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Introducing video recording in primary care midwifery for research purposes: Procedure, dataset, and use

EVELIEN R SPELTEN[A, G,] LINDA MARTIN[A,] JANNEKE T GITSELS[A, F,] MONIQUE TR PEREBOOM[A,] EILEEN K HUTTON[A, B,] SANDRA VAN DULMEN[C, D, E,]

[a] Department of Midwifery Science, AVAG and the EMGO[+] Institute for Health and Care Research, VU University Medical Centre, Amsterdam, the Netherlands
[b] Obstetrics & Gynecology, McMaster University, Hamilton, Ontario, Canada
[c] NIVEL, Netherlands Institute for Health Services Research, Utrecht, the Netherlands
[d] Department of Primary and Community Care, Radboud University Nijmegen Medical Centre, Nijmegen, the Netherlands
[e] Department of Health Science, Buskerud University College, Drammen, Norway
[f] Faculty of Theology, VU University, Amsterdam, the Netherlands
[g] Dept of Medicine, Nursing, and Health Sciences, Monash University, Melbourne, Australia

ABSTRACT

Background: Video recording studies have been found to be complex, however very few studies describe the actual introduction and enrolment of the study, the resulting dataset and its interpretation. In this paper we describe the introduction and the use of video recordings of health care provider (HCP)-client interactions in primary care midwifery for research purposes. We also report on the process of data management, data coding and the resulting data set.

Methods: We describe our experience in undertaking a study using video recording to assess the interaction of the midwife and her client in the first prenatal consultation, in a real life clinical practice setting in the Netherlands. Midwives from six practices across the Netherlands were recruited to videotape 15–20 intakes. The introduction, complexity of the study and intrusiveness of the study were discussed within the research group. The number of valid recordings and missing recordings were measured; reasons not to participate, non-response analyses, and the inter-rater reliability of the coded videotapes were assessed. Video recordings were supplemented by questionnaires for midwives and clients. The Roter Interaction Analysis System (RIAS) was used for coding as well as an obstetric topics scale.

Results: At the introduction of the study, more initial hesitation in cooperation was found among the midwives than among their clients. The intrusive nature of

the recording on the interaction was perceived to be minimal. The complex
nature of the study affected recruitment and data collection. Combining the
dataset with the questionnaires and medical records proved to be a challenge.
The final dataset included videotapes of 20 midwives (7–23 recordings per
midwife). Of the 460 eligible clients, 324 gave informed consent. The study
resulted in a significant dataset of first prenatal consultations involving
recording 269 clients and 194 partners.
Conclusion: Video recording of midwife-client interaction was both feasible and
challenging and resulted in a unique dataset of recordings of midwife-client
interaction. Video recording studies will benefit from a tight design, and vigilant
monitoring during the data collection to ensure effective data collection. We
provide suggestions to promote successful introduction of video recording for
research purposes.

BACKGROUND

Video recording of health care-provider (HCP)-client communication has become an
accepted part of health care education and research. In education, video recording
provides feedback on work habits by assessing communication during clinical
performance. In research, video recording enables the assessment of communication
performance or intervention fidelity as well as the confirmation of best practices in
health care provider-client communication by observing daily practice, often in
combination with other research measures such as questionnaires (Noordman et al.,
2011, Van Dulmen et al., 2012 and Rushmer et al., 2011).

In the Netherlands, nearly 80% of all pregnant women start obstetric care in a
midwifery practice (Wiegers, 2009). In the first prenatal consultation, the midwife
provides health education on a large number of important topics, e.g. on health life
style such as smoking, drinking, weight gain, and on infectious diseases. In 2007,
midwives became the primary counsellors for prenatal screening for congenital
anomalies (Wiegers, 2009). To date, no research has considered how midwives
counsel clients in practice, how they provide health care education during a
consultation, or what topics are addressed during the first consultation. We felt video
recorded HCP-client interaction in midwifery practices would be an ideal approach
to studying these complex interactions.

We anticipated that the use of video recordings for research purposes in health care
practice would be complex; however, very few studies describe the actual
introduction and enrolment of the study, the resulting dataset and its interpretation.
From a number of studies on video recording we extracted three elements that seem
to shape the feasibility of a video recording study: introduction of the study,
complexity of the data collection and intrusion of the video camera. A good
introduction is crucial to the feasibility of the study. Both client and health care
worker need to be briefed adequately in order to enhance participation (Van Dulmen
et al., 2012). *Complexity* of the data collection refers to additional questionnaires that
need to be completed, filling in of forms such as non-participant forms, and
managing the actual recording. It has been found that a more complex research
protocol results in reduced participation (Van Dulmen et al., 2012).

A third element to consider is the potential *intrusive nature* of the camera for both
the health care worker and the patient. The actual recording could act as an

intervention. However, there is little evidence that care providers behave differently
when on camera (Wolraich et al., 1986) and in practice, the majority of patients do
not object to being video recorded, as long as there are careful privacy and safety
procedures (Van Dulmen et al., 2012, Pringle and Stewart-Evans, 1990 and Van der
Stouwe, 2010).
We found little information in the literature on the construction of a meaningful data
set in terms of *quantity*: e.g. about how many recordings should be made in total and
per health professional, how many health professionals should be included to allow
for generalizability of the observations. It is our impression that the challenges
encountered with the complex and time-consuming nature of video recording may in
the end determine the amount of data collected rather than realising a predefined
number of recordings.
In this report, we use a framework made of the elements extracted from the literature:
introduction, complexity and intrusion, to which we have added *quantity* as a fourth
important element to consider in planning and implementing video recording studies.
This is the first study in which midwife-client interactions in primary care midwifery
practices in the Netherlands were video recorded. The purpose of the study was to
gain insight into the midwife-client interaction in relation to the quality of care
provided by midwives. There are very few papers recounting the complex recording
process. This paper describes the introduction of video recording in midwifery
practices for research purposes, the coding process, and the resulting dataset.
Analyses of observational data are described in separate papers (Martin et al., 2013c
and Pereboom et al., 2013).

METHODS

The video study focused on the interaction of the midwife and her client in the first
prenatal consultation. The study was embedded in the DELIVER study, a large scale
multi-centre multidisciplinary prospective national survey into the quality and
provision of primary midwife led care in the Netherlands in which twenty midwifery
practices and their clients participated (Klomp et al., 2008, Manniën et al., 2012 and
Spelten and Nieuwenhuijze, 2013). The design of the DELIVER study, including the
video recordings of first prenatal consultations, was approved by the Institutional
Review Board of the VU University Medical Centre as well as by the Medical
Ethical Committee of the VU Medical Centre, Amsterdam, the Netherlands,
supplemented by consent from all participating midwives.

Data collection: quantity of video recordings

In order to have an adequate sample to perform quantitative analysis and to develop
consistency around our observations of communication for each midwife and across
the group, we aimed to obtain at least 15–20 recordings per midwife and to include at
least 6 practices across the country. The number of recordings was also based on the
fact the sometimes the first recording needs to be discarded due to getting acquainted
with video recording (Van den Brink-Muinen et al., 2004) and sometimes technical
problems are encountered rendering the recording unusable. At recruitment for the
DELIVER study, all twenty DELIVER practices, which were purposively sampled
from the north, east, west, and south region of the Netherlands were automatically
asked to participate in the video recording study, even though we anticipated that
would be more than sufficient for our video data collection. All midwives in a
practice were requested to participate; however in larger practices the number was

set at a maximum of 6 midwives, to limit the relative influence of one practice on the entire dataset. In all participating practices, midwives decided which of them participated.

Midwives were eligible to participate if they: (1) had a work contract at the midwifery practice; (2) were fully qualified midwives (e.g. not student-midwives); and (3) if prenatal counselling consultations were part of their usual work.

Clients were eligible if they: (1) were new to counselling about prenatal congenital anomaly tests for the current pregnancy; (2) waived their right not to know about prenatal anomalies tests; (3) were aged 18 years or older; and (4) were able to read Dutch or English.

Data collection was carried out between June 2010 and May 2011.

Data management
All video recordings were digitalized, analyzed in The Observer XT version 7.0 (Noldus et al., 2000). Coded data were transported to the statistical software package SPSS 20.0 (SPSS inc., Chicago, IL). Data from the analysis of the video recordings were entered in SPSS 20.0 together with the questionnaire data. Through anonymous patient numbers, data from the video recordings were connected to the questionnaire data and the medical record files of the DELIVER study.

Introduction of video recording research
Practices were first approached by phone, followed by written information to those who agreed to consider participation, and finally a visit was made to explain the study procedure.

For the recording, participating midwives received a camera, empty tapes, and a recording protocol. They were made familiar with the actual recording of the consultation: setting up of the camera, starting and stopping recording, camera angle, changing of tapes, completion of the study forms, etc. Researchers were not present at the actual recordings but could be reached by phone.

Midwives also received questionnaires, information leaflets for clients and informed consent forms. Practice assistants who did the initial recruitment, received protocol instructions from the midwives.

Enrolment of clients
The enrolment procedure for this study is described as a flow chart in Fig. 1. Pregnant women and their partners were recruited from all consecutive new clients at the six midwifery practices involved. Eligible clients received information about the study and were invited to participate. Interested clients signed an informed consent form prior to the consultation, which stated that they could withdraw at any time during or after the consultation without consequences.

[FIG. 1]
If clients declined to participate in the study, the practice assistant recorded reasons for refusal of participation as well as the clients' age, parity, level of education and ethnicity.

Questionnaires
To supplement the recordings, we collected demographic information and background characteristics from midwives, clients, and their partners. We asked participants to complete the QUOTE [prenatal] questionnaire twice, once before and once

after the recorded consultation. This questionnaire focuses on clients' preferences and experiences regarding prenatal counselling for congenital anomaly tests (Martin et al., 2013a). On request, an English version of the questionnaire was available.
The midwives completed the midwives' version of the QUOTE [prenatal] including items on the midwife-client relationship once, at the start of the study to assess their views on adequate counselling for prenatal congenital anomaly tests (Martin et al., 2013b). To assess their reflections on daily practice, the midwife completed the same questionnaire again at the end of each recorded consultation.

The video recording
The midwife positioned the unmanned camera to show her full face, in line with protocol instruction; the client and her partner were usually seen from behind or from the side. The recording was started before the client entered the consultation room. The midwife recorded the identification numbers of the practice, national registration of herself and the number of the client on video before the client entered. The midwife notified the client and her partner that the video had started recording. The tape was turned off at the end of the (counselling part of the) consultation.

APPROACH TO ANALYSES

Coding

Coding of the recordings
For the purpose of analysing the collected data, a valid and reliable coding scheme was used to quantify the data. The best known and most frequently used coding scheme for HCP-patient interaction during the patient visit is the Roter Interaction Analysis System (RIAS). RIAS is also the most extensive coding scheme available (Ellington et al., 2011, Roter et al., 2006 and Roter et al., 2011).
Coding was done in two separate runs for verbal and nonverbal behaviour, respectively.
In the coding for communication a distinction was made between point events and state events. Point events refer to a straightforward count of occurrences, e.g. does a midwife inform the client of her risk of having a child suffering from a congenital abnormality and if so, how often is the theme discussed. The occurrence is noted and therefore the frequencies can be counted. No time indication is given. State events refer to elements in the communication that are linked to a time indication, e.g. client-directed gaze or the duration of the prenatal counselling.

Coding of the recordings for verbal behaviour
The main focus of the coding was on *verbal behaviour* related to prenatal counselling for congenital anomaly tests. The RIAS is applied to the smallest unit of expression or statement to which a meaningful code can be assigned. These units are assigned to mutually exclusive and exhaustive categories that reflect the content and form of the dialogue. RIAS has demonstrated levels of reliability and concurrent validity (Ellington et al., 2011 and Roter et al., 2011).
Furthermore, for the purpose of the study, we developed an obstetric topics scale to code each topic addressed during the intake to allow for all relevant components of a first prenatal consultation to be addressed in the analyses, inclusive aspects of prenatal counselling for congenital anomaly tests. The main categories of this obstetric topic scale were: family history (including family genetics, consanguinity),

obstetric history, pregnancy-related health and well-being, life style (smoking, alcohol, drugs, weight, nutrition), infectious diseases, use of medication, counselling and philosophy of life and physical examination. An open category was used to note remarkable occurrences such as "the video-recording could not be used because another consultation was recorded on top of it".

Coding of the recordings for nonverbal behaviour

For *nonverbal behaviour,* the affect or emotional context of the dialogue, the Global Affect Measure (GAM), which is part of RIAS, and client-directed gaze were rated. The GAM ratings are based on overall affective impressions of the health care provider on such dimensions as dominance, friendliness, attentiveness, and hurrying or rushing. Impressions of the clients are based on dimensions such as emotional distress, assertiveness, and friendliness. Ratings of the GAM were assigned for both the midwife and client (and her partner) on scales from low to high (scale 1–6). Ratings of "3" or "4" are considered "average" affect (www.riasworks.com). Client-directed gaze is the time the midwife looked directly into the pregnant woman or her partner's face. Client-directed gaze has previously been found to facilitate a discussion about psychosocial issues (Bensing et al., 1995) and is thus an important factor of communication.

Approach to establishing coding reliability

Before observing and coding the videotapes, three researchers and three research assistants participated in a RIAS course. These coders were split in two teams: one team with two researchers (JG, MP) and one research assistant (KvA) coded the content of the first prenatal consultation, GAM and client-directed gaze. The second team with one researcher (LM) and two research assistants (LG and VS) coded the communication of the prenatal counselling only, with a distinction between verbal and nonverbal behavior using the RIAS. At the start of the coding process, coders of each team compared three coded tapes, adjusted unclear items and made a final coding model. The team coding the content started the coding process, the other team followed. To establish inter-rater reliability, within each team, the coders compared in total approximately 10% of the tapes with each other, and continued to do so, on a regular basis using also a coding memo to exchange coding experiences, to check and maintain consensus. Coders used direct entry software, The Observer XT version 7.0-computer system, which is especially designed for coding behavioural interactions from video recordings (Noldus et al., 2000), and coded directly from the digitized videotaped sessions.

Dataset

Descriptive statistics were used to report characteristics of the participating practice, the midwives, clients (and partner) and the first prenatal consultation recordings. The participating and non-responding clients were compared using t-tests to examine differences in age and chi square tests to examine differences in parity, level of education and ethnicity. Proportions were used to identify the relative contribution of the practices and midwives to the total dataset.

RESULTS

Introduction: feasibility of the study
Six of the twenty practices that participated in the DELIVER-study were asked to
participate. They were selected on the basis of regional coverage, size of the practice
and the client characteristics within the different areas. When two declined, two other
DELIVER practices in the same region were approached, and they agreed to
participate.
Per practice two to six midwives agreed to be recorded, in two practices one or more
midwives refused to participate. In the six practices, recordings were made of 22
midwives and unintentionally of two non-midwife ultra sound specialists who
provided prenatal counselling. The recordings from the ultra sound specialists were
excluded from the data collection because the focus was on midwives. Correctly
recorded videotapes per midwife ranged from 2 to 24. If less than seven complete
recordings were made of an individual midwife, the recordings of this midwife were
excluded. In the research team it was decided that this number was considered too
low to give a valid impression of the midwife's client communication skills.
The increased awareness of being recorded may have prompted a tendency towards
'best behaviour' for midwives or may have increased self-consciousness. This could
have affected the first recording when adjustment takes place. However, we found no
discernible learning curve with regards to the content and the amount of information
given in the first recorded video consultation were compared to all other recorded
video consultations. First recordings were therefore not discarded (Pereboom et al.,
2013).

Dataset: quantity
An overview of the data collection is given in Table 1. The table shows that video
recordings from 20 midwives were taken into the analyses. The number of midwives
per practice ranged from one to five midwives, and recordings ranged from 7 to 23
per midwife.

[TABLE 1]
Of the 460 eligible clients (pregnant women approached to participate), 324 (70.4%)
agreed, resulting in the same number of video recordings, since each client was
recorded once. Of 269 (58.5% of all approached clients), the video recording could
be used for analyses and were included in the resulting dataset. A flow chart
summarizing the number of clients approached, down to the final number of
recordings included in the dataset, including description of the reduction of numbers
can be found in Table 2.

[TABLE 2]
Three types of recordings were made: a whole routine first prenatal consultation
including counselling (*N*=191), a recording limited to the counselling part of the
consultation (*N*=71), and a separate counselling consultation (*N*=7).

Dataset: adequacy and representativeness of sample
The sample characteristics are described on three levels: for the midwives, for the
clients and for the recordings, respectively in Table 3, Table 4 and Table 5.

[TABLE 3][TABLE 4] [TABLE 5]
The mean age of the 20 participating *midwives* was 32.8 years (range 23 to 54 years),
with a mean of years of work experience of 8.3 years (range: just started to 33 years).
Demographic and professional characteristics of the midwives are shown in Table 3.
Data on background characteristics of *clients* are shown in Table 4. Data on
background characteristics of clients were available for 89.6% (*N*=241/269) and data
on background characteristics for partners were available for 88.1% (*N*=171/194).
The mean age of the pregnant women was 29.2 years, (range 20 to 40 years) and the
mean age of partners was 31.8 years (range 18 to 47 years).
Recordings were combined with questionnaires and with medical records. The latter
was complicated and resulted in a large reduction in numbers of matched data; a
match of 54 of 269 (20%).
Data on the *recordings* of the consultations are summarised in Table 5, which
contains information on the number of recordings and on the duration of the different
recordings.
Twelve tapes could not be coded on client-directed gaze because of the angle of the
recording and for two tapes only RIAS coding was done, due to administrative error
of the coders, no other coding was undertaken. The intake consultations, including
prenatal counselling (*N*=191), lasted on average 39.55 minutes and ranged from
11.08 minutes to 95.58 minutes. The counselling part of these consultations lasted on
average 9.48 minutes and ranged from 1.92 minutes to 25.12 minutes.

Information on clients declining participation

Non-response information was available from five of the six participating practices,
from 136 pregnant women, not from their partners. These five practices provided
97.5% data. We only found a significant difference for parity: the percentage of
multiparas in the non-participant group (75.6%) was higher compared to the
percentage multiparas among participants (59.9%), Chi-square test for independence
(with Yates Continuity Correction) was *p*=0.003. No significant differences were
found for age or ethnic origin. Education level was only noted in 15.4% of the cases,
thus a statistical comparison could not be made. The main reasons noted to refuse
participation were: client just does not want to participate; partner refuses to
participate, client has a difficult (medical) history.

RELIABILITY OF THE RECORDINGS

Inter-rater reliability of content and non-verbal communication

Inter-rater reliability between the observers was tested for each scoring item in the
protocol for 26 out of 269 video consultations (9.8%); the Kappa coefficient per item
ranged from 0.31 to 0.78 (mean 0.56) indicating moderate to very good agreement
(Landis and Koch, 1977). Regarding client-directed gaze the inter-rater reliability
was calculated on a random sample of 10% (*N*=26) of the video-tapes for which this
coding was possible (*N*=253); the Intraclass Correlation Coefficient (ICC, single
measures) ranged from 0.64 to 0.92 indicating moderate to very good agreement.

Inter-rater reliability of RIAS

Inter-rater reliability was calculated on a random sample of 9.3% (N=26) of the study
videotapes (*N*=269). Intraclass correlation (ICC) was used to measure the inter-rater
reliability for midwife, client and partner categories with a mean occurrence greater
than 2% (i.e. any occurrence had to be at least 2% of the total), which proved to be

adequate (Pieterse et al., 2005 and Pieterse et al., 2006). The ICC was rated as
Kappa.
Coding categories for midwives had a substantial mean ICC (ICC single measures)
of 0.62 (Range 0.58–0.65). The average ICC of client coding categories (ICC single
measures) was moderate with 0.53 (Range=0.30–0.56) and the mean ICC of partner
categories (ICC single measures) was good with 0.71 (Range=0.59–0.82). The
partner category consisted of only one category, namely backchannels. The mean
ICC of the counselling topic was also almost perfect with 0.99 (Range=0.99–1.00).

DISCUSSION
In this paper, we describe the introduction and resulting dataset of video recordings
in a naïve population: primary care midwifery. Midwives in the Netherlands, unlike
many other health professionals, had not yet been exposed to video recording as a
tool for research. Also, in the recorded first prenatal visit, there is no established
relation between the midwife and her client, which may require more effort to gain
trust needed to consent to the recording. Because of the new situation for both
midwives and their clients and because there are very few papers recounting the
complex recording process, in this paper, we describe the Introduction process. In
addition, we report on the data coding procedure and the resulting dataset in terms of
quantity and quality.
The use of recordings for research purposes posed a number of challenges. These
challenges are described in terms of the framework introduced earlier: the
introduction in the practice setting, the complexity of the associated data collection
including data-linking, the possible intrusiveness of the camera, and determining the
needed quantity of the recordings.
For the *introduction*, we identified the need to ensure commitment of health care
providers to the research prior to enrolling the practice group as part of the study.
Despite initial consent, some practices and midwives did not agree to participate.
Voiced reasons for non-participation at practice level were not video-related (i.e. not
convenient for the practice at the moment, on grounds of a pregnant colleague and,
not convenient for fear that clients would decide to change to a different practice).
Because we wanted to limit the relative contribution of a larger practice on the
dataset, this provided midwives in larger practices with an opting out option. In the
end, the practices that agreed to participate turned all out to be larger practices (≥4
midwives) and in these practices, not all midwives agreed to participate. This was
left at the discretion of the practice; it could be that individual midwives did not
participate because recording was unfamiliar to them or for practice management
reasons.
Second, an introductory period provided opportunity to adjust to the recording
process, allowing for necessary changes to be made to the initial protocol. In our
study, the provision of a word-by-word script to invite clients to participate in the
study proved to be crucial for commitment of midwives to the study and for
recruitment of clients. A subsequent change to the protocol related to the recording.
Depending on the preference of the practice, three different recordings could be
made: a complete first prenatal consultation; only the counselling part within the first
prenatal consultation; or for practices that provided a complete, separate session for
prenatal counselling, recording of that session only. This change resulted in a
recording of the entire first prenatal consultation for most practices, even though the

initial focus of the study was on counselling for congenital anomalies. And since all
first consultations are likely to be similar in content, this avoided cross-practices
comparison issues, which allowed for an extension of our research focus to include
all the health education aspects that are included in the first consultation.

Finally, we feel that an introductory period may also increase feelings of control for
the midwives and their assistants and enhance cooperation.

With regards to *complexity* of the data set, a meticulous description of the recording
process, and close monitoring of the data collection by researchers is necessary to
prevent loss of data. For example in our study, the 19 failed recordings (Table 2)
may have been prevented if early check-ins and additional assistance with technical
aspects of taping were addressed; 18 sessions taped by non-midwife counsellors may
have been avoided if we included the credential of who was recording on the
clinician data collection form. In studies such as ours, where the video data are to be
linked to other data sets, careful attention must be paid to the unique identifiers that
will allow the linkages. In our study matching the data with medical records resulted
in a considerably reduced sample.

The coding system used seemed appropriate, although the complexity of the data
coding could negatively influence the results through low ICC's especially for rare
coding categories. Furthermore, the complexity of the data coding could negatively
influence the results through low ICC's.

The *intrusive nature* of video recording did not appear to be a problem and may
reflect the fact that participating midwives were less concerned about being recorded.
Midwives who agreed to participate quickly got used to being recorded and even
reported on the fact that being taped itself was already an insightful experience (
Spelten et al., 2012). Even though we were working in a situation where clients
would be meeting their midwife for the first time in this pregnancy, client
participation was high with nulliparous women being more inclined to participate,
suggesting that lack of an established HCP-client relationship was not a barrier to
participation in our study.

In terms of *quantity*, the video study has resulted in a dataset consisting of 269 video
recordings of first prenatal consultations, involving 269 clients, 194 partners and 20
midwives from 6 practices, providing unique insight into the communication skills of
midwives, with no evidence of it acting as an intervention (Pereboom et al., 2013).
The relative contribution of a single midwife and of a practice on the total varied a
lot in our sample, which may hamper subsequent analyses. We were not able to
record the initially set goal of 15–20 recordings per midwife; instead we required
midwives to have recorded a minimum of seven interactions in order to be included
in the study. Closer monitoring may have assisted in meeting our original goal and
resulted in a more balanced data set in terms of recordings per midwife and
participating midwives per practice.

LIMITATIONS

Overall, our results indicate that our sampling efforts were adequate. Our purposeful
sampling appears to have been adequate. Our sample of midwives compares well to
the national sample (Table 3). For the client sample, on-going monitoring may have
better balanced the number of multiparous women.

Video recording as a method may exclude some clients or lead to refusal from others
(e.g. clients with personal issues or for example a medical history of miscarriages)

and this may lead to bias and reduced generalisability of the results. This may
however depend on the research question, e.g. if the focus of the study was on
women with personal issues or with a history of miscarriages.

Since there was no clear-cut information on cut off points for inclusion for the
number of practices, midwives (per practice) and recordings per midwife, we made
arbitrary choices. Future research may provide better underpinning for these
decisions.

CONCLUSIONS

Video recording in midwifery practice has resulted in a unique database of 269
recording, involving 269 clients, 194 partners and 20 midwives from 6 midwifery
practices on midwife-client interaction of primary care midwives in the Netherlands,
supplemented with additional data gathered through questionnaires and linked
medical records.

The implementation of a video recording study requires a tight design, careful
attention and vigilant monitoring during the data collection in order to ensure a
satisfactory end result.

COMPETING INTERESTS

The authors declare that they have no competing interests.

AUTHOR CONTRIBUTIONS

LM, JG and MP conducted the data collection and analysis. ES initiated and
coordinated the DELIVER study. EH supervised the DELIVER study. SvD designed
and supervised the video observation study. All authors participated in discussing the
design of the study and developing the research protocols and questionnaires. ES
drafted the manuscript, and all authors read and corrected draft versions of the
manuscript and approved the final manuscript.

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REFERENCES

1. Bensing et al., 1995 JM Bensing, JJ Kerssens, M van der Pasch Patient-directed
   gaze as a tool for discovering and handling psychosocial problems in general
   practice Journal of Non-Verbal Behavior, 19 (4) (1995), pp. 223–242 View Record in
   Scopus
2. Ellington et al., 2011L Ellington, KM Kelly, M Reblin, S Latimer, D. Roter
   Communication in genetic counselling: cognitive and emotional processing Health
   Communication, 26 (2011), pp. 667–675
3. Hingstman and Kenens, 2011 L Hingstman, RJ. Kenens Numbers from the
   midwifery registrations Nivel, Utrecht (in Dutch) (2011)
4. Klomp et al., 2008T Klomp, E Spelten, M van der Meijde DELIVER, een studie naar
   de eerstelijns verloskundige zorg in Nederland [DELIVER, a study into primary care

midwifery in the Netherlands] Tijdschrift voor Verloskunde (2008), pp. 42–43
(juli/augustus)

5. Landis and Koch, 1977 JR Landis, GG. Koch The measurement of observer
    agreement for categorical data Biometrics, 33 (1977), pp. 159–174
6. Manniën et al., 2012 J Manniën, G Klomp, T Wiegers, M Pereboom, J Brug, A de
    Jonge, M van der Meijde, E Hutton, F Schellevis, E. Spelten Evaluation of primary
    care midwifery in the Netherlands: design and rationale of a dynamic cohort study
    (DELIVER) BMC Health Services Research, 12 (2012), p. 69
7. Martin et al., 2013a L Martin, S van Dulmen, E Spelten, A de Jonge, P de Cock, E.
    Hutton Prenatal counselling for congenital anomaly tests: Parental preferences and
    perceptions of midwife performance Prenatal Diagnosis, 33 (2013), pp. 1–12
8. Martin et al., 2013b L. Martin, E.K. Hutton, E.R. Spelten, JT. Gitsels-van der Wal, S.
    van Dulmen Midwives' views on appropriate antenatal counselling for congenital
    anomaly tests; do they match clients' preferences? Midwifery (2013) (doi:pii: S0266-
    6138(13)00274-X)
9. Martin et al., 2013c L Martin, EK Hutton, JT Gitsels-van der Wal, ER Spelten, F
    Kuiper, MTR Pereboom, S van Dulmen Prenatal counselling for congenital anomaly
    tests: an exploratory video-observational study about client-midwife communication
    (2013) (Submitted to Midwifery)
10. Noldus et al., 2000 LP Noldus, RJ Trienes, AH Henderiksen, H Jansen, RG. Jansen
    The observer video-pro: new software for the collection, management, and
    presentation of time-structured data from videotapes and digital media files Behavior
    Research Methods, Instruments and Computers, 32 (1) (2000), pp. 197–206
11. Noordman et al., 2011 J Noordman, P Verhaak, S. van Dulmen Web-enabled video-
    feedback: a method to reflect on the communication skills of experienced physicians
    Patient Education and Counselling, 82 (3) (2011), pp. 335–340
12. Pereboom et al., 2013 MTR Pereboom, J Mannien, K van Almkerk, ER Spelten, J
    Gitsels, L Martin, EK Hutton, FG. Schellevis What information do Dutch midwives
    give clients about toxoplasmosis, listeriosis and cytomegalovirus prevention? An
    exploratory study of videotaped consultations Patient Education and Counseling.
    (2013) (Submitted)
13. Pieterse et al., 2005 AH Pieterse, AM van Dulmen, MGEM Ausems, FA Beemer,
    JM. Bensing Communication in cancer genetic counselling: does it reflect
    counselees' pre-visit needs and preferences? British Journal of Cancer, 92 (2005),
    pp. 1671–1678
14. Pieterse et al., 2006 AH Pieterse, AM van Dulmen, FA Beemer, MGEM Ausems,
    JM. Bensing Tailoring communication in cancer genetic counselling through
    individual video-supported feedback: A controlled pretest-posttest design Patient
    Education and Counselling, 60 (3) (2006), pp. 326–335
15. Pringle and Stewart-Evans, 1990 M Pringle, C. Stewart-Evans Does awareness of
    being video recorded affect doctors' consultation behaviour? British Journal of
    General Practice, 40 (1990), pp. 455–458
16. Roter et al., 2006 DL Roter, L Ellington, L Hamby Erby, S Larson, W. Dudley The
    genetic counselling video project (GCVP): Models of practice American Journal of
    Medical Genetics Part C, 142C (2006), pp. 209–220
17. Roter et al., 2011 DL Roter, JA Hall, D Blanch-Hartigan, D Larson, RM. Frankel
    Slicing it thin: New methods for brief sampling analysis using RIAS-coded medical
    dialogue Patient Education and Counselling, 82 (3) (2011), pp. 410–419
18. Rushmer et al., 2011 R Rushmer, M Themessel-Huber, J Coyle, G Humphris, J
    Dowell, B. Williams Is the routine recording of primary care consultations possible…
    and desirable? Lessons for researchers from a consultation with multiple
    stakeholders Patient Education and Counselling, 82 (2011), pp. 247–253
19. Spelten and Nieuwenhuijze, 2013 E Spelten, M. NieuwenhuijzeMidwifery in the
    Netherlands: research gaining momentum International Journal of Childbirth (2013)
    (Accepted 20 July)
20. Spelten et al., 2012 E Spelten, J Gitsels, M Pereboom, L Martin, E Hutton, S van
    Dulmen Video recording to improve the quality of prenatal genetic counselling

Prenat Diagn, 32 (Supl. 1) (2012), p. 128
http://dx.doi.org.proxy.library.uu.nl/10.1111/j.1097-0883.2012.03905.x (2012)

21. Van den Brink-Muinen et al., 2004 A v Van den Brink-Muinen, AM van Dulmen, FG
Schellevis, JM Bensing (Eds.), Tweede Nationale Studie naar ziekten en
verrichtingen in de huisartspraktijk. Oog voor communicatie: huisarts-patiënt
communicatie in Nederland[Second National Study into illness and performance in
General Pratice. Focus on communication: GP-patient communication in the
Netherlands], NIVEL, Utrecht (2004)

22. Van Dulmen et al., 2012 S Van Dulmen, G Humphris, H. Eide Towards a guideline
for person-centered research in clinical communication; lessons learned from three
countries IJPCM, 2 (2012), pp. 58–63

23. Van der Stouwe, 2010 R. Van der Stouwe Voortgang Deliver [Progress of Deliver
Study] Tijdschrift voor Verloskundigen, 35 (2010), pp. 21–22 (maart)

24. Wiegers, 2009 TA. Wiegers The quality of maternity care services as experienced by
women in the Netherlands BMC Pregnancy Birth, 9 (2009), p. 18

25. Wolraich et al., 1986 ML Wolraich, M Albanese, G Stone et al. Medical
communication behavior system. An interactional analysis system for medical
interactions Med Care., 24 (1986), pp. 891–903

TABLES AND FIGURES

Table 1.
Data collection: practices, midwives and recordings.

Practice code	Midwife code	Recordings/clients per midwife	% Recordings per practice	% Recordings per midwife
1	1	20		7.4
	2	19		7.1
	3	19		7.1
	4	15		5.6
Sub total		**73**	**27.1**	
2	5	14		5.2
	6	12		4.5
Sub total		**26**	**9.7**	
3	7	14		5.2
	8	16		6.0
	9	12		4.5
	10	11		4.1
Sub total		**50**	**18.6**	
4	11	12		4.5
	12	11		4.1
	13	16		6.0
	14	23		8.6
Sub total		**62**	**23.1**	
5	15	9		3.3
	16	11		4.1
	17	8		3.0
	18	11		4.1
	19	12		4.5
Sub total		**51**	**19.0**	
6	20	**7**	**2.6**	2.6
N=6	**N=20**	**N=269**		

Table 2.
Inclusion and exclusion of clients and recordings.

460	**Eligible clients**
- 136	Did not agree to participate for various reasons
324	**Agreed to participate, total number of recordings made**
	Exclusion grounds for recordings:
- 19	Failed recordings
- 7	Recording stopped /halted
- 1	Partner withdrew from study for privacy reasons
- 2	No unique code
- 2	Unmatched second recording
- 1	Consultation of 38 weeks gestation
- 18	Recordings from ultrasound specialists
- 4	Too few recordings per midwife
269	**Total number of recordings in final dataset**

Table 3.
Demographic and professional characteristics of midwives and of the Netherlands midwifery population[a].

Characteristics	Midwives N=20 (%)	The Netherlands midwifery population (N=2612, 86.7%)(%)
Age (years)		
≤29 years	10 (50)	%<40 years=63% (*N*=1644)
≥30 years	10 (50)	%>55 years=7.6% (*N*=198)
Gender		
Male	–	43 (1.6)
Female	20 (100)	2569 (98.4)
Ethnicity[b]		
Dutch	14 (70)	Not available
Non Dutch – Non Western ethnicity	2 (10)	
Non Dutch – Western ethnicity	4 (20)	
Place of graduation		
Amsterdam	8 (40)	641 (25)
Groningen	1 (5)	147 (6)

Characteristics	Midwives N=20 (%)	The Netherlands midwifery population (N=2612, 86.7%)(%)
Maastricht	3 (15)	660 (25)
Rotterdam	3 (15)	638 (24)
Abroad	4 (20)	523 (20)
Missing	1 (5)	3 (0.1)
Year of graduation		
≤2003	9 (45)	Not available
≥2004	11 (55)	
Work experience (years)		
≤2 years	4 (20)	Not available
3–11 years	12 (60)	
≥12 years	4 (20)	
Religious background		
None believers	11 (55)	Not available
Believers	9 (45)	

a
(Hingstman and Kenens, 2011)
b
In the Netherlands, ethnic origin is defined by country of birth of a person's parents.
If one of the parents (or both of them) of a person is born outside the Netherlands,
this person is non-Dutch (Dutch National Office of Statistics; Statistics Netherlands).

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

Characteristics	Pregnant women N=241[□](%)	Partner N=170[□](%)
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		
Up to high school	115 (47.9)	88 (52.1)
Higher vocational education / university	125 (52.1)	81 (47.9)
Occupation		
School	12 (5.1)	4 (2.4)
Paid job	198 (84.6)	158 (94.0)
Unemployed	12 (5.1)	2 (1.2)
Disabled	1 (0.4)	3 (1.8)
Housewife / Husband	11 (4.7)	1 (0.6)
Marital status		
Single	11 (4.6)	4 (2.4)
Divorced	0 (0.0)	0 (0.0)
Married / Partner	227 (95.4)	164 (97.6)
Ethnicity[a]		
Dutch	184 (77.0)	135 (80.8)
Non-Dutch	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)

Characteristics	Pregnant women N=241[□](%)	Partner N=170[□](%)
≥12 weeks	17 (7.7)	9 (5.8)
Parity		
Nullipara	98 (41.2)	92 (55.1)
Multipara	140 (58.8)	75 (44.9)

□
Due to missing and inapplicable answers the N can vary from variable to variable.
a
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-Dutch (Dutch National Office of Statistics; Statistics Netherlands).

Table 5.
Characteristics of the video-taped consultations.

	N (%)	minutes (SD in minutes)
Number of videos analysed		
number of content analyses	268 (99.6)	
number of RIAS analyses	269 (100.0)	
number of integrated consultations	191 (71.0)	
number of separate counselling consultations	7 (2.6)	
number of integrated consultations only counselling on tape	71 (26.4)	
analysis of client-directed gaze	253 (94.1)	
analysis of GAM	245 (91.1)	
Duration		
overall duration of video-tapes	269 (100.0)	31.33 (16.68)
duration of first consultation including counselling	191 (71.0)	39.55 (11.11)
overall duration of counselling	269 (100.0)	9.21 (4.26)
duration of counselling part the first consultation	191 (71.0)	9.49 (4.37)
duration of counselling if only counselling	71 (26.4)	8.49 (3.91)

	N (%)	**minutes (SD in minutes)**
was video-taped		
duration of separate counselling consultations	7 (2.6)	8.89 (4.40)