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Midwives' experiences of using the Mindfetalness method when talking with pregnant women about fetal movements

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ABSTRACT

Background: Information given to pregnant women about fetal movements is important in maternity care and decreased fetal movements is associated with fetal growth restriction and stillbirth. The fetal movement pattern is different for every fetus and women perceive different types of movements. Mindfetalness is a self-assessment method for a woman to use to become familiar with her unborn baby's fetal movement pattern.
Aim: We aimed to explore midwives' perceptions about informing pregnant women about fetal movements and their experiences of working with Mindfetalness in their daily work.
Methods: A web-questionnaire was distributed to midwives who participated in a randomized controlled trial evaluating Mindfetalness, a method for the observation of fetal movements. In total, 67 maternity clinics in Stockholm, Sweden, were randomized to Mindfetalness or routine care. Of the 144 midwives working in maternity clinics randomized to Mindfetalness, 80% answered the questionnaire.
Findings: The midwives thought that the leaflet about Mindfetalness was supportive in their work when informing women about fetal movements and the majority wanted to continue to distribute the leaflet when the trial ended. The midwives also expressed that the study increased their own knowledge about fetal movements. Women embraced the information about Mindfetalness positively and appreciated the written material. The midwives thought that talking about fetal movements in maternity care is an important but challenging task.
Conclusion: Mindfetalness is a useful tool to use in maternity clinics when informing pregnant women about fetal movements. The written information was appreciated by both pregnant women and midwives.

Statement of significance

Problem or issue
Talking about fetal movements is an important aspect of midwives' daily work. Yet, no instruments are available to guide how they should inform or instruct women to become familiar with their unborn babies' fetal movement patterns.

What is already known
Pregnant women want information about fetal movements and midwives in maternity care are an important source. Maternal observation of the unborn baby's movement pattern is important for preventing adverse outcomes.

What this paper adds
Mindfetalness is a self-assessment method for women to use to become familiar with their unborn babies' movement patterns. The midwives thought that distributing information about Mindfetalness was supportive in their daily work. This method can therefore be a useful tool in maternity care.

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1. Introduction

Fetal movements and women's perceptions of fetal movements are unique to every woman and fetus [1]. Fetal movements develop and increase in frequency during pregnancy until gestational week 32 and stay at that level until birth. In late pregnancy, women describe different types/characteristics/qualities of fetal movements, such as "powerful", "large", "slow", "stretching" or "moving from side to side" [2]. Fetal movements is an important measurement of the fetus' well-being [3–5]. Decreased fetal movements are associated with intrauterine growth restriction and stillbirth [6,7], and reducing pre-hospital delay by improving maternal awareness of fetal movements is suggested to be one measure in preventing an adverse outcome [8]. Among women who have experienced stillbirth, 30–50% perceived that the fetal movements diminished gradually over several days before the baby died [9–11]. However, in the STARS-cohort study, 8.5% of women reported that they felt suddenly increased fetal movements prior to death. The majority (50–89%) of women who have experienced stillbirth wait more than 24 h without perception of any movements before contacting healthcare [12,13], and one-third of the women wait more than 48 h [13].

Women are positive about receiving as much information about fetal movements as possible [14]. In an antenatal care clinic in Australia, a questionnaire was distributed to 526 pregnant women from 34 weeks' gestation and 67% stated that they had received information about fetal movements [14]. The majority requested further information from their midwife or healthcare provider and additional written material to refer to at any time. Similarly, a study from New Zealand reported that 62% of the pregnant women recalled receiving information from their lead maternity carer (midwife) about what to expect regarding fetal movements in the last three months of pregnancy [15], and corresponding figures from a Norwegian study were 75% [16]. Still, results from Canada showed that pregnant women had limited knowledge about fetal movements and fetal monitosring [17]. About 54% of the 304 women in the Canadian study stated that they would seek healthcare if fetal movements decreased, and 70% identified daily fetal movements as normal. Two-thirds of the women, however, could not describe normal fetal movements or monitoring techniques, and 37.5% thought that it might be normal if fetal movements stopped around the due date.

Warland and Glover [18] explored what midwives in Australia were telling pregnant women about fetal movements; 87.5% of the midwives answered that they routinely gave women information about fetal movements. However, the authors found that midwives gave non-evidence-based advice to women with concerns about decreased fetal movements, such as drinking cold or sugary drinks if the fetal movements decreased. After educating midwives about stillbirth, they found that the midwives not only improved their knowledge but also became more engaged in involving the pregnant women in conversations about stillbirth [19].

Different types of counting methods have been used to help women to note fetal movements as a way to reduce the risk of adverse birth outcomes [20,21], but no consensus has been reached on whether these are effective. The most common method is kick-counting, where the woman notes the duration of time it takes for her to perceive ten fetal movements [20]. A new method for observing fetal movements has been introduced, called Mindfetalness [22]. The pregnant women are instructed, from 28 weeks' gestation, when the baby is awake, to focus on the character, strength and frequency of the movements (without counting each movement) daily, for 15 min. By using the method, the woman becomes familiar with their unborn baby's unique movement pattern [23–25]. The Swedish National Board of Health and Welfare suggests in guidelines issued in October 2016 that pregnant women should be informed about fetal movements in maternity care from 24 weeks' gestation [26]. We aimed to explore midwives' perceptions about informing pregnant women about fetal movements and their experiences of working with Mindfetalness in their daily work.

2. Methods

This is a study included within a randomized controlled trial evaluating the effects of Mindfetalness [24,27]. With the intention to create similar groups for comparison, the 67 maternity clinics in Stockholm were divided between high-income and non-high-income areas, followed by further division into small, medium or large clinics. After this stratification, 34 clinics were randomized to routine care and 33 to intervention with Mindfetalness. After the randomization, one maternity clinic allocated to Mindfetalness declined participation. Approximately 180 midwives were employed at the 32 maternity clinics randomized to provide information about Mindfetalness to pregnant women and they constitute the study sample for this study. One of the researchers (AA) gave a lecture to the midwives before the start of the intervention. The lecture included evidence-based information about fetal movements and about the Mindfetalness method. The midwives were instructed to distribute a leaflet (Appendix) to the pregnant women registered at the clinic when they were at 25 weeks' gestation. The leaflet included information about fetal movements and instructions on how to practise Mindfetalness. It was, however, voluntary for the women to practise the method. The intervention was ongoing from September/October 2016 to January 31st 2018. Throughout the study, the midwives received a monthly newsletter via email from the research group. The newsletter included information about the study and a summary of the results from recent scientific publications about fetal movements. At the end of the intervention (December 2017), the midwives were asked to complete a web-questionnaire about their experiences of giving information about fetal movements and the Mindfetalness method. In this study, we have analysed six claims/questions in the web-questionnaire. Four items were multiple-choice questions (answer alternatives in brackets) and two items were statements prompting free-text responses:

"Distributing the leaflet about Mindfetalness has been supportive in my work" ("Yes, to a high extent", "Yes, to some extent" or "No"). "To what extend do you agree to the statement: The study has contributed to increasing my knowledge about fetal movements?" ("Strongly agree", "Agree to a large extent", "Agree to some extent" or "Disagree"). "What is your experience of how the pregnant women embraced the leaflet about Mindfetalness?" ("Positively", "Neither positively nor negatively" or "Negatively"). "Would you like to continue distributing the leaflet about Mindfetalness to pregnant women?" ("Yes, always", "Yes, sometimes", "No" or "I don't know").

"Here you can write in your own words, what it is like as a midwife to talk to pregnant women about fetal movements."
"Please describe in your own words your experiences of how the women embraced the leaflet about Mindfetalness."

To the statement, "Here you can write in your own words, what it is like as a midwife to talk to pregnant women about fetal movements", 32 free-text answers were collected. A total of 33 midwives provided free-text answers to the statement "Please describe in your own words your experiences of how the women embraced the leaflet about Mindfetalness". All written answers to the free-text questions were analysed using qualitative content analysis as described by Elo and Kyngas [28]. Qualitative content analysis strives to identify and describe themes and patterns within qualitative data material [29]. An inductive approach was

applied in the analysis process, meaning that the authors did not use a pre-set categorisation matrix, but instead formed codes and categories based on the content of the free-text answers. The analysis was primarily performed by authors AA and SD and followed the steps described by Elo and Kyngas [28]; preparation, organizing, and reporting. The preparation phase constituted assembling all free text answers into two units of analysis – one for each statement with free-text answers. The organising phase of the analysis commenced with two authors (AA and SD) working together and reading all answers in both analysis units several times in order to develop a sense of the data. The units of analysis were then separated and analysis of data pertaining to each of the two statements followed the same steps but was completed separately. Every free-text answer was discussed between authors AA and SD, and thereafter received one or more descriptive codes based on its content. After all answers had been coded, a coding sheet was constructed. The coding sheets served as tools in constructing categories that captured and described the midwives' answers and reasoning regarding each of the statements. After constructing three tentative main categories responding to each of the two research statements, the results were reviewed and discussed within the entire research group. After reaching consensus about the categories within the research group, three categories were found to respond to the statement,*"Here you can write in your own words, what it is like as a midwife to talk to pregnant about fetal movements"* and three categories were found to respond to the statement "*Please describe in your own words your experiences of how the women embraced the leaflet about Mind-fetalness*". Each category was named based on its content and, when necessary, the content of the category was further described using sub-categories.

The study was approved by The Regional Ethics committee in Stockholm, Sweden, 2015/2105-31/1 (2019-02276).

3. Results

The questionnaire was sent to 144 of the midwives who participated in the study. At the time at which the questionnaire was sent via e-mail, a small proportion of the midwives participating in the intervention were not reached as they had moved to a new workplace. The response rate was 80% ($n = 115$). The majority of the midwives thought that distributing the leaflet about Mindfetalness had been supportive in their work (Fig. 1) and reported that the study had contributed to increasing their knowledge about fetal movements (Fig. 2). The midwives experienced that pregnant women in general embraced the information about Mindfetalness positively (Fig. 3) and the majority would have liked to have continued distributing the leaflet (Fig. 4).

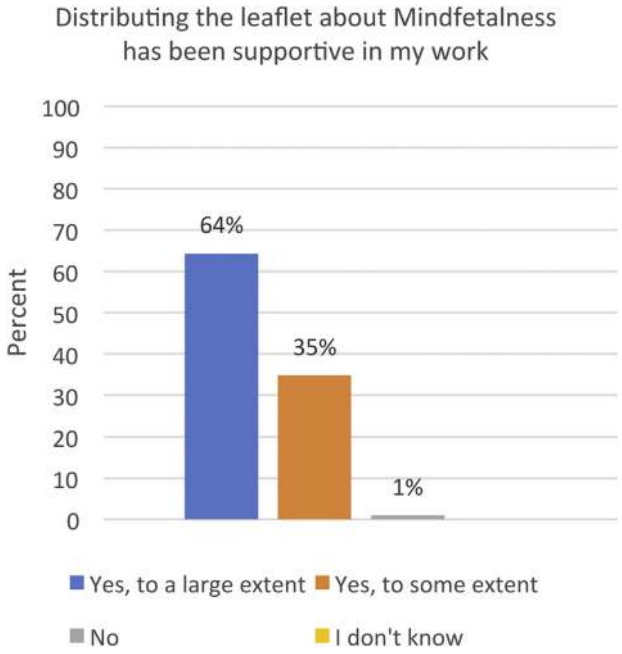

Fig. 1. The midwives' experiences of distributing the leaflet about Mindfetalness.

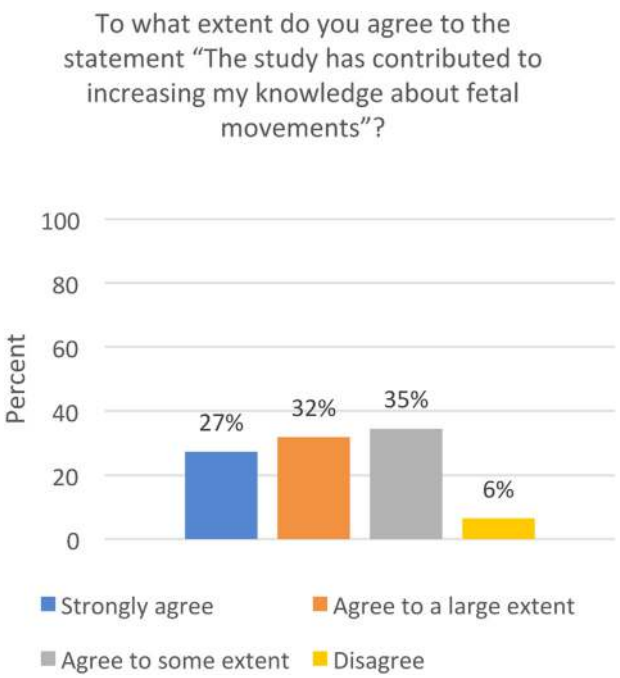

Fig. 2. The midwives' thoughts on how the study contributed to knowledge about fetal movements.

4. Talking with pregnant women about fetal movements

The statement, *"Here you can write in your own words, what it is like as a midwife to talk to pregnant women about fetal movements"*, yielded 32 answers from midwives, and the analysis generated three main categories with four sub-categories. The first category, "A challenging task", included the subcategories, "Difficult for women to embrace", and "Balancing act". The second category, "Important information", is divided into the sub-categories, "Daily attention on fetal movements", and "Increase in women's empowerment". The third category is "Positive attitude towards a common topic".

Main categories	Subcategories
A challenging task	Difficult to embrace
	Balancing act
Important information	Daily attention on fetal movements
	Increase in women's empowerment
Positive attitude towards a common topic	–

4.1. "A challenging task"

The midwives expressed that talking to pregnant women about fetal movements is difficult, as expressed by one of the midwifes:

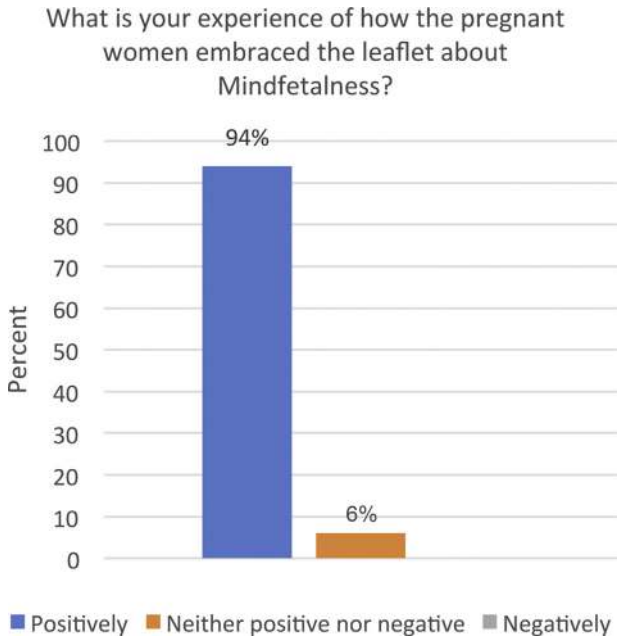

Fig. 3. The midwives' experiences of how the pregnant women embraced the leaflet about Mindfetalness.

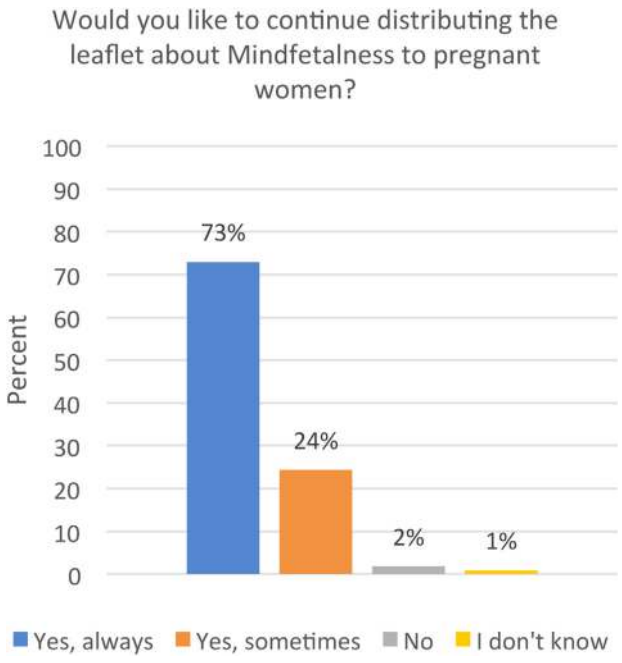

Fig. 4. The midwives' thoughts on continuing to distribute the leaflet.

"Sometimes it's difficult, as many want to know exactly how many movements they should feel each day and have difficulties putting their trust in common sense. Talking about it can sometimes feel a little fuzzy even though it's such an important subject."

This category also shows how some midwives perceived information about fetal movements as being difficult for some women, as expressed by one midwife:

"Women are often positive to communication about fetal movements but later during pregnancy I get a feeling, although they have got information (and leaflet), that they have not embraced the information. Due to this I usually start to communicate about fetal movements already in 20 weeks' gestation, to confirm it again in 25 weeks' gestation."

Further, some midwives expressed how they would like to inform pregnant women about fetal movements, but at the same time, they are afraid to make the women worried:

"It is a little difficult to inform in a way that does not unnecessarily worry the pregnant woman. I usually say that the movements of the fetus normally vary from day to day and that it is a pattern that the pregnant woman will notice, if the fetus would move less than it usually does when the baby has its 'quieter' days, then one should be observant and search. Most of my patients feel confident that they know their child and detect when the movements are diminishing. Some feel that conversations about fetal movements cause concern, especially those who, for example, have an anterior placenta and do not feel much, maybe only once a day. Then one may try to normalize, but it is also difficult to know when such a child is actually moving less."

4.2. "Important information"

Informing pregnant women about fetal movements seems to be important for the midwives and they appreciated having written material as a support. They also experienced that the pregnant women are positive towards receiving written information. Two midwives claimed:

"One of the most important tasks we have."
"Written material is appreciated."

Additionally, midwives explained that a core matter in providing the information about fetal movements to pregnant women is encouraging them to feel fetal movements daily:

"To listen and pay attention to the child's movements on a daily basis is fundamental, it is important to take the time just to be pregnant and interpret the body's and child's signals before it is born. Listen, feel and interpret!"

In another dimension of informing women about fetal movements, the midwives explained that they have a mission to get the women to understand that it is only the expectant mother who can determine whether the fetus' movement patterns change. It is important to make the women understand this and empower them to trust themselves to make this judgement and feel confident in seeking healthcare when they feel necessary. One midwife said:

"Important to help the woman understand that she is the one feeling the child and who can give us information if something changes. Important to say that we want her to get in touch. Get her to pay more attention to the child, feel an affinity and think about the unborn child not just in terms of movements but as a life growing inside her."

4.3. "Positive attitude towards a common topic"

Talking about fetal movements at maternity clinics is a daily task and many midwives expressed having a positive feeling when they communicate with the pregnant women:

"It feels important and good to do it."

Some midwives saw additional benefits in communicating about fetal movements, where they thought it was good to talk about them as a way of increasing maternal-fetal attachment, as one midwife put it:

"It is a good introduction for communication about attachment and motherhood."

5. Midwives' experiences of working with the Mindfetalness method

The statement, "*Please describe in your own words your experiences of how the women embraced the leaflet about Mindfetalness*", yielded 33 answers, and the analysis resulted in three categories.

Categories
Mindfetalness – a supportive tool in everyday work
Pregnant women's reactions to Mindfetalness, as perceived by the midwives
An easy and simple intervention

5.1. "Mindfetalness – a supportive tool in everyday work"

Almost all of the midwives stated that using the leaflet about Mindfetalness had been supportive in their work and the majority thought the study about Mindfetalness had contributed to increasing their knowledge about fetal movements (Figs. 1 and 2). The majority of the midwives wanted to continue to distribute the leaflet (73% always, $n = 81$, 24.3% sometimes, $n = 27$) (Fig. 4). Three midwives explained:

"They have felt safe."

"Very good with a simple tool."
"The leaflet and all of the information has been very helpful, it defuses and provides something tangible."

Several midwives expressed a belief that Mindfetalness encourages and supports an attachment between not only the mother and baby, but also between the other parent and the unborn baby, as displayed in the following quotes from- two midwives:

"It is good that the couple have daily contact with their baby with help from Mindfetalness, it becomes a routine in everyday life for both. A way to be aware when fetal movements change character, a way to wind down and to get close to their unborn baby. Important for attachment!"
"Get the feeling that women get to know their unborn baby better this way!"

Further comments from the midwives suggest that distributing the leaflet about Mindfetalness improves patient safety, as the women receive uniform information in a more structured way and this contributes to increasing knowledge and promoting patient safety:

"The leaflet is a great help when talking about fetal movements. We look through it together and talk about the content/the diary and make connections with recommendations about fetal movements and when to contact healthcare."
"Good with information. The patient takes notice and reports that they observe fetal movements daily when we get together during our meetings. I also ask every time we meet if they feel their baby."

5.2. "Midwives' experiences of how pregnant women embraced the intervention"

Most of the midwives perceived that the pregnant women embraced the leaflet about Mindfetalness positively (Fig. 3):

"Have seen that they have taken extra notice."

"Positive feedback at follow-up, especially from first-time mothers."

"A lot of women are very positive, especially multiparous who have said it gives them an excuse to have a little alone time with the unborn baby."

The midwives had the impression that most women who received the leaflet also chose to practise Mindfetalness, only a few expressed that they had met pregnant women who became stressed or worried about fetal movements after receiving the leaflet.

5.3. "The intervention procedure"

Overall, the intervention procedure was experienced as easy to work with and simple to understand, with the written material (the leaflet) being comprehensible and serving as a useful and convenient complement to the conversations about fetal movements they had with the pregnant women. It felt good to hand out the leaflet to the pregnant women and it was described as *"small and nice"* by one midwife.

6. Discussion

Working with the Mindfetalness method was perceived as being supportive for the midwives in their daily work and they reported that they increased their own knowledge about fetal movements. The midwives thought the women embraced the leaflet positively. Further, they expressed that Mindfetalness encourages the women's attachment to their unborn baby.

The leaflet about Mindfetalness helped the midwives to follow the recommendations from the Swedish National Board of Health and Welfare when informing about fetal movements. The midwives thought the leaflet was a supporting tool in their daily work and according to the recommendations in reference to the Swedish Patient Act, information should be adapted to each recipient and written information should be distributed if needed [26]. The Mindfetalness method may appeal to the midwives more than counting methods due to the method's ability to include all types of movements and not only counting the number of kicks. By practising Mindfetalness, the woman's ability to become familiar with the fetus' unique movement pattern is strengthened. The information in the leaflet also empowers the woman to contact healthcare if she perceives that the fetal movements have become weaker or have decreased.

We found that the midwives' impression was that the women embraced the leaflet positively. These results are in line with a previous study from Sweden, where women were found to have a positive attitude towards observing fetal movements systematically [25]. In a randomized controlled trial, evaluating kick-counting as a method to observe fetal movements [30], the women in the counting group reported increased control and confidence to a higher extent than the women in the control group. Further, in another randomized controlled trial, the authors could not see any difference in levels of anxiety between women using counting charts and those who did not count the fetal movements; however, anxiety levels decreased overall [31]. Similarly, in another study, researchers found that the counting group had statistically significant lower values for worry on the Spielberger STAI-scale [32]. The Mindfetalness method differs from counting methods and probably presents more opportunities to open up a dialogue between the woman and the midwife about the character of the movements and the fetus' unique personality. This, along with the uniform information being provided to all pregnant women, could improve patient safety.

In our study, the midwives expressed that Mindfetalness encourages the women's attachment to their unborn baby. This observation would appear to be supported by other studies, for

example Mikhail et al., in where they investigated if counting fetal movements had effect on maternal-fetal-attachment (MFAS-24) [33]. The pregnant women were randomized to either count the fetal movements by using the Sadovsky or the Cardiff method, or to control. The counting group had statistically significant higher scores than controls which indicates more attachment to the unborn baby [33]. The association between counting fetal movements and higher scores in the attachment scale was confirmed in another study by Guney et al. [34], where the intervention group were instructed to count fetal movements daily (according to the Count-to-ten method) for four weeks. The intervention group had statistically significant higher scores in the Maternal Antenatal Attachment Scale (MAAS) than the control group [34]. Mindfetalness may strengthen maternal-fetal attachment even more than counting methods due to the method's inclusion of the variation and types of movements made by the baby. When using counting methods, only the number of kicks is noted, but, with Mindfetalness, the woman is focused on all movements; their intensity and their variations, i.e., stretching, moving from side to side, how powerful, how fast or slow, etcetera.

It is suggested in the guidelines published by the Royal College of Obstetricians and Gynaecologists that women should be informed about fetal movements during pregnancy [5], as guidelines in Sweden also suggest [26]. Providing information to pregnant women about fetal movements can be important for pregnancy outcomes [35,36]. An intervention study, conducted in Norway between the years 2005 and 2007, showed a reduction of 50% in the number of stillbirths in the intervention group, and the stillbirth rate decreased overall by 30% [36,37]. The intervention included written information about fetal movements and an invitation to monitor fetal movements. Guidelines provided to healthcare professionals about managing decreased fetal movements were also a part of the intervention [36]. When investigating patient delay (delay in contacting healthcare when perceiving decreased fetal movements) in a pre- and post-survey study among 140 pregnant women, it was shown that the intervention group, who received a leaflet about fetal movements, had less patient delay. The intervention group also increased their knowledge about fetal movements [38]. In our study, the midwives in the intervention group reported increased knowledge about fetal movements and one can speculate that the increased knowledge is communicated to the women and might have effect on patient delay.

6.1. Methodological considerations

The study's strengths include a study sample with a high response rate; 115 midwives, representing a majority (80%) of the midwives working with the intervention at the maternity clinics, completed the survey. The sample of midwives answering the questionnaire is likely to be representative for midwives working in Stockholm overall. All the clinics in Stockholm were included (except specialist maternity clinics and extra small clinics) and before the randomization, the maternity clinics were stratified into socioeconomic status and size. This contributed to an increased diversity of the study sample. The data included in the qualitative analysis consisted of a reasonably large sample (32 + 33) of free-text answers. It is possible that conducting individual qualitative interviews or focus groups with the midwives would have generated richer answers and, thus, may have provided further insights to their experiences of working with the Mindfetalness intervention or talking to pregnant women about fetal movements. Trustworthiness was strengthened by using quotations to illustrate the contents of the categories of the results as well as a meticulous and detailed description of the analysis process [28]. To increase study credibility and researcher reflexivity [39], the qualitative analysis was performed in a close collaborative process within the research group. The first free-text question (" . . . *what it is like as a midwife to talk to pregnant women about fetal movements")* yielded statements of both positive and negative nature, indicating that the question was formulated in a neutral was that allowed for both. A vast majority of the free-text answers to the second question (" . . . *your experiences of how the women embraced the leaflet about Mindfetalness"*) indicated a positive attitude towards, and positive experiences of, working with the Mindfetalness intervention among the midwives. Any negative experiences were either not reported or were not elaborated on among the free-text answers, opening up for the possibility that these perspectives did not emerge in using this particular phrasing of the question. This could be considered a limitation of the study. However, these results are much in line with those obtained from the multiple-choice questions in this study — where a majority of the participants reported positive experiences of working with the Mindfetalness intervention.

7. Conclusion

Mindfetalness is a useful tool to use in maternity clinics when informing pregnant women about fetal movements, which is a mandatory and important task for midwives. The written information about fetal movements and the method Mindfetalness was appreciated by both pregnant women and midwives.

Author statement

This article is the authors original work and the article has not received prior publication and is not under consideration for publication elsewhere. All authors have seen and approved the manuscript being submitted. The authors abide by the copyright terms and conditions of Elsevier and the Australian College of Midwives.

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Ethical statement

The study was approved by The Regional Ethics committee in Stockholm, Sweden, 2015/2105-31/1 (2019-02276).

Conflict of interest

None declared.

CRediT authorship contribution statement

Ingela Rådestad: Conceptualization, Methodology, Validation, Visualization, Supervision, Writing - original draft. **Sandra Doveson:** Methodology, Validation, Formal analysis, Visualization, Writing - original draft, Writing - review & editing. **Helena Lindgren:** Validation, Visualization. **Susanne Georgsson:** Validation, Visualization. **Anna Akselsson:** Conceptualization, Methodology, Validation, Formal analysis, Visualization, Supervision, Project administration, Funding acquisition, Writing - original draft, Writing - review & editing.

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Appendix A. Supplementary data

Supplementary data associated with this article can be found, in the online version, at https://doi.org/10.1016/j.wombi.2020.10.007.

References

[1] K. Marsal, Ultrasonic assessment of fetal activity, Clin. Obstet. Gynaecol. 10 (3) (1983) 541–563.
[2] I. Radestad, H. Lindgren, Women's perceptions of fetal movements in full-term pregnancy, Sex. Reprod. Healthc. 3 (3) (2012) 113–116.
[3] S. Neldam, Fetal movements as an indicator of fetal wellbeing, Lancet 1 (8180) (1980) 1222–1224.
[4] I. Radestad, Fetal movements in the third trimester—important information about wellbeing of the fetus, Sex. Reprod. Healthc. 1 (4) (2010) 119–121.
[5] RCOG, Reduced Fetal Movements, (2011) . https://www.rcog.org.uk/en/guidelines-research-services/guidelines/gtg57/57).
[6] L. Valentin, K. Marsal, L. Wahlgren, Subjective recording of fetal movements. III. Screening of a pregnant population; the clinical significance of decreased fetal movement counts, Acta Obstet. Gynecol. Scand. 65 (7) (1986) 753–758.
[7] J.V. Holm Tveit, E. Saastad, B. Stray-Pedersen, P.E. Bordahl, J.F. Froen, Maternal characteristics and pregnancy outcomes in women presenting with decreased fetal movements in late pregnancy, Acta Obstet. Gynecol. Scand. 88 (12) (2009) 1345–1351.
[8] V. Flenady, A.M. Wojcieszek, P. Middleton, et al., Stillbirths: recall to action in high-income countries, Lancet 387 (10019) (2016) 691–702.
[9] L. Maleckiene, R. Nadisauskiene, S. Bergstrom, Socio-economic, demographic and obstetric risk factors for late fetal death of unknown etiology in Lithuania: a case—referent study, Acta Obstet. Gynecol. Scand. 80 (4) (2001) 321–325.
[10] J. Warland, L.M. O'Brien, A.E. Heazell, E.A. Mitchell, An international internet survey of the experiences of 1,714 mothers with a late stillbirth: the STARS cohort study, BMC Pregnancy Childbirth 15 (2015) 172.
[11] A. Linde, K. Pettersson, I. Radestad, Women's experiences of fetal movements before the confirmation of fetal death—contractions misinterpreted as fetal movement, Birth Issues Perinatal Care 42 (2) (2015) 189–194.
[12] S. Koshida, T. Ono, S. Tsuji, T. Murakami, H. Arima, K. Takahashi, Excessively delayed maternal reaction after their perception of decreased fetal movements in stillbirths: population-based study in Japan, Women Birth 30 (6) (2017) 468–471.
[13] J.F. Froen, M. Arnestad, K. Frey, A. Vege, O.D. Saugstad, B. Stray-Pedersen, Risk factors for sudden i ntrauterine unexplained death: epidemiologic characteristics of singleton cases in Oslo, Norway, 1986–1995, Am. J. Obstet. Gynecol. 184 (4) (2001) 694–702.
[14] A. McArdle, V. Flenady, J. Toohill, J. Gamble, D. Creedy, How pregnant women learn about foetal movements: sources and preferences for information, Women Birth 28 (1) (2015) 54–59.
[15] A.M. Peat, T. Stacey, R. Cronin, L.M. McCowan, Maternal knowledge of fetal movements in late pregnancy, Aust. N. Z. J. Obstet. Gynaecol. 52 (5) (2012) 445–449.
[16] E. Saastad, T. Ahlborg, J.F. Froen, Low maternal awareness of fetal movement is associated with small for gestational age infants, J. Midwifery Womens Health 53 (4) (2008) 345–352.
[17] A.M. Berndl, C.M. O'Connell, N.L. McLeod, Fetal movement monitoring: how are we doing as educators? J. Obstet. Gynaecol. Can. 35 (1) (2013) 22–28.
[18] J. Warland, P. Glover, Fetal movements: what are we telling women? Women Birth 30 (1) (2016) 23–28.
[19] J. Warland, P. Glover, Talking to pregnant women about stillbirth: evaluating the effectiveness of an information workshop for midwives using pre and post intervention surveys, Nurse Educ. Today 35 (10) (2015) e21–e25.
[20] J.F. Pearson, Fetal movements—a new approach to antenatal care, Nurs. Mirror Midwives J. 144 (16) (1977) 49–51.
[21] E. Sadovsky, H. Yaffe, Daily fetal movement recording and fetal prognosis, Obstet. Gynecol. 41 (6) (1973) 845–850.
[22] I. Radestad, Strengthening mindfetalness, Sex. Reprod. Healthc. 3 (2) (2012) 59–60.
[23] A. Akselsson, S. Georgsson, H. Lindgren, K. Pettersson, I. Radestad, Women's attitudes, experiences and compliance concerning the use of Mindfetalness—a method for systematic observation of fetal movements in late pregnancy, BMC Pregnancy Childbirth 17 (1) (2017) 359.
[24] A. Akselsson, H. Lindgren, S. Georgsson, et al., Mindfetalness to increase women's awareness of fetal movements and pregnancy outcomes: a cluster-randomised controlled trial including 39 865 women, BJOG 127 (7) (2020) 829.
[25] M.C. Malm, I. Radestad, C. Rubertsson, I. Hildingsson, H. Lindgren, Women's experiences of two different self-assessment methods for monitoring fetal movements in full-term pregnancy–a crossover trial, BMC Pregnancy Childbirth 14 (2014) 349.
[26] Socialstyrelsen, Minskade fosterrörelser – rekommendationer om information, råd och en inledande bedömning – Kunskapsstöd med nationella rekommendationer, (2016) . . (Accessed 4 July 2020) http://www.socialstyrelsen.se/publikationer2016/2016-10-9.
[27] I. Radestad, A. Akselsson, S. Georgsson, H. Lindgren, K. Pettersson, G. Steineck, Rationale, study protocol and the cluster randomization process in a controlled trial including 40,000 women investigating the effects of mindfetalness, Sex. Reprod. Healthc. 10 (2016) 56–61.
[28] S. Elo, H. Kyngas, The qualitative content analysis process, J. Adv. Nurs. 62 (1) (2008) 107–115.
[29] M.Q. Patton, Qualitative Research & Evaluation Methods: Integrating Theory and Practice, 4th ed., SAGE Publications, Inc., Thousand Oaks, California, 2015.
[30] A. Grant, D. Elbourne, L. Valentin, S. Alexander, Routine formal fetal movement counting and risk of antepartum late death in normally formed singletons, Lancet 2 (8659) (1989) 345–349.
[31] R.M. Liston, K. Bloom, P. Zimmer, The psychological effects of counting fetal movements, Birth 21 (3) (1994) 135–140.
[32] M. Delaram, S. Shams, The effect of foetal movement counting on maternal anxiety: a randomised, controlled trial, J. Obstet. Gynaecol. 36 (1) (2016) 39–43.
[33] M.S. Mikhail, M.C. Freda, R.B. Merkatz, R. Polizzotto, E. Mazloom, I.R. Merkatz, The effect of fetal movement counting on maternal attachment to fetus, Am. J. Obstet. Gynecol. 165 (4 Pt 1) (1991) 988–991.
[34] E. Guney, T. Ucar, Effect of the fetal movement count on maternal-fetal attachment, Jpn. J. Nurs. Sci.: JJNS 16 (1) (2019) 71–79.
[35] S. Koshida, T. Ono, S. Tsuji, T. Murakami, K. Takahashi, Recommendations for preventing stillbirth: a regional population-based study in Japan during 2007–2011, Tohoku J. Exp. Med. 235 (2) (2015) 145–149.
[36] J.V. Tveit, E. Saastad, B. Stray-Pedersen, et al., Reduction of late stillbirth with the introduction of fetal movement information and guidelines — a clinical quality improvement, BMC Pregnancy Childbirth 9 (2009) 32.
[37] J.V.H. Tveit, E. Saastad, B. Stray-Pedersen, et al., Erratum to: Reduction of late stillbirth with the introduction of fetal movement information and guidelines — a clinical quality improvement, BMC Pregnancy Childbirth 10 (1) (2010) 49.
[38] K. Wackers, M. Wassen, B. Zeegers, L. Bude, Mj. Nieuwenhuijze, Effect of the use of a national information brochure about fetal movements on patient delay, Women Birth 32 (2) (2019) 131–136.
[39] Y.S. Lincoln, Naturalistic Inquiry, Sage Publications, Beverly Hills, Calif, 1985.