

Chapter 5

**Antenatal counseling for congenital anomaly tests: an exploratory
video-observational study about client-midwife communication**

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ABSTRACT

Objective Prenatal counseling for congenital anomaly tests is conceptualized as having both *Health Education (HE)* and *Decision-Making Support (DMS)* functions. Building and maintaining a *Client-Midwife Relation (CMR)* is seen as a necessary condition for enabling these two counseling functions. However, little is known about how these functions are fulfilled in daily practice. This study aims to describe the relative articulation of the prenatal counseling functions; to describe the ratio of client versus midwife conversational contribution and to get insight into clients' characteristics, which are associated with midwives' expressions of the functions of prenatal counseling.

Design Exploratory video-observational study.

Participants and setting 269 videotaped prenatal counseling sessions for congenital anomaly tests provided by 20 midwives within 6 Dutch practices.

Measurements We used an adapted version of the Roter Interaction Analysis System to code the client-midwife communication. Multilevel linear regression analyses were used to analyze associations between clients' characteristics and midwives' expressions of prenatal counseling in practice.

Findings Most utterances made during counseling were coded as *HE* (41%); a quarter as *DMS* (23%) and 36% as *CMR*. Midwives contributed the most to the *HE* compared to clients and their partners (91% versus 9%) and less to the *DMS* function of counseling (61% versus 39%). Multilevel analyses showed an independent association between parity and shorter duration of prenatal counseling; ($\beta=-3.01$; $p<.001$). The amount of utterances concerning *HE* and *DMS* during counseling of multipara was less compared to nulliparous.

Key conclusions Prenatal counseling for congenital anomaly tests by midwives is focused on giving *HE* compared to *DMS*. The relatively low contribution of clients during *DMS* might indicate poor *DMS* given by midwives. Counseling of multiparae was significantly shorter than counseling of nulliparous women; multiparae received less *HE* as well as *DMS* compared to nulliparous women.

Implications for practice Our findings should encourage midwives to reflect on the process of prenatal counseling they offer with regards to the way they address the three prenatal counseling functions during counseling of nulliparous women compared to multiparae.

Highlights

- We report an exploratory video-observational study about antenatal counseling.
- Midwives focused primarily on *health education* during counseling for antenatal anomaly tests.
- During *decision-making support* clients contributed most to the conversation.
- Parity appears to be independently associated with the way clients are counseled.

INTRODUCTION

Prenatal screening for Down syndrome, other chromosomal and structural congenital anomalies has become common obstetrical practice in many countries [1,2]. Prenatal screening aims to provide timely information to women and their partners about the health of their fetus in order to enhance their reproductive choice [3]. If the fetus is diagnosed with a chromosomal disorder or structural congenital anomaly, prospective parents have the opportunity to either prepare for the birth of a child with a congenital anomaly, or to opt for termination of the pregnancy [4,5]. Screening tests and these options are typically discussed during prenatal counseling. In the Netherlands, since 2007, midwives have provided routine prenatal counseling for congenital anomaly tests to nearly 80% of pregnant population [6]. The purpose of this counseling has been to facilitate autonomous, informed decision-making by prospective parents regarding the uptake of prenatal congenital anomaly tests using an opting in approach [5,7-9].

High quality counseling consists of *health education (HE)*, *decision-making support (DMS)* and relationship-building [10-12]. The latter function is seen as a necessary condition for enabling the first two counseling functions and could be accomplished by showing empathy and understanding and using partnership statements and social conversation [10,13-15]. *Health education* topics include providing information about the prenatal tests that are available and the anomalies that can and cannot be detected [9,10,16]. Key elements of *decision-making support* include empowering clients to find personal meaning in the information given and making psychological sense of the implications for the future. This support is intended to minimize psychological distress and increase personal feelings of control as well as to facilitate autonomous decision-making [11-13,17-19].

The extent to which this three-function prenatal counseling model is reflected in daily practice is, so far, unknown. However, because of the extensive amount of information counselors are obliged to give it has been established by Dutch educational and research programs that the *health education* function requires a lot of time and attention to a variety of information [9,16,20-23]. Furthermore, the role of *health educator* is more familiar to most counselors in the medical setting compared to the role of providing *decision-making support* and therefore more counseling activity seems to focus on providing *health education* [12]. Moreover, clients' characteristics seem to influence counseling in practice. Counseling with better educated clients seem to contain both more *health education* and *decision-making support*, since better educated clients ask probably more questions. The presence of a partner seems also related to both more *health education* and *decision-making support*, as it will take more effort to inform two persons and to engage them both into the discussion about the decisions at hand [10,12,24-26].

The current study was designed to provide a detailed description of routine prenatal counseling for congenital anomaly tests by midwives in the Netherlands, during videotaped, every day practice (see Appendix A for more information about the Dutch prenatal screening context). This study aims to 1) describe the relative expression of the three functions of the prenatal counseling model (*HE*, *DMS* and *client-midwife relation: CMR*) during counseling by midwives; 2) describe the ratio client versus midwife conversational contribution within the three prenatal counseling functions; 3) explore characteristics which are associated with midwives' expressions of the three function prenatal counseling model.

It was expected that the *health education* function would be expressed most by midwives compared to *decision-making support* and that midwives would contribute more to the conversation during counseling compared to clients. With regards to clients' characteristics it was expected that parity was negatively associated with the amount of *health education* given during counseling, because midwives might expect multiparae to have former knowledge. Furthermore, it was expected that consultations with better educated clients and / or with partners present would contain both more *health education* and *decision-making support*.

METHODS

We used a video observational design to study prenatal counseling. The present study is part of DELIVER, a multi-center national research program investigating the quality and provision of primary midwifery care in the Netherlands [27].

Our study was approved by the Institutional Review Board and the Medical Ethical Committee of the VU University Medical Centre, Amsterdam, the Netherlands, supplemented by local agreements to participate from all participating midwifery practices.

Participants

Midwives

From the twenty primary care midwifery practices participating in the DELIVER study [27], six practices were purposively sampled based on their practice size and location in the Netherlands (urban versus semi-rural and percentages of clients from non-Dutch origin), and participated between August 2010 and April 2011. Every participating midwife was asked to video-tape 10-20 consultations in order to assure the reliability of the test sample [28] and to complete a pre- and post-counseling questionnaire. As an incentive for participation, each participating midwife was offered an one time amount 80 euro credit note after they finished the video-recordings for this study.

Clients

Clients were recruited from all consecutive new clients (pregnant women and their partners) of the six midwifery practices. We used a video observational design to study prenatal counseling between June 2010 and May 2011. Clients (nulliparous or multiparous women) were eligible if they were: (1) new to prenatal counseling for the current pregnancy; (2) aged 18 years or older; (3) able to read Dutch or English.

Procedure

Clients were invited to participate in the study by the practice assistant and if they agreed received additional, written information about the study. Participating clients and partners were asked to sign an informed consent form as well as to complete a pre-counseling questionnaire.

Measurements

Midwifery and client questionnaires

Midwives' characteristics such as age, gender and religion were derived from a questionnaire completed as part of our study regarding midwives' views on appropriate prenatal counseling [10]. Clients' background characteristics such as age, parity and ethnicity, were derived from the pre-counseling questionnaire [10].

Measurement to code HE, DMS and CMR on videotapes: RIAS

The most well-known and frequently used coding scheme for provider – patient communication with good reliability and concurrent validity is the Roter Interaction Analysis System (RIAS) [12,29,30] (Appendix B). RIAS is also the most exhaustive coding scheme available [29,30]. During the coding procedure meaningful utterances (e.g. a sentence or a thought) of midwives and clients were counted, e.g. the client asking the midwife which anomalies can be found using prenatal screening; or the midwife informing the client of her risk of having a child suffering from a congenital abnormality. The occurrence of utterances with similar themes are categorized and the frequencies are then counted. Three trained observers used an adjusted version of the RIAS to code the video recordings.

Health Education was coded using the content areas 'medical condition' and 'medical testing' concerning topics such as information exchange about the medical conditions which can be detected by prenatal congenital anomaly tests, and 'societal information exchange' concerning topics like costs and eligibility of these tests. All codes within these main categories were computed into the categories *HE Information*, *HE Questions* and *Total HE* (Table 5a).

Decision-making support was coded using the content area 'counseling behavior' (midwives only category) or 'psychosocial topics' containing topics that address exploration of clients' moral dilemma's concerning the decision about whether to take prenatal congenital anomaly

tests. The main coding area *DMS* was also divided into two sub-areas *DMS Information* and *DMS Questions*. Finally, the *client-midwife relation* was coded using the ‘affective behavior’ categories of the RIAS; affective behavior facilitates this relation through the development of affinity and responsiveness to the client’s emotions. Examples of this category are: giving verbal attention, agree and backchannel (e.g. “hm, hm” or “ok”) and social behavior. Coding categories per main coding area (*HE*, *DMS* and *CMR*) were derived from the original RIAS and expanded with 32 items of the 58-item QUOTE^{prenatal} questionnaire, a client centered instrument to assess clients’ preferences regarding prenatal counseling for congenital anomaly tests [10]. The 32 items were selected from the possible 58 based on the criterion that they had to be observable as verbal communication during the coding of the video-taped consultations. The 32 items we used of the QUOTE^{prenatal} questionnaire were assigned to the most suitable coding area based on the Principal Component Analysis used in the study of [10] (Table 1).

Coding reliability

Inter-rater reliability was calculated on a random sample of 26 (9.3 %) of the 269 study video tapes. Intraclass correlation (ICC) was used to measure the inter-rater reliability for midwife, client and partner categories with a mean occurrence greater than 2% of the total, which proved to be adequate [31,32]. At the start and half way through the coding process levels of agreement were measured; some videos were coded again in order to enhance the coding reliability, which it did. Midwife categories had a substantial mean ICC (ICC single measures) of 0.67 (Range: 0.53 – 0.70). The average ICC of client categories (ICC single measures) was moderate with 0.53 (Range: 0.45 – 0.58) and the mean ICC of partner categories (ICC single measures) was good with 0.82 (Range: 0.72 – 0.91) [33]. Moderate and substantial ICCs such as 0.53 and 0.67 are seen in other video-recording studies using similar approaches [31,34-37].

Data Analysis

Descriptive statistics were used to describe the socio-demographic characteristics of participating midwives, clients and partners. We compared characteristics of midwifery respondents with characteristics of the National midwifery population to examine the representativeness of our research sample with respect to the available information (i.e. age, gender and place of vocational education). Non-response analyses of clients, who declined to participate in this study, were conducted using independent *t*-tests and χ^2 tests to compare both groups with regards to background characteristics such as age and parity. Furthermore, descriptive statistics and multilevel regression analyses were used to describe the potentially independent association between clients’ background characteristics and the duration of counseling.

Relative expression of the three prenatal counseling functions

Descriptive statistics (frequencies, percentages) of the coded utterances were used to describe the relative expression of the three counseling functions by clients, partners and midwives together. Throughout the analysis utterances are defined as the smallest unit of expression or statement to which a meaningful code can be assigned, generally a complete thought, expressed by each speaker (client, partner, midwife) throughout the counseling session.

Ratio client versus midwife conversational contribution

The ratio of midwives' versus clients' (women and partners separately) contributions to the conversation relative to the total count of utterances were calculated per counseling function using descriptive statistics. For instance *HE*: *midwives' total HE utterances / total HE utterances*; *clients' total HE utterances / total HE utterances* and *partners' total HE utterances / total HE utterances*.

Characteristics associated with midwives' expressions of the three prenatal counseling functions

The data in our dataset came from 20 midwives of 6 practices. Therefore, we assumed dependency of our observations. To control for this clustering, a multivariate multilevel linear regression analysis was used to examine client characteristics that are possibly, independently associated with differences in the expression of the three functions of prenatal counseling by midwives. During multivariate multilevel linear regression analysis the following procedure was used. First, we ran a 'naïve' analysis (linear regression analysis) of the relationship between each client characteristic (clients' age, parity, religion, ethnicity, education and presence of the partner during counseling) and each of the three dependent variables (*HE*, *DMS* and *client-midwife relation* utterances of midwives). Second, we used the likelihood ratio test to determine if a random intercept of 'midwife' alone, 'practice' alone or 'midwife and practice' together would provide the best approach for running the third step. Third we used the likelihood ratio test to evaluate the necessity of a random slope for each independent variable to the model. We built the final association model for each dependent variable separately using a backward selection procedure. For these final analyses we used $p \leq 0.05$ to indicate significance, keeping in mind the arbitrary nature of this limit [38]. SPSS 21.0 was used for the analysis.

Table 1 Items of the QUOTE^{prenatal} added to the main content areas of the RIAS.

| Number | Item descriptions per component of the QUOTE ^{prenatal} |
|--------------------------------|---|
| Client–midwife relation | |
| Q17 | Give the client (additional) written information |
| Q18 | Tell the client that she can always contact the midwife with any questions she may have (including when the practice is closed) |
| Health education | |
| Q26 | Explain which anomalies can be identified using prenatal screening |
| Q27 | Explain which anomalies <u>cannot</u> be identified using prenatal tests |
| Q28 | Provide medical information about the anomalies that are being tested for |
| Q29 | Discuss possible negative implications of prenatal screening for the unborn child |
| Q31 | Explain the usefulness of prenatal screening (what the client can decide to do eventually) |
| Q32 | Tell the client about all the different types of prenatal tests |
| Q33 | Tell the client how prenatal screening can affect her emotions and mental wellbeing |
| Q34 | Tell the client how much prenatal tests cost |
| Q35 | Tell the client about the incidence of birth defects in the Netherlands |
| Q36 | Ask about clients family's history of birth defects |
| Q37 | Explain how often congenital anomalies occur in pregnant women of clients age |
| Q38 | Explain how the chances of a birth defect are calculated for the unborn child |
| Q39 | Tell the client about HER chances of having a child with a congenital abnormality during this pregnancy |
| Q40 | Talk to the client about how HER risk of having a child with a birth defect will affect her |
| Q41 | Tell the client why she is or is not eligible for certain prenatal tests |
| Q42 | Explain what will happen DURING the prenatal tests |
| Q43 | Explain which prenatal tests will be done first and which will be done later, if required and/or necessary |
| Q44 | Explain who will give the client the results of the prenatal tests and how (verbally, in writing or by telephone) |
| Q45 | Explain how long the client may take to decide whether or not to have the prenatal tests |
| Q46 | Explain how long the client may take to decide whether or not to terminate the pregnancy, should the test results show an abnormality |
| Q48 | Discuss all clients options with regard to prenatal screening and the implications |
| Decision-making support | |
| Q3 | Tell which websites the client can use to find information about prenatal screening and diagnostic |
| Q9 | Advise the client about whether or not to take the prenatal tests |
| Q14 | Enquire clients' standards, values and views on prenatal screening and diagnostic |
| Q22 | Respond to what the client already knows about prenatal screening |
| Q30 | Tell the client what the Dutch government aims to achieve by providing prenatal tests |
| Q49 | Talk to the client about how her family and she would react to a child with a birth defect |
| Q50 | Ask the client to explain her decision to take / not to take the prenatal tests |
| Q51 | Asks whether clients family, friends or other people close to her would support her decision about prenatal screening |
| Q52 | Ask the client what for her constitutes a healthy child |
| Q53 | Ask whether test results indicating that clients unborn child has a birth defect would cause problems with her conscience |
| Q54 | Ask whether clients family, friends or other people close to her would support her decision to terminate the pregnancy if the child were to have a congenital abnormality |
| Q55 | Ask how the client thinks she will react to the results of the prenatal tests |

FINDINGS

Participants

Midwives and recorded visits

269 video-recordings of 20 midwives working in 6 practices were included in the analyses. Per practice the number of participating midwives ranged from one to five midwives. Recordings per midwife ranged from 7 to 23. The mean age of the participating midwives was 32.8 years of age (range 23 to 54 years of age), and mean years of work experience was 8.3 years (range: just started to 33 years of work experience) (Table 2).

One of the midwives offered counseling for prenatal congenital anomaly tests during separate counseling sessions, the other 19 midwives offered this counseling during the routine intake. Within the latter group 191 complete intakes were recorded and in 71 cases the video-recordings were switched on and off to only record the counseling parts of the intake. In cases where the video-recordings contained the whole intake, only the prenatal counseling part was or prenatal counseling parts were analyzed. The coding book for coders provided information about how to decide the counseling was started and ended.

Table 2 Demographic and professional characteristics of midwives.

| Characteristics | Midwives N=20 (%) | Dutch midwifery population N=2264^a (%) |
|-----------------------------------|------------------------------|--|
| Age (in years) | | |
| ≤ 40 years | 16 (80) | 1644 (73) |
| ≥ 41 years | 4 (20) | 620 (27) |
| Gender | | |
| Male | - | 43 (2) |
| Female | 20 (100) | 2569 (98) |
| Ethnicity^b | | |
| Native | 14 (70) | No information available |
| Non-Native- Non Western Ethnicity | 2 (10) | |
| Non Native- Western Ethnicity | 4 (20) | |
| Work experience (years) | | |
| ≤ 2 years | 4 (20) | No information available |
| 3-11 years | 12 (60) | |
| ≥ 12 years | 4 (20) | |
| Religious background | | |
| Non religious | 11 (55) | No information available |
| Religious | 9 (45) | |

^a [46].

^b In the Netherlands, ethnic origin is defined by country of birth of a person's parents. If one of the parents (of both of them) of a person is born outside the Netherlands, this person is non-Native [56].

Table 3 illustrates that the counseling lasted on average 9.13 (SD=4.16) minutes. Only parity was independently and significantly associated with the duration of counseling. Prenatal counseling of multiparae lasted statistically significantly less long compared to nulliparous women ($\beta=-3.01$; 95% CI: -3.96 – -2.05; $p<.001$). The amount of utterances during the counseling was positively related to the duration of counseling and counseling of nulliparae lasted significantly longer compared to multiparae. Therefore, it was decided to measure the ratio client versus midwife conversational contribution overall and for nulliparous ($N=98$) and multipara ($N=141$) separately.

Table 3 Characteristics of the video-taped consults.

| Duration of consultations and prenatal counseling | N* (%) | M (SD in minutes) |
|---|---------------|--------------------------|
| Recorded part of the counseling | | |
| Overall duration of counseling | 269 (100.0) | 9.13 (4.16) |
| Duration of counseling in integrated consultations | 191 (71.0) | 9.29 (4.22) |
| Duration of counseling in integrated consultations if video recordings were <i>switched on and of</i> | 71 (26.4) | 8.32 (3.56) |
| Duration of separated counseling | 7 (2.6) | ** |
| Parity | | |
| Duration of counseling nulliparae | 98 (41.2) | 11.03 (4.09) |
| Duration of counseling multiparae | 140 (58.8) | 7.91 (3.99) |
| Ethnicity | | |
| Duration of counseling Dutch participants | 184 (77.0) | 9.46 (4.09) |
| Duration of counseling non-Dutch participants | 55 (23.0) | 9.01 (4.82) |
| Religion | | |
| Duration of counseling religious participants | 127 (53.1) | 9.08 (4.25) |
| Duration of counseling non-religious participants | 112 (46.9) | 9.59 (4.22) |
| Level of education | | |
| Duration of counseling lower educated women | 115 (47.9) | 9.28 (4.27) |
| Duration of counseling higher educated women | 125 (52.1) | 9.40 (4.27) |
| Dyadic / triadic counseling | | |
| Duration of counseling if partner was present | 197 (73.2) | 9.85 (4.31) |
| Duration of counseling if partner was absent | 72 (28.8) | 7.45 (3.59) |

* Due to missing data the N can vary from variable to variable. Valid percentages are shown.

**Number of cases too small for relevant, further analyses.

Bold figures indicate independent significantly association between groups ($p<0.001$).

Clients

Of the 460 eligible clients (pregnant women) invited to take part in the study, 324 (70.4%) agreed to participate, but due to recording and other problems a number 55 video-tapes were lost, leaving 269 clients (269/460=58.5%) to be included in the analysis. Of those

included, 197 consultations (197/269=73.2%) clients and their partner visited their midwife together. Data on background characteristics were available for 241 clients (241/269=89.6%) and 171 partners (171/197=86.8%). Table 4 shows the background characteristics of clients and partners. The mean age of clients was 29.2 years of age, (range 20 to 40 years) and the mean age of partners was 31.8 years of age (range 18 to 47 years).

We analyzed the characteristics of the 136 clients who declined participation. The percentages of multiparae in the non-participant group (75.6%) were higher compared to participants (59.9%) (χ^2 (1, $N=324$)=8.58, $p=0.003$, $\phi=0.159$).

Table 4 Characteristics of pregnant women and (if present) their partners.

| Characteristics | Pregnant women N=241* (%) | Partner N=171* (%) |
|---|------------------------------|-----------------------|
| Gender | | |
| Male | - | 168 (99.4) |
| Female | 241 (100.0) | 1 (0.6) |
| Age (years) | | |
| ≤ 25 years | 44 (18.5) | 21 (12.6) |
| 26 – 30 years | 108 (45.4) | 45 (26.9) |
| 31 – 35 years | 73 (30.7) | 69 (41.3) |
| ≥ 36 years | 13 (5.5) | 32 (19.2) |
| Highest level of education^a | | |
| Up to high school | 115 (47.9) | 88 (52.1) |
| Higher vocational education / university | 125 (52.1) | 81 (47.9) |
| Ethnicity^b | | |
| Native | 184 (77.0) | 135 (80.8) |
| Non-Native | 55 (23.0) | 32 (19.2) |
| Religious background | | |
| None | 112 (47.1) | 80 (47.9) |
| Christian | 102 (42.9) | 78 (46.7) |
| Muslim | 22 (9.2) | 7 (4.2) |
| Other | 2 (0.8) | 2 (1.2) |
| Pregnancy duration | | |
| ≤ 11 weeks | 204 (92.3) | 147 (94.2) |
| ≥ 12 weeks | 17 (7.7) | 9 (5.8) |
| Parity | | |
| Nullipara | 98 (41.2) | 92 (55.1) |
| Multipara | 141 (58.8) | 75 (44.9) |

*Due to missing and inapplicable answers the N can vary from variable to variable. Valid percentages are shown.

^a Up to high school includes the Dutch MBO.

^b In the Netherlands, ethnic origin is defined by country of birth of a person's parents. If one of the parents (of both of them) of a person is born outside the Netherlands, this person is non-Native [56].

Relative expression of the three prenatal counseling functions

Tables 5a and 5b present the total amount of utterances regarding the three functions of counseling for prenatal congenital anomaly tests made by midwives, clients and partners. 41% (20635/50154) of the utterances were coded as *HE*, 23% (11528/50154) as *DMS* and 36% (17991/50154) as building a *client-midwife relation*.

Ratio client versus midwife conversational contribution

Tables 5a and 5b show that the overall conversational contribution of midwives during prenatal counseling exceeded the contribution of clients and partners (60% versus 32% and 8%, respectively) with no difference for the nulliparous women compared to multiparae $\geq 5\%$. More specifically, results show that midwives contributed the most to the conversation during *HE*; they made 91% of the *HE* utterances, 7% were made by clients and 2% by partners. The majority of the utterances made by midwives were characterized as giving *HE Information* (90% out of 91%). Also, most utterances of clients and partners were characterized as giving *HE Information*.

With regards to *decision-making support* tables 5a and 5b show that midwives' relative contribution to the conversation was 61%, clients 29% and partners made 10% of the utterances regarding the *decision-making support* function of prenatal counseling. However, these ratios were different for nulliparous women compared to multiparae. Multiparae contributed relatively more to the conversation during *decision-making support* (34%) compared to nulliparous women (25%). Overall, of the midwifery utterances coded as *DMS*, the majority (34%) were intended to direct behavior. For example 'you really have to talk about your decision at home together with your partner' or utterances stating the 'opting in' system used in the Netherlands such as 'it is important to think about the implications of prenatal testing before you take or refuse them'. The least frequent utterances of midwives were *DMS Questions* (11%), such as 'what reasons do you have to take or refuse prenatal tests?'. Both clients and partners made the most utterances regarding giving *DMS Information* (29% and 10%, respectively), such as 'The combined test is just a risk assessment. I think the results will only upset me'.

Regarding the *client-midwife relation* most utterances of midwives, clients and partners were coded as agree or backchannel.

Characteristics associated with midwives' expressions of the three prenatal counseling functions

Results of the multivariable multilevel analyses of the whole dataset show that data were clustered within midwives, but not within practices. Regarding the *HE* function of counseling, the multivariable multilevel analyses shows that of the 5 potential client characteristics that were included in the model (age, religion, level of education, parity and partner being

Table 5a Counselors (MF), clients' and partners' number and percentages of total counseling utterances across the three functions of prenatal counseling.

| | MF (N=20) N (%) | Clients (N=269) N (%) | Partners (N=197) N (%) | Total N (%) |
|---|--------------------|--------------------------|---------------------------|---------------------------------------|
| Health Education | | | | |
| Health education Questions | 241 (1) | 453 (2) | 192 (0,9) | 886 (4) |
| Health education Information | 18520 (90) | 936 (5) | 293 (1,1) | 19749 (96) |
| Total Health Education utterances | 18761 (91) | 1389 (7) | 485 (2) | 20635 (100) 20635/50154=41% |
| Decision-making support | | | | |
| Decision-making support Questions | 1151 (11) | 35 (0) | 34 (0) | |
| Decision-making support Information | 1878 (16) | 3359 (29) | 1123 (10) | |
| Decision-making support Counseling | 3948 (34) | - | - | |
| Total Decision-making support utterances | 6977 (61) | 3394 (29) | 1157 (10) | 11528 (100) 11528/50154=23% |
| Client-midwife relation | | | | |
| Affective communication: verbal attention, social behaviour, agree and backchannels, approval, concern, reassurance, disagree | 3497 (19) | 11094 (62) | 2689 (15) | |
| Giving written information | 557 (3) | 2 (0) | 2 (0) | |
| Offer the possibility to talk about prenatal tests again | 150 (1) | - | - | |
| Total client-midwife relation utterances | 4204 (23) | 11096 (62) | 2691 (15) | 17991 (100) 17991/50154=36% |
| Total amount of prenatal counseling utterances | 29942 (60) | 15879 (32) | 4333 (8) | 50154 (100) |

Table 5b Counselors (MF), clients' and partners' number and percentages of total counseling utterances across the three functions of prenatal counseling and nulliparae and multiparae separately and all clients together.

| | MF (N=20) N (%) | Clients (N=269) N (%) | Partners (N=197) N (%) | Total N (%) |
|---|--------------------|--------------------------|---------------------------|----------------|
| Health Education | | | | |
| Nullipara (N=98) | 8849 (92) | 553 (6) | 236 (2) | 9638 (100) |
| Multipara (N=141) | 8129 (90) | 724 (8) | 197 (2) | 9050 (100) |
| Nullipara and multipara together (N=269) | 18761 (91) | 1389 (7) | 485 (2) | 20635 (100) |
| Decision-making support | | | | |
| Nullipara | 3240 (65) | 1252 (25) | 494 (10) | 4986 (100) |
| Multipara | 3037 (56) | 1854 (34) | 514 (10) | 5405 (100) |
| Nulliparous and multipara together | 6977 (61) | 3394 (29) | 1157 (10) | 11528 (100) |
| Client-midwife relation | | | | |
| Nullipara | 1637 (21) | 4708 (60) | 1480 (19) | 7825 (100) |
| Multipara | 2163 (25) | 5493 (64) | 916 (11) | 8572 (100) |
| Nulliparous and multipara together | 4204 (23) | 11096 (62) | 2691 (15) | 17991 (100) |
| Total amount of prenatal counseling utterances | | | | |
| Nullipara | 13726 (61) | 6513 (29) | 2210 (10) | 22449 (100) |
| Multipara | 13329 (58) | 8071 (35) | 1627 (7) | 23027 (100) |
| Nullipara and multipara together | 29942 (60) | 15879 (32) | 4333 (8) | 50154 (100) |

Bold figures show differences $\geq 9\%$ between the relative contribution to the conversation between counseling of nullipara versus multipara.

present or not), only parity was independently and significantly associated with the amount of *HE* utterances as well as *DMS* utterances ($\beta=-27,41$; CI: -35,20 – -19,63; $p< 0.001$ and $\beta=-10,62$; CI: -14.30 – - 6.95; $p< 0.000$, respectively); midwives used less *health educational* and *decision-making support* utterances during counseling of multiparae compared to counseling of nulliparous women. The expression of building a *client-midwife relation* was independently and significantly associated with the religious background of clients and the age of the pregnant women. With non-religious clients midwives used less *client-midwife relation* utterances compared to religious women ($\beta=-2.42$; CI: -4.88 – 0.04; $p=0.05$) and a higher age of pregnant women was associated with more midwives' utterances regarding the *client-midwife relation* ($\beta=0.41$; CI: 0.11 – 0.70; $p=0.01$).

DISCUSSION

This study shows that almost half of the utterances made during prenatal counseling for congenital anomaly tests by midwives were coded as related to the *health education* function of prenatal counseling. About a quarter of the utterances was related to the *decision-making support* function. Building a *client-midwife relation* was accomplished by both midwives and clients primarily through active listening techniques such as giving backchannels and agreements.

As expected, midwives contributed the most to the conversation coded as *health education*. Regarding the *decision-making support* function of counseling, the relative contribution of midwives was less extensive compared to their contribution during *health education*, while clients and their partners contributed more to the *decision-making support* conversation compared to their relative contribution during *health education*. This 'pattern' was different for nulliparae compared to multiparae; during *decision-making support* of multiparae midwives' relative contribution to the discussion was less compared to their contribution during *decision-making support* of nulliparous women. Such differences were not found within the other two functions of counseling. Counseling of nulliparous women lasted significantly longer than counseling of multiparous women.

Other research on client-counselor communication, also concluded that counseling sessions are largely didactic in nature with relatively little emphasis on the psychological and emotional aspects of the decision-making process of clients and decision-making support [12,31,39]. Most of the counseling took place during the initial intake, although a separate counseling consultation is recommended by national guidelines and the literature [18,24-26,40]. Perceived time pressure may be a reason why most practices choose to counsel within the initial intake, despite recommendations from the national guidelines. Most clients enter midwifery care around 8.6 weeks of pregnancy [10]. Scheduling two appointments (e.g. one intake and one prenatal counseling session) is challenging since the blood test of the CT has

ideally to be done around 10 weeks of the pregnancy. One way to improve this suboptimal situation is to provide clients with more information about choices at hand, prior to the initial consultation. For example by asking clients and partners to complete a decision aid at home and read information. During counseling the counselor can then check knowledge, focus on pros and cons of the options, discuss the outcome of the decision aid and provide client-centered *decision-making support* [26]. As far as we know, this approach is not commonly used by midwives. Limited time in combination with a client with little or no prior knowledge could have affected the way midwives asked *decision-making support* questions, i.e. more as rhetorical questions.

With regards to the *decision-making support* function of counseling the results of our study are promising. Midwives seem to understand that during this part of the conversation it is important to step back and listen to the clients' way of making sense of the information they just received. However, our study shows also that midwives use relatively fewer exploring questions compared to directing behavior. This approach could potentially cause less informed decision-making, because clients are not invited to really answer reflective questions during counseling. As a result, they might not consider them at all and therefore base their decision on uninformed instead of informed preferences. Achieving informed preferences is the optimal goal since decisions will be better understood, based on more accurate expectations about the negative and positive consequences and more consistent with personal preferences [26,41].

Results of the multilevel analyses showed a strong association between parity and the amount of *health education* and *decision-making support* provided. Furthermore, as expected, counseling of nulliparous women lasted significantly longer than counseling of multiparae. One explanation could be that multiparae know already more about the available tests and might have experience in making decisions about the test uptake and therefore need less *health education* and *decision-making support* and shorter counseling. However, from an earlier study of our research group it is known that significantly fewer multiparae compared to nulliparous women perceive that the *health education* they received during counseling met their pre-counseling preferences and that a majority of multiparae with strong preferences for *decision-making support* perceived that these preferences were not fully addressed during counseling [10]. Since we found no random slope for parity and we did find clustering of data within midwives, midwives seem to be the initiator of contributing more to the *decision-making support* of nulliparous compared to multiparous women. With the current data it remains unclear if this approach together with differences in the duration of counseling is accurate especially within the Dutch context in which the fee midwives receive for counseling of nulliparae and multiparae is the same. The funded pre-test counseling time is 30 minutes [42].

This study indicated that the full funded 30 minutes for counseling was not used, on average. There may be several reasons why midwives do not use the allocated counseling time for pre-test counseling during this first prenatal visit. Perhaps midwives plan to spend additional time later in the pregnancy for example additional counseling for the FAS. Alternatively, they may want to reserve some extra funded time for post-test counseling. Furthermore, maybe there is a difference in perception of time needed between midwives and policy makers. Recent studies demonstrate that a substantial part of the Dutch midwives' perceptions regarding the content of *health education* do not entirely match clients' preferences and that not all midwives fully endorse the counseling function *decision-making support*, while clients prefer tailored *health education* as well as *decision-making support* [10,43]. Using the funded 30 minutes time could improve counseling that meets clients' individual preferences as well as professional guidelines.

The expression of building a *client-midwife relation* was statistically, independently and significantly associated with the religious background of clients indicating that midwives used more *client-midwife relation* utterances during counseling of religious women. It is difficult to provide examples of the differences between counseling of religious versus non-religious women, since the *client-midwife relation* is built during the whole counseling using utterances such as 'yes, I can imagine it is a difficult decision to make' or 'hm, indeed'. However, an explanation for the expression of more *client-midwife relation* utterances used within counseling of religious women, could be that in general believers indicate obedience to an authority (e.g. God, the bible, doctrines and preacher) as more important than non-believers do [44]. So, from the perspective of a believer, a midwife could be seen as an authoritative person with whom it is important to build a relationship of trust. Furthermore, in general, non-believers are more individualized than believers and one of the characteristics of individualization is the emphasis on interest of the person herself [44,45].

Study limitations

First, our study included only 20 midwives of the ca. 2264 midwives in the Netherlands [46]. Therefore, the generalizability of the findings of this explorative study are limited. Some of the midwives video-taped a relatively small amount of their consultations, which might not be representative for their way of counseling. Depending on the medical history of the client and the policy of the midwifery practice, additional counseling sessions could be held. These were not included in the study, because especially during the first consultation, focusing on pre-test counseling, the foundation for a relationship between the midwife and the client (and partner) is laid. However, participating midwives stated that they counseled for both the combined test and the fetal anomaly scan during the recorded counseling sessions and therefore it is likely that most of it was video-taped. Second, although the ratio multiparae versus nulliparae in the current study was the same as the Dutch pregnant population [47]

fewer multiparae participated, and our study sample was more highly educated and of Dutch origin than the Dutch pregnant population although of practices participating in this study were also located in the so called 'Randstad' area of the Netherlands, where significantly more people from non-Dutch origin live [47]. This also limits generalizability of our results. Last, using the RIAS for analyses as we did, all utterances get the same count irrespective of whether they refer to words or backchannels such as 'hm, hm' or to a whole expression, such as 'you have to know that the combined test is a risk assessment only'. In general, *health education* utterances are more likely to be whole expressions and not backchannels. During *decision-making support* backchannels will more often be used reflecting active listening after asking exploring questions. These backchannels are counted as *client-midwife relation* utterances. As a result, the relative amount of *health education* utterances compared to *decision-making support* utterances may have been underestimated.

Key Conclusions

- We found that midwives focused primarily on the *health education* function of counseling for prenatal anomaly tests. As expected, during *health education* midwives did most of the talking while clients were listening.
- During *decision-making support* clients, especially multiparae, contributed more to the conversation compared to their contribution during *health education*. However, midwives contributed still more to the discussion compared to clients and used relatively few exploring questions.
- Parity appears to be independently associated with the way midwives counsel their clients. Nulliparous women receive more *health education* as well as *decision-making support* and contributed less to the conversation during *decision-making support* compared to multiparae.

Practice Implications

Our findings should encourage midwives to reflect on the way they address the three prenatal counseling functions during counseling of nulliparous women compared to multiparous women. Reflections should include the connection to knowledge of clients: 'what do you know about prenatal screening?' followed by: 'can you tell me what additional information you might need from me?'. Regarding *decision-making support*, in our study a midwife stated 'The most important thing to do is to think about what you would do if your test informs you that your child has Down syndrome [...] I think it is important to talk this through with your boyfriend'. Rather than telling a client what to do, we would encourage midwives to ask open questions such as 'what would you do in case prenatal tests inform you that your child has Down syndrome?' and wait for the answer, also when it takes the client some time to formulate it. Another approach to the starting of the counseling could also be considered;

for example, providing clients with a decision aid to complete prior to starting the counseling session with the midwife. The counseling could start with: 'What do you want to know about the health of your child during pregnancy?' or 'Why would you opt for prenatal screening or / why would you not opt for prenatal screening?' This directs the counseling more towards *DMS* compared to *HE*.

The Shared Decision Making model could be used as a practical guideline to optimize both the *health education* and *decision-making support* functions of prenatal counseling. The model divides the conversation into three parts: 'choice talk': the pros and cons of each choice (e.g. the choices about prenatal screening, the choices about prenatal diagnosis, the eventual choices about termination of pregnancy), 'option talk': exploration of preferences and moral values as well as providing further decision support by using decision tools and 'decision talk': reflection on the time needed to make the decision.

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APPENDIX A Dutch prenatal screening context

Since 2007 prenatal screening is offered to all Dutch pregnant women using an opting in approach [5,8,9]. The screening program includes two non-invasive tests: the combined test (CT), a blood test and an ultrasound to measure the nuchal translucency, for determining the possibility of Down syndrome, (around 12th weeks gestational age), and the Fetal Anomaly ultrasound Scan (FAS) for detecting physical anomalies (around 20th weeks gestational age). In the case of confirmatory diagnostic testing, two options are available: pregnancy termination before 24 weeks of gestation, or health-oriented prenatal care for the fetus combined with prenatal and postnatal support [48]. Although both tests are part of a population-screening program, they are not offered on the same basis. The FAS is free for all women, while the CT has to be paid for (ca. 150 euro) by women younger than 36 years of age [5,8].

The mean uptake of prenatal anomaly screening tests in the Netherlands has been around 27% for the CT, but varies between different regions (range 12% to 52%) [49-52]; the mean uptake of the FAS has been around 91% (range 80% to 99%) [50,51]. In the Netherlands, an obstetrician, clinic genetic or pediatrician will provide counseling following confirmation of a fetal anomaly and discuss the option of pregnancy termination or health-oriented prenatal care for the fetus [53]. In 2011, 970 of the parents choose to terminate a pregnancy with a confirmed diagnosis of a congenital anomaly (e.g. about 0.5% of the pregnancies) [54].

APPENDIX B RIAS

The RIAS distinguishes utterances that are primarily informative (information giving), persuasive (counseling), interrogative (closed and open-ended questions), affective (social, positive, negative and emotional) and process oriented (facilitation, orientation and transitions). Information and question utterances were further specified in: 1) medical condition, symptoms and history; 2) testing and therapeutic intervention; 3) lifestyle, finances, self-care, and preventive behaviors; 4) psychosocial topics related to emotional reactions, coping, family issues, and social relationships; and 5) counseling or directs behavior [12,55].