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Interprofessional collaboration among care professionals in obstetrical care: are perceptions aligned?

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ABSTRACT

Background In an obstetrical team, obstetricians, midwives and nurses work together in a dynamic and complex care setting. Different professional cultures can be a barrier for effective interprofessional collaboration. Although the different professional cultures in obstetrical care are well known, little is understood about discrepancies in mutual perceptions of collaboration. Similar perceptions of collaboration are important to ensure patient safety. We aimed to understand how different care professionals in an obstetrical team assess interprofessional collaboration in order to gain insight into the extent to which their perceptions are aligned.

Methods This cross-sectional study was performed in the north-western region of the Netherlands. Care professionals from five hospitals and surrounding primary-care midwifery practices were surveyed. The respondents consisted of four groups of care professionals: obstetricians (n=74), hospital-based midwives known as clinical midwives (n=42), nurses (n=154) and primary-care midwives (n=109). The overall response rate was 80.8%. We used the Interprofessional Collaboration Measurement Scale (IPCMS) to assess perceived interprofessional collaboration. The IPCMS distinguishes three subscales: communication, accommodation and isolation. Data were analysed using non-parametrical tests.

Results Overall, ratings of interprofessional collaboration were good. Obstetricians rated their collaboration with clinical midwives, nurses and primary-care midwives more positively than these three groups rated the collaboration with obstetricians. Discrepancies in mutual perceptions were most apparent in the isolation subscale, which is about sharing opinions, discussing new practices and respecting each other.

Conclusion We found relevant discrepancies in mutual perceptions of collaboration in obstetrical care in the Netherlands. Obstetrical care is currently being reorganised to enable more integrated care, which will have consequences for interprofessional collaboration. The findings of this study indicate opportunities for improvement especially in terms of perceived isolation.

INTRODUCTION

In obstetrics, interprofessional collaboration is essential for patient safety. Poor

collaboration and communication failure are known causes of adverse events.^{1 2} The Joint Commission on Accreditation of Healthcare Organisations identified breakdown in communication as the leading cause (72%) of perinatal death or disability in a root analysis of 47 cases.³ In most cases, communication failure was attributed to organisation culture, for example, hierarchy and failure to function as a team. In an obstetrical team, obstetricians, midwives and nurses need to work together in a dynamic and complex care setting. These care professionals are required to be skilled top players in their own discipline and they must also be effective team players.^{4 5}

Differences between professional cultures can be an important barrier for interprofessional collaboration.⁶ Obstetricians and midwives are known to have different views on pregnancy and childbirth as a result of differences in education, responsibilities and patient populations.⁷ Midwives take care of women with low-risk pregnancies who require minimal medical intervention. Obstetricians take charge when complications arise during pregnancy or childbirth.⁷⁻¹⁰ Differences between professional cultures can negatively affect open communication, mutual trust, working towards shared goals and a clear understanding of each team member's tasks and responsibilities.^{6 11} These are important aspects of effective collaboration and if they are not in place, that can make interprofessional collaboration difficult and increase the risk of patient harm.

In multidisciplinary teams it is important that ideas about patient care needs and perceptions of collaboration among care



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professionals are aligned to ensure patient safety.^{1 12} Previous studies in various healthcare settings have focused on discrepancies in perceptions towards teamwork and interprofessional collaboration.^{12–16} These studies have predominantly looked into differences between nurses and physicians. A common pattern is that physicians have a more positive perception of their collaboration with nurses compared with nurses' perceptions.^{12 13} Different views of patient needs, difficulties in speaking up and the lack of input from nurses in decision-making, or poor reception of that input, are some explanations cited for the discrepancies.^{12–14 17}

Although the different professional cultures in obstetrical care are well known, little is understood about perceptions among all team members of collaboration. Besides studies on nurse-physician collaboration, perceived interprofessional collaboration within an obstetrical team including midwives has not been examined yet. Insight into possible discrepancies is important in order to improve collaborative practice and thus enhance patient safety. We aimed to understand how different care professionals in obstetrical teams assess their collaboration in order to gain insight into the extent to which their perceptions are aligned. Therefore the research question for this study was: What discrepancies are there in the perceptions of interprofessional collaboration in multidisciplinary teams consisting of obstetricians, nurses and midwives?

METHODS

Context

We performed a cross-sectional study in the north-western region of the Netherlands, as part of the larger LOCoMOTive study (*Local Obstetrical Collaboration Multidisciplinary Onsite Team training effectiveness study*). The LOCoMOTive study is a multicentre study aimed at increasing understanding of the implementation and impact of team training and tools for structured communication such as SBARR (Situation, Background, Assessment, Recommendation, Read back). The details of the LOCoMOTive study are described elsewhere.¹⁸ We included care professionals working in multidisciplinary teams from five Local Obstetrical Collaborations (LOCs). A LOC refers to all obstetrical care professionals working in a specific regional area: an obstetrics department in a hospital plus the surrounding primary-care midwifery practices.

In the Netherlands, independent primary-care midwives take care of women in the locality with low risks of pathology. Women are referred to a hospital if risks of adverse fetal or maternal outcomes are high, or if complications arise during pregnancy or childbirth. In the hospital, obstetricians take over responsibility and care, in collaboration with nurses and hospital-based midwives, also called clinical midwives.^{9 10} A consequence of this system is a high referral rate

Box 1 Interprofessional Collaboration Measurement Scale (IPCMS)

Subscale

Communication

- ▶ <We> have a good understanding with <them> about our respective responsibilities
- ▶ I feel that patient treatment and care are not adequately discussed between <us> and <them>
- ▶ <They> anticipate when <we> will need their help
- ▶ Important information is always passed on between <us> and <them>
- ▶ Disagreements with <them> often remain unresolved*

Accommodation

- ▶ <They> are usually willing to take into account the convenience of <us> when planning their work
- ▶ <We> and <they> share similar ideas about how to treat patients
- ▶ <They> are willing to discuss <our> issues
- ▶ <They> cooperate with the way we organise <our> care
- ▶ <They> would be willing to cooperate with new <our> practices

Isolation

- ▶ <They> do not usually ask for <our> opinions*
- ▶ <They> would not be willing to discuss their new practices with <us>*
- ▶ <They> think their work is more important than the work of <us>*

Note: Terms in angle braces (< >) are replaced by the appropriate care professional group: obstetricians, clinical midwives, nurses or primary-care midwives.

*Indicates negatively phrased questions which were reverse coded in the analyses.

between care settings for women, in which close collaboration is required.

Measurement

To assess perceptions of interprofessional collaboration, all care professionals in the study were invited to complete the Interprofessional Collaboration Measurement Scale (IPCMS). The IPCMS is a 13-item questionnaire which is suitable for multiple care professional groups.¹⁹ The questionnaire distinguishes three subscales related to interprofessional collaboration, namely 'communication', 'accommodation' and 'isolation'. The 'communication' and 'accommodation' subscales consist of five questions each. The 'isolation' subscale consists of three questions. The questions are rated on a 4-point Likert Scale (1=strongly disagree to 4=strongly agree). The questionnaire was translated into Dutch using consensus meetings with three translators. Box 1 shows the questions and related subscales of the IPCMS.

The IPCMS has a round robin design, which enables all care professional groups to act as raters

Table 1 Characteristics of the respondents

	Obstetricians	Clinical midwives	Nurses	Primary-care midwives
Total (N)	74	42	154	109
N (%)				
Female	59 (79.7)	40 (95.2)	152 (98.7)	107 (98.2)
Median (Q1–Q3)				
Age in years	38 (32–47)	47 (37–52)	45 (34–54)	35 (30–44)
Working hours per week	40 (36–46)	29 (24–36)	28 (24–32)	40 (33–48)
Work experience in profession in years	4 (3–9)	10 (5–17)	15 (7–26)	10 (5–19)
Work experience in department/practice in years	2 (1–10)	4 (2–9)	12 (5–20)	8 (4–13)

as well as subjects in the questionnaire.¹⁹ In this study, obstetricians (including registrars in obstetrics and gynaecology), clinical midwives, nurses and primary-care midwives were treated as four different care professional groups. In accordance with the round robin design, all care professional groups filled in the 13-item questionnaire three times (once for each of the other three groups) in order to enable interprofessional comparisons between all professions. The mutual assessments between all possible pairs of professions resulted in 12 assessments of interprofessional collaboration (obstetricians rating collaboration with clinical midwives, nurses and primary-care midwives; clinical midwives rating collaboration with obstetricians, nurses and primary-care midwives; nurses rating collaboration with obstetricians, clinical midwives and primary-care midwives, and primary-care midwives rating collaboration with obstetricians, clinical midwives and nurses).

Data collection

Data collection took place between October 2013 and October 2014. All care professionals in the five participating LOCs were invited to fill in the questionnaire. Every obstetrician (or registrar), clinical midwife, nurse and primary-care midwife received a personal link to an online survey via email. Every participant was given 2 months to complete the questionnaire. During this period, two reminders were sent to those who had not yet completed the questionnaire. The survey included questions on respondent characteristics and room for comments in addition to the IPCMS questionnaire.

Data analyses

Descriptive statistics were used to study the respondent characteristics of sex, age, working hours and working experience. In order to answer the research question, we investigated discrepancies in perceptions of interprofessional collaboration in terms of communication, accommodation and isolation. The IPCMS questions were assigned to the subscales of communication, accommodation and isolation (box 1). Cronbach's α s were calculated for the IPCMS subscales to test for

internal consistency. The data for the subscales were skewed, clustered towards response options 3 and 4. These response options reflect generally good collaboration ratings. Therefore, the data were analysed using non-parametrical tests.

To assess possible differences in the perceptions of interprofessional collaboration, we used the Mann-Whitney U test to test for differences between the care professional groups. For example, the communication score for 'obstetricians rating primary-care midwives' was compared with the communication score for 'primary-care midwives rating obstetricians'. This test was repeated for every interprofessional comparison on subscale level as well as on item level. A significance level of $p \leq 0.05$ was considered to indicate statistical significance. Analyses were performed using SPSS V.20.

RESULTS

In total, 395 of out 469 care professionals completed the online questionnaire. We excluded 16 incomplete questionnaires (4.1%), resulting in a total of 379 questionnaires for analyses. Completed questionnaires were returned by obstetricians ($n=74$, response rate 88.1%), clinical midwives ($n=42$, response rate 95.1%), nurses ($n=154$, response rate 71.0%) and primary-care midwives ($n=109$, response rate 87.9%). The overall response rate was 80.8%, taking all obstetrical care professionals in the five LOCs into account. Table 1 shows the respondents' characteristics. Because of skewed data, the median and lower and upper quartiles are shown.

Table 2 shows the results of the interprofessional comparisons between obstetricians, clinical midwives, nurses and primary-care midwives for the subscales 'communication', 'accommodation' and 'isolation'. Possible within-group differences between five LOCs were considered. However, no substantial differences were found. The significant differences ($p < 0.01$) between care professionals are visualised in figure 1. Below, the results are discussed on subscale level as well as on item level.

Table 2 Results of interprofessional comparisons for the subscales 'communication', 'accommodation' and 'isolation'

Comparisons	Communication		Accommodation		Isolation	
	Median (Q1–Q3)	P Value	Median (Q1–Q3)	P Value	Median (Q1–Q3)	P Value
Pair 1						
Obstetricians	3.6 (3.0–3.8)	0.031	3.4 (3.0–3.8)	<0.001	3.3 (3.0–4.0)	<0.001
Clinical midwives	3.2 (3.0–3.6)		2.8 (2.6–3.3)		3.0 (2.3–3.3)	
Pair 2						
Obstetricians	3.4 (3.0–3.6)	<0.001	3.0 (3.0–3.4)	<0.001	3.5 (3.0–4.0)	<0.001
Nurses	2.8 (2.6–3.0)		2.8 (2.4–3.0)		2.3 (2.3–3.0)	
Pair 3						
Obstetricians	3.0 (2.6–3.2)	0.238	2.8 (2.6–3.0)	0.014	3.0 (2.7–3.3)	<0.001
Primary-care midwives	2.8 (2.6–3.0)		2.6 (2.4–2.8)		2.7 (2.2–3.0)	
Pair 4						
Clinical midwives	3.2 (2.8–3.6)	0.142	3.0 (2.6–3.2)	0.081	3.3 (2.7–3.7)	0.009
Nurses	3.0 (2.8–3.4)		3.0 (2.8–3.4)		3.0 (2.7–3.3)	
Pair 5						
Clinical midwives	3.1 (2.8–3.2)	0.660	3.0 (2.6–3.4)	0.203	3.0 (2.9–4.0)	0.009
Primary-care midwives	3.0 (2.8–3.4)		3.0 (2.8–3.2)		3.0 (2.7–3.0)	
Pair 6						
Nurses	3.0 (2.8–3.2)	0.161	3.0 (2.8–3.2)	0.001	3.0 (2.7–3.0)	0.090
Primary-care midwives	3.0 (2.8–3.2)		2.8 (2.6–3.0)		3.0 (2.7–3.3)	

Communication

Cronbach's α for the communication subscale ranged between 0.47 and 0.68. These α s fall below the generally accepted lower limit of 0.70.²⁰ Thus, results from this subscale should be interpreted with caution. As shown in table 2, significant differences

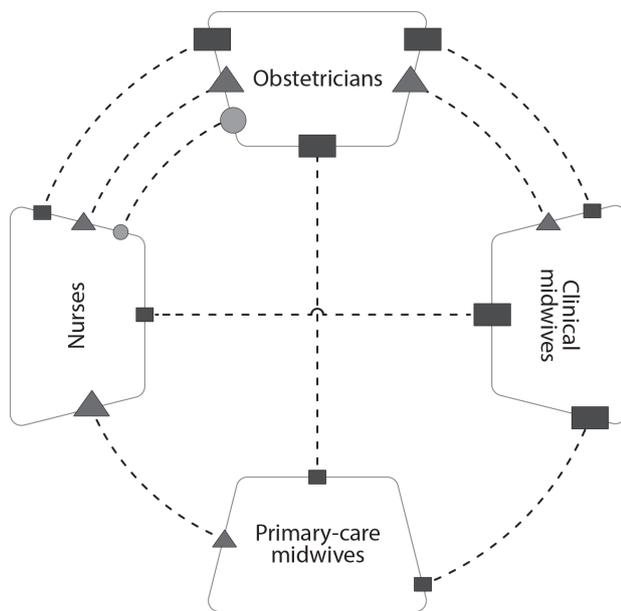


Figure 1 Discrepancies in mutual perceptions of 'communication', 'accommodation', 'isolation' in obstetrical care. 'Circle': Communication subscale; 'Triangle': Accommodation subscale; 'Square': Isolation subscale. The professions with a large circle, triangle or square reported a significantly higher score compared with the professions with a small symbol ($p \leq 0.01$).

for the subscale communication were found between obstetricians and nurses ($p < 0.001$) as well as between obstetricians and clinical midwives ($p = 0.031$). Obstetricians reported a high score for communication with clinical midwives (3.6, 3.0–3.8) and with nurses (3.4, 3.0–3.6), but received a significantly lower score from clinical midwives (3.2, 3.0–3.6) as well as from nurses (2.8, 2.6–3.0). We found no significant differences in other interprofessional comparisons for the subscale communication.

The communication subscale consists of five items, as shown in box 1, and we tested for item-level differences between care professionals. In four out of five items, obstetricians rated a significantly higher score compared with nurses. The item '*Important information is always passed on between <us> and <them>*' was the only exception. None of the interprofessional comparisons showed a significant difference for this item. The item '*<We> have a good understanding with <them> about our respective responsibilities*' showed significant lower scores of nurses compared with obstetricians ($p < 0.001$), clinical midwives ($p = 0.009$) and primary-care midwives ($p = 0.017$). The item '*<They> anticipate when <we> will need their help*' showed significant differences between all interprofessional comparisons, with the exception of the comparison between clinical midwives and primary-care midwives.

Accommodation

Cronbach's α for the accommodation subscale ranged between 0.75 and 0.82. Significant differences for the

subscale accommodation were found between obstetricians and clinical midwives ($p < 0.001$), between obstetricians and nurses ($p < 0.001$) as well as between obstetricians and primary-care midwives ($p = 0.014$). Obstetricians reported a high score for accommodation with clinical midwives (3.4, 3.0–3.8), nurses (3.0, 3.0–3.4) and primary-care midwives (2.8, 2.6–3.0). However, obstetricians received a significant lower score for accommodation from these three groups of care professionals. In addition, a significant difference was found between nurses and primary-care midwives ($p = 0.001$). Nurses reported a high score for accommodation with primary-care midwives (3.0, 2.8–3.2), but received a significant lower score from this care professional group (2.8, 2.6–3.0).

The accommodation subscale consists of five items and we tested for item-level differences between care professionals. The interprofessional comparisons showed a significantly higher score of obstetricians compared with nurses on all items. In four out of five items, obstetricians rated a significantly higher score compared with clinical midwives. The item '*<They> are willing to discuss <our> issues*' was the only exception. In addition, this item was rated higher by nurses compared with primary-care midwives. Moreover, the following two items were rated higher by nurses compared with primary-care midwives as well as clinical midwives; '*<We> and <they> share similar ideas about how to treat patient*' and '*<They> cooperate with the way we organise <our> care*'.

Isolation

Cronbach's α for the isolation subscale ranged between 0.62 and 0.72. All interprofessional comparisons for the subscale isolation showed discrepancies in mutual perceptions, except for collaboration between nurses and primary-care midwives. Significant differences were found between obstetricians and clinical midwives ($p < 0.001$), between obstetricians and nurses ($p < 0.001$) as well as between obstetricians and primary-care midwives ($p < 0.001$). The negatively phrased questions were reverse coded in the analyses and, therefore, a higher score indicates a more positive perception. Obstetricians reported a high score for isolation with clinical midwives (3.3, 3.0–4.0), nurses (3.5, 3.0–4.0) and primary-care midwives (3.0, 2.7–3.3). However, obstetricians received a significantly lower score for isolation from these three groups of care professionals. Also, significant differences were found between clinical midwives and nurses ($p = 0.009$) and between clinical midwives and primary-care midwives ($p = 0.009$). Clinical midwives reported a high score for isolation with nurses (3.3, 2.7–3.7) and primary-care midwives (3.0, 2.9–4.0), but received a significantly lower score from these two groups of care professionals (respectively, 3.0, 2.7–3.3 and 3.0, 2.7–3.0).

The isolation subscale consists of three items and we tested for item-level differences between care professionals. The interprofessional comparisons showed a significantly higher score of obstetricians compared with clinical midwives, nurses and primary-care midwives on all items. The item '*<They> would not be willing to discuss their new practices with <us>*' showed the only significant difference between obstetricians and registrars in this study. Registrars rated a higher score on this item compared with obstetricians. In addition, clinical midwives rated the item '*<They> do not usually ask for <our> opinions*' significantly higher compared with primary-care midwives. The item '*<They> think their work is more important than the work of <us>*' showed significant differences for all interprofessional comparisons.

DISCUSSION

This study showed multiple discrepancies in mutual perceptions of interprofessional collaboration between obstetricians, clinical midwives, nurses and primary-care midwives. Overall, ratings of interprofessional collaboration were good. However, obstetricians rated their collaboration with clinical midwives, nurses and primary-care midwives more positively than these three groups rated the collaboration with obstetricians. The interprofessional collaboration between clinical midwives, nurses and primary-care midwives showed fewer significant discrepancies. Discrepancies in mutual perceptions were most apparent in the isolation subscale, which is about sharing opinions, discussing new practices and respecting each other.

The findings are in line with previous research on interprofessional collaboration and teamwork in other healthcare settings. A more positive perception of collaboration by physicians compared with nurses and other team members was also reported in, for example, the intensive care setting and in the operating theatre.^{12 13 15 16} For example, Wauben *et al*¹² studied discrepant perceptions of collaboration and related concepts in surgical teams. They found differences between surgeons and other team members concerning teamwork, communication and situational awareness.¹² Thomas *et al*¹³ studied perceptions of teamwork in intensive care units. In this study too, physicians reported the most favourable perceptions of collaboration.¹³ The current study showed that this pattern is also applicable to perceptions of collaboration among obstetrical care professionals in the Netherlands and more specifically to different subscales of collaboration; communication, accommodation and isolation.

There are several ways to explain the misaligned perceptions between care professionals in obstetrical care in the Netherlands. First, the organisation of obstetrical care in the Netherlands leads to a physical distance between primary-care midwives in the local community and obstetricians, clinical midwives and

nurses in hospitals. This is cited as an important barrier to interprofessional collaboration and facilitates the existence of different professional cultures.²¹ Second, the care professional groups collaborate in different ways and frequencies. Primary-care midwives take care of women with low risks of pathology. When women are referred during labour due to complications, primary-care midwives may choose to stay or not with labouring women. In hospitals, clinical midwives manage the majority of births in collaboration with nurses.²² Obstetricians are responsible for these women and are involved when additional risks or problems occur. These differences in status and responsibilities are also an important third aspect to explain the misaligned perceptions.^{6,21} Finally, the organisation of obstetrical care is subject of debate in the Netherlands. Uncertainty about changing roles and responsibilities may affect perceptions of collaboration.²³

The isolation subscale showed most discrepancies between all care professionals. The items of this subscale cover the following topics: sharing opinions, willingness to discuss new practices and respecting each other. In addition, the other subscales showed most discrepancies for the items; understanding responsibilities, anticipating when help is needed (communication) and sharing similar ideas (accommodation). All these items relate to the importance of cohesion and team identity. For successful interprofessional collaboration it is necessary to expand care professionals' social identity beyond their profession. A common team-based identity, rather than a profession-based identity, encourages team members to perceive themselves as part of one superordinate group.^{24,25} In addition, cohesion refers to the force that drives team members to stay together and want to work together.^{26,27} Team members who feel no sense of cohesion, or feel isolated, are less motivated and less likely to collaborate to meet the team goals.²⁷ In particular, it is important to address cohesion and team identity to improve collaborative practice.

Efforts to improve collaborative practice often include team training interventions. Different training programmes have been developed, such as Crew Resource Management (CRM) and Team Strategies and Tools to Enhance Performance and Patient Safety (TeamSTEPPS).²⁸ These interventions focus on comparable teamwork competencies, such as communication, situational awareness, leadership, role clarity and coordination. Findings indicate that CRM and TeamSTEPPS training produces positive reactions from trainees as well as improving attitudes towards collaboration.^{28–31} These team training interventions could help to increase shared understanding and reduce discrepancies in perceptions of collaboration.

Methodological considerations

We used IPCMS for its round robin design to gain insight into contrasting views of interprofessional

collaboration. IPCMS includes important aspects of effective teamwork, although the subscales are not as comprehensively defined in order to compare the content with the concept of teamwork. IPCMS was originally designed to measure interprofessional collaboration for multiple health provider groups, physicians, nurses and allied health professionals. The latter group encompasses a wide range of professionals from different training backgrounds that cannot be accurately represented by one care provider group.¹⁹ The current study population involved well defined groups of professionals. Therefore, we decided to include four care professional groups as raters and subjects in the survey. Due to the multiple comparisons, there is a higher chance of false-positive results, type 1 error.

The internal consistency of the subscales was calculated with Cronbach's α . In the original IPCMS paper by Kenaszchuk *et al*,¹⁹ the consistency was estimated with Raykov's composite reliability statistic.¹⁹ The Raykov values ranged between 0.73 and 0.82 (communication), between 0.79 and 0.88 (accommodation), between 0.71 and 0.79 (isolation). The estimates of reliability produced by composite reliability are, on average, larger than those estimated by Cronbach's α .³² In this current study, the communication subscale showed poor internal consistency.²⁰ This indicates that more research is needed on the translation and validity of the IPCMS questionnaire in different healthcare settings. Still, the subscales of accommodation and isolation demonstrated reasonable internal consistency in our study.

A limitation of this study is the assessment of care professionals as homogenous groups, which is inherent to the research question and questionnaire set-up. Respondents were able to elaborate on their answers to the questionnaire in the comment fields. However, some care professionals used this space to comment on the questionnaire itself. The most common comments seemed to be related to the perceived subjective nature and difficulty in generalising. For example, a respondent stated "*We work with so many different people that it differs from person to person. I don't think I can give a right answer in general*". We realise that collaboration can differ between individuals within groups of care professionals. There are always some care professionals who are less willing to collaborate and communicate than others.

The strengths of this study are the round robin comparisons, the high response rate limiting selection bias and the relevance of this study's topic for Dutch obstetrical care. Referrals between primary-care midwives and obstetricians are an important point for attention in improving collaboration and the continuity of care.³³ Obstetrical care in the Netherlands is now reorganising towards integrated care and enhancing the continuity of care from the perspective of the patient. This change has consequences for

collaboration between all care professionals within an LOC, for example, by creating joint electronic record systems and shared protocols and decision-making.³⁴ Therefore, it would be interesting to repeat this survey over time to monitor changes in perceptions of inter-professional collaboration.

In conclusion, care professionals in obstetrical care do not always have similar perceptions of communication, accommodation and isolation. This study provided insight into the perception of inter-professional collaboration by all members of teams of obstetrical care professionals. Though the effect of discrepant perceptions on patient safety was not studied, the findings increase awareness that obstetricians generally rate collaboration more positively compared with clinical midwives, nurses and primary-care midwives. Especially discrepant perceptions for the isolation subscale indicate a potential for improving collaborative practice.

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Contributors All authors made contributions to the design of the study. AR carried out data collection, performed statistical analyses, interpreted results and drafted the manuscript. PWT, MCdB, CW and CJMdG made contributions to interpretation of the data and revisions to the manuscript. All authors read and approved the final manuscript.

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