records.	2% out of possible 22% referred back to midwifery led care. 10% inappropriate referrals. 32% wrongly classified as high risk.
Knox et al (2018) Scotland and New Zealand	Health policy and consequences for midwife-woman partnerships: Is normal pregnancy compromised by body mass index (BMI) measure use?	Comparative case study of policy, guidelines and midwifery models of care in New Zealand and Scotland.	Medical and midwifery values in conflict. BMI as a tool may be ineffectual.
McGlone & Davis (2012) UK	Risk and obesity: Towards a 'tolerable risk' approach?	Discussion.	'Tolerable risk' in partnership with women better than 'absolute risk' to address maternal obesity.
McIntyre, Chapman, Francis (2011) Australia	Hidden costs of universal application of risk management in maternity care.	Literature review and discussion.	Over-use of caesareans affecting women's future reproductive health.
RCM (2000) UK	Assessing and managing risk in midwifery practice.	Discussion.	Overview of policy changes.
Roberts (2019) UK	How do risk management principes fit with the reality of clinical midwifery?	Literature review.	Risk classifications and management at odds with promoting normality and safety.
Stahl & Hundley (2003) Germany	Effect of risk label on psychosocial state of pregnant women.	Quantitative prospective case-control study. 111 women in antenatal class.	Worse psychosocial state in high-risk category. No difference in other variables.
Vos et al (2017) Netherlands	Evaluation of implementation of scorecard-based antenatal risk assessment and care pathways.	Evaluation of implementation including reach and fidelity across 10 trial sites.	6 out of 11 municipalities met implementation criteria.

Data extraction and analysis

Data extraction, assessment and reduction steps were developed through an iterative process by AM following a thematic network approach for integrative review data as described in Dhollande et al.[38] Initial codes were created through close reading and detailed documentation, which were then reduced, connected, and grouped into subcategories and themes aided by maps and co-author discussions. A bespoke, detailed data extraction table was developed including sections on; risk assessment process, efficacy, effect on women and midwives, choice and decision making, the role of midwife, and policy level. Data from diverse methodologies was thus integrated into the final synthesis and interpretation. The relatively small numbers of participants in the quantitative study (111) and the audit (98) allowed for equal weighting with the qualitative data. Quantitative synthesis or meta-analysis was not undertaken due to heterogeneity of study designs, outcomes and methodologies, and the nature of a mixed method integrative review. The data extraction headings formed the basis of the synthesis of the findings.

Findings

Three key areas each with sub-themes, were developed from the literature reviewed (figure 2).



Rationale for risk assessments

Do ARAC improve outcomes?

Debate over the rationale and efficacy of ARAC as screening was evident throughout the literature. Widely accepted screening criteria are: a reliable and accurate test and a recognisable early asymptomatic stage of a health problem, that can be treated, ideally early in

the evolution of the condition. [51,53–55] Risk assessment is "screening for conditions that could result in adverse perinatal outcomes for which an intervention would improve the health outcome for mother or child." (p191) [42] The value of any risk assessment is dependent on the action able to be taken and the benefits of this action.[41]

Seven studies revealed ARACs not fulfilling these criteria.[36,42,45–47,49,50] Firstly, poor predictive values led to inconclusive findings, including reduced fetal movements as a predictor for perinatal morbidity and mortality, [47] and fetal growth scans being predictive of shoulder dystocia.[46] Many risk assessments in 2003 lacked sensitivity, specificity, and predictive value, often relying on expert opinion, and socio-demographic and physical traits often failing to predict adverse outcomes.[50] The next challenge was the absence of acceptable management options to address the risk. For example, for risk of preterm labour in 2009, or for the case of a unilateral short fetal femur where there was neither '*normalcy nor treatment*.' [42] More recent studies point to the 2003 and 2009 findings still being the case.

Tools for addressing fetal concerns in 2004 and 2009 were essentially limited to termination of pregnancy, induction of labour, or caesarean section. Statistically improved birth outcomes correlated with ultrasound scans were mainly due to higher rates of termination of pregnancy; removing babies with poor prognosis from the population whose outcomes are measured, as is still the case today.[36,42]

Additionally, some treatments did not deliver conclusive benefits. For some ARAC programmes in the early 2000s and also in 2018 there were no improvements in outcomes flowing from having been risk assessed.[36,49,50]

ARACs increasingly use population-wide, epidemiological data to assign a risk category for the individual woman. This approach limits personalised care, and often does not take salutary factors, other health factors, previous perinatal experiences, the woman's values and her own knowledge of her body, or clinical expertise into account. The resulting recommendations may or may not be applicable for that specific woman.[36,45]

In response to this, the TCDST aims to integrate personalised risk weighting, including protective factors. Prospective modelling suggests its personalised assessment for threatened preterm labour could prevent 90% of hospitalisations while maintaining similar neonatal outcomes.[52]

Body Mass Index (BMI) was developed for aggregating population data for public health indicators, not individual risk assessment. Its use in ARAC, despite marginal outcome differences, risks pathologizing otherwise normal bodily states and conflicts with women-centred care principles.[49]

Defensive practice and communication of ARAC

ARAC is perceived to reduce risk for the health care professional or NHS Trust, with midwives conducting tests out of fear of legal or emotional consequences.[47] Despite ARAC not preventing malpractice suits, it is sometimes intended to avoid litigation.[42] Influenced by defensive practice, blame culture, and fears of poor outcomes and litigation, midwives offer choices that suit maternity service protocols, do not offer a holistic risk-assessment based on the woman's characteristics or values and overestimate the likelihood of poor outcomes.[42,45,47] Women are over-referred to obstetric-led care, and rarely move back into midwifery-led care despite being eligible.[50,56] This is widely acknowledged as an on-going issue.[57]

Most studies emphasised presenting absolute rather than relative risk when communicating with women.[42,45] Provider communication strongly influenced women's understanding of risk. Phrasing such as normal/abnormal or increasing/decreasing altered interpretation even with identical numbers.[42] Women's perception of risk was often higher than the absolute risk, differed from the practitioner's perception, and increased with any recommended intervention.[39,42,50] The balance of risks of the intervention versus the problem it was intended to mitigate against were usually not sufficiently explained to women.[39,42,46] For example, risks associated with caesarean birth, including wound infection, neonatal intensive care unit admissions, and stillbirth in subsequent pregnancies, were downplayed and benefits overstated.[39] 'Shroud waving' ("*They said I was at risk of killing my baby*" (p559[46])) is a powerful dynamic, regardless of actual risk or accuracy of the screening. Additionally, the information the health care professional *could* impart is often inconclusive and complex, making it hard to deliver in a short time frame.[36] The authors therefore query the practicalities of how midwives will explain the complex algorithms in tools like the TCDST, and whether such tools provide guidance on communicating risk.[52]

Sometimes neither absolute nor relative risk is explained, but rather ARACs were presented to women as routine, non-voluntary, and part of low-risk care; women were told they *'need to have the scan to see whether the baby is doing what it should be doing'* (p31).[36,46] Out of the twenty four women attending a hypertension clinic in 2006, only one felt she had been fully informed by her midwife as to the purpose and process of the clinic.[48]

The effect of ARAC: Management of risk and iatrogenic harm

Balance of risk

The enactment of ARAC itself, even if the findings are normal, may alter a woman's pregnancy and birth journey. Assessment for reduced fetal movement increased the likelihood of induction of labour, even after reassuring scans and no concerns were found.[47] Testing the glucose tolerance of healthy, asymptomatic pregnant women changes the pregnancy experience for many healthy women.[42]

In cases of deviant findings with recommended interventions to mitigate risk, attendant iatrogenic risks can be high. Induction of labour and pre-labour caesareans can cause iatrogenic prematurity and low birthweight, precludes planned birth in midwifery settings and is associated with more negative birth experiences. In the cases of fetal growth restriction screening, which still has low specificity and predictive value, some babies may have fared better in utero.[51]

The management of the risk of future intrauterine hypoxia is balanced against iatrogenic low birth weight. The AFFIRM trial on women's fetal movement monitoring demonstrated that monitoring did not conclusively reduce stillbirth, but did increase inductions of labour, caesarean sections, neonatal unit admissions and possibly post-birth neonatal death.[47] The Saving Babies Lives Care Bundle, increased the number of caesarean sections, inductions of labour, and neonatal unit admissions.[52] Caesarean sections double the incidence of unexplained stillbirth in subsequent pregnancies as well as significantly increasing rates of spontaneous abortion, ectopic pregnancy, uterine rupture and placental abruption.[39]

Inductions of labour or planned caesareans subsequent to scan findings of a larger fetus (15% margin of error with diagnosis of 'large for gestational age' incorrect in 60% of cases) did not improve outcomes for women and babies and increased other risks, casting doubt on the value of the growth scans.[46,58]

When risk management is applied to many for the benefit of few, there is a high chance of iatrogenic harm without clinical benefit due to burgeoning prophylactic interventions. Women labelled as high-risk often have more interventions than would be beneficial, possibly due to care-provider bias.[50] As McIntyre state: "*Medical risk in pregnancy is known to benefit 15% or less of all pregnancies. Risk management applied to the remaining 85% of healthy women results in the management of risk in the absence of risk*" (p 211).[39]

Due to resource limitations, there is a corresponding deficit for women genuinely at risk. [39,52] ARAC with low specificity leading to high numbers of induction of labour and caesarean

sections may increase the chance of those who would genuinely benefit from interventions being overlooked; aggravating the 'too much too soon, too little too late' problem.[39,52] Ironically, risk management interventions reduced evidenced-based care, such as midwife-led birth settings, women mobilising and using water-immersion during labour, and continuity of carer.[45,49] Induction of labour removes the benefits of spontaneous labour onset increasing pelvic plasticity and the moulding and positioning of the fetal head.[42]

Assumed acquiescence of risk management and intervention

Despite the lack of a conclusive evidence-base and possible iatrogenic harms, several articles noted the link between the risk-classification and an assumption of accepting a care pathway to mitigate that risk, regardless of how remote the possibility of the risk, nor how likely or severe the effects of the 'cure'.[39,40,42,46,47,52] Guidelines titled 'management of women with obesity' indicates disregard for women's autonomy to weigh the pros and cons of interventions.[45,49] The authors note that the TCDST study assumes uncritical acceptance of recommended pathways, defining "*risk groups and corresponding personalised care pathways*" without distinguishing risk assessment from the decision to follow that care. (p.4).[52]

Women's experience

ARAC and classifying women as 'high-risk' has an impact on the care women receive and on their emotional and psychological state.[42,46–48,50] Any deviant finding can negatively affect the woman's experience of her pregnancy and her confidence.[42,46] Scans indicating a larger than normal fetus increased medical surveillance and had *'oppressive and disempowering effects'* (p. 557) on women including reduced choice about their births, a sense of loss of control, disempowerment, and reduced joy.[46] The high BMI label can imply a moral failure and contribute to women's low self-worth and be anxiety-inducing, at odds with healthy living promotion. [45,49]

Being labelled high-risk led to lower psychosocial status scores than for those labelled low-risk in one 2006 study.[50] Anxiety after a high-risk finding can lead to tokophobia, including requesting surgical birth to avoid labour.[42] The dual effects of reassurance and anxiety are reported in five of the studies.[42,46–48,50]

Many authors emphasised the importance of genuine shared decision-making in the mother-midwife relationship. In a midwifery model, mitigation of the power dynamics between women and health care professionals when making decisions about ARAC and subsequent care pathways is necessary to position the woman as the authority in her pregnancy and

birth.[12,36,42,46,49] Some women found mother-midwife allyship to be negatively affected by midwives who operate in a risk-focused paradigm.[46] For the women, the greater the perceived risk, the greater the willingness to hand over the locus of control to health care providers.[42] Women see ARAC as part of essential care, and expect reassurance or objective evidence of fetal wellbeing.[42,46,47] Although some women could articulate the scan's ability to predict placental position, fetal anomaly, and growth, less clear was their understanding of the margin of error, treatment options available if concerns were identified, or the increased likelihood of intervention.[46] Women described having the scan as a way of demonstrating acting as a 'good mother' or 'doing what is best for the baby'.[36]

Jordan and Murphy claim this 'good mother' narrative also constructed acquiescence with the intervention pathway, regardless of the strength of evidence of improved outcomes or chance of iatrogenic harm. Choices were driven by guilt, fear and wanting to choose the 'right' option. The wellbeing of the fetus was assumed to take priority over the wellbeing or wishes of the mother, implying they were in conflict, with the care provider positioned as champion of the fetal interests.[42]

Discussion

We set out to analyse the available literature on antenatal risk assessment and classification and the effects thereof. We found that the proliferation of ARAC over the last 25 years has not achieved its intended goals, although some improvement to neonatal outcomes was apparent. The ARACs reviewed here led to higher rates of iatrogenic harm to women through use of prophylactic intervention, exclusion from midwifery-led birth settings, heightened anxiety, and some harm to neonates from iatrogenic prematurity. Their lack of specificity, leading to high rates of prophylactic intervention may, ironically, distract focus from the smaller number for whom the benefits of an intervention would outweigh the risks. ARAC, often based on epidemiological data, aimed to predict and mitigate complications but were frequently unreliable due to lack of predictive value or treatment pathways with conclusive benefit. We can therefore assume that the ambition of the new Tommy's Clinical Decision Support Tool (TCDST) (currently being introduced as a refined ARAC tool) to only use evidence demonstrating clear clinical benefit may be limited by a lack of an available evidence base.[52] Communication to women about ARAC and recommended care pathways often assumed benefits not born out by evidence. Focusing on risk and the drive to lower the neonatal mortality rate, has arguably directed the service away from optimal outcomes for most women without appreciable positive impact. There is a disjuncture between the aspirations for ARAC and the outcomes and effects

thereof. In this discussion we examine the assumptions behind ARAC and models of midwifery care and outline what women-centred relational ARAC could look like.

Risk society

Core to the debate around ARAC is the framing of pregnancy and birth as either a risky medical event (normal only in hindsight) or as a biopsychosocial event (that sometimes benefits from medical intervention)..[30,59] The focus on risk in antenatal care reflects the obstetric belief that birth is inherently dangerous. ARAC dominates the schedule and content of antenatal midwifery care.[60] This makes the midwifery focus on salutogenic care, promoting wellness and normality problematic and unstable.[11,12,49] It undermines the biopsychosocial midwifery model and increases anxiety for both women and midwives. [12,42,49] Various studies in this review pointed to the underlying medical model of pregnancy being unquestioningly accepted as the norm, assuming benefits of biomedical governance and control, a phenomenon also apparent in intrapartum care.[11,20,34,35,61] Risk surveillance activities by midwives were announced rather than offered with a rationale.[62] Discussing the effect of continual risk assessment during labour, Scamell highlights the contradiction for women between the midwife stating she is supporting and confirming normality, and continual checks for abnormality or pathology signalling that risk is ever-present and complications likely.[34] The focus on ARAC during antenatal appointments play a similar role in exacerbating anxiety and hindering reassuring salutogenic partnership care. The TCDST has an aim of 'providing reassurance' without recognition that undergoing detailed and rigorous risk assessments can cause anxiety for all women, regardless of the results.[52]

The dominance of the biomedical discourse is evidenced by the assumption of "informed compliance", that women will follow recommendations for ARAC or subsequent care pathways.[36,39,42,46] Women who decline, or even question the rationale, were viewed as disruptive and not being a 'good patient'.[36,46] However, consent to a care pathway must begin with good communication and information, the possibility of informed refusal without sanction, and in the context of relations that equalise power as much as possible.[42]

The current approach arguably views the woman as the carrier of the precious infant, with doctors constructed as the infant's protector from the potentially risky mother.[63] The ubiquity of ARAC and the primary focus on the fetus may contribute to difficulties for women experiencing pregnancy as a normal embodied state.[42] This created difficulties in accurate assessment when

the 'objective' antenatal CTG recording was at odds to a woman's subjective and embodied reporting of fetal movement.[42,47] There is a general societal tendency to consider any screening as a protective and necessary measure, despite lack of evidence of improved outcomes and of increased anxiety and iatrogenic harm.[64] Sociologists have noted the culturally specific nature of our modern 'risk society' attempting greater control over the social and natural world.[65,66] In risk-oriented surveillance medicine, the woman is assumed to be in a liminal state of pre-pathology, or on a spectrum of risk of pathology, even when objective evidence indicates wellness.[47,67] The idea of an action to indemnify the future is woven into the modern idea of risk.[10,11] There is an implicit assumption by both women and health care professionals, embedded in the obstetric paradigm, that a finding of being 'high-risk' comes with an imperative to intervene to mitigate that risk. This idea of the body as a potentially perfect machine if only we had enough medical tools, is at odds with the nature of the organic world that contains uncertainties.[65,66] This explains findings reported in the Lancet of higher rates of maternal mortality and maternal morbidity after caesarean than vaginal birth, along with a range of complications for the neonate.[68]

Controlling risk is not the same thing as enhancing safety, which includes important psychological, social, and spiritual needs as well as more salutogenic approaches to supporting physiological health. A re-evaluation of ARAC could help pivot antenatal care away from classifying increasing numbers of women as high-risk, and towards women-centred, personalised, midwife-led, salutogenic care. This could reduce iatrogenic harm, optimise neonatal and maternal outcomes, short- and long-term, and bring the benefits midwifery care offers including emotional wellbeing and maternal confidence. We examine below what women-centred, relational, physiology-supporting, risk assessment and mitigation could look like.

Biopsychosocial risk assessment

An important goal of personalised risk assessments and reducing interventions where possible is evident in the TCDST.[52] Risk assessments must have a clear evidence-based rationale and expected benefit, and move away from epistemological broad-brush checklists. However, midwives working in a biomedical paradigm can leave women feeling disappointed in the lack of allyship, affecting the trust and reciprocity ideal in the woman-midwife relation.[46] Care grounded in the relationship between the midwife and the woman leads to better outcomes, and a better experience for women, and for midwives.[69,70] Developing a risk assessment that is not binary, and is part of an on-going partnership-model conversation between the woman and

the midwife, would not be a linear process, and could include room for individual cultures, values and wishes. The ability of midwifery to be local, pluralistic and community-based means it can be more adaptable to the women's values and cultures.[32] Decision about ARAC and subsequent pathways can be culturally-tailored, including views on termination of pregnancy, place of birth or expected family size. The risks of, for example, hospital-acquired infection, induction of labour, or labour stalling when transferring from home to hospital, might be more salient for some women than others.

Relational care

Relational care with a known midwife enables women to be better heard both when they say they are well, and when they say they are worried.[30] Every maternity review in the last ten years has identified women not being listened to as a contributing factor to poor outcomes, exacerbating inequality and racism.[71–73] These factors could explain how continuity of midwifery carer leads to significantly lower rates of stillbirth for socially deprived and ethnically diverse women.[74,75]

The relationship with the midwife, and a salutogenic approach, enables women to experience pregnancy as physically, emotionally, socially and culturally-situated and promotes a sense of connection to the fetus. Lupton theorises that bodies are constantly re-made and brought into contextualised being in their relations with others: the fetus, the family, the midwife, and the material environment. Through this lens, a scan in a hospital ultrasound department is a different experience from a midwife's hands in one's living room, where the woman can participate and understand what she is feeling.[63] Antenatal care based on relationship-building and developing a narrative, including, but not centred on, ARAC, would support health and mitigate risk by developing a deeper understanding for the woman and her midwife of the developing pregnancy.[30,60] The centrality of ARAC as currently practised has squeezed out the possibility for these kind of connections.

The environment and care organisation can facilitate or hinder relational midwifery care. McCourt found that antenatal assessments in caseload midwifery were conversational rather than hierarchical, fostering relational care and genuine discussion and choice around ARAC. Unlike medical settings, ARAC uptake was not assumed.[60] The caseloading Albany midwifery practice, with its outstanding outcomes in an area of high social deprivation, had the initial midwifery assessment taking place in the woman's home.[76]

Walsh and Newburn point out that although it's known that social and economic factors affect preterm birth and poor fetal growth, the response has been high-tech clinics and surveillance

rather than developing community support networks or addressing structural inequalities.[30] Under a biopsychosocial model of care, midwives would use only proven technologies, and prioritise holistic, locally accessible care connected to social support with use of interventions only when appropriate to the person's clinical situation rather than as routine. Studies included here from 2000, 2011, and 2019 called for a review of the risk management culture and a renewed focus on midwifery care.[12,39,40] The current intervention rates and crisis in maternity care lend an urgency to this call.[24]

Strengths and Weaknesses

The strength of this integrative review is the overview of ARAC including the a-priori assumptions, the outcome and effect on the women. With a broad overview, and time-period, it lacks detail on specific ARAC. The quantitative obstetric material on outcomes and risk balance, did not always dovetail into the cultural and qualitative research on women's experiences. Some critiques of ARAC may no longer be valid due to technological developments.

Recommendations

Under the current systems and conditions, the trajectory is for birth intervention rates to continue rising with corresponding worsening maternal morbidity. This itself impacts neonates, compounded by effects of birth interventions including iatrogenic prematurity. If a biopsychosocial model of midwifery was used as the basis for a risk assessment, it could focus on relationship building, supporting the embodied experience of pregnancy. Decisions regarding risk assessment and treatment could rest with the woman and be personalised and culturally specific. This may lead to better outcomes overall, clinically and psychologically. New risk assessment tools could allow for this shift of focus and approach by starting with a dialogue between the woman and her midwife that includes the woman's views and values, accurate information on the evidence-base for any recommended or offered ARAC and consideration of population-based statistics in the light of the woman's health and values. The already strong evidence-base for continuity of carer points to the importance of this taking place as part of relational, biopsychosocial midwifery care.[5,75]

Women-centred care and choice should be considered as a central pillar, along with guidelines and clinical expertise, not secondary to guidelines. We hope the upcoming UK national maternity review considers evaluating ARAC and acknowledges the importance of relational care, whilst ensuring optimal maternal and neonatal outcomes.

Conclusions

The evidence suggests current ARAC, as practised within the UK medical model, lacks efficacy in improving fetal and maternal outcomes, risks iatrogenic harm and can negatively affect women's experiences. By funnelling high numbers of women into obstetric-led birth settings, the known benefits of midwifery care are not utilised. A shift to relational women-centred ARAC could be expected to show benefits for mothers and newborns.

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