Midwives' perception of the intrapartum risk of healthy nulliparae in spontaneous labour, in The Flanders, Belgium

Marianne Mead RM, MTD, BA(OU), PhD,
Principal Lecturer, Health and Human Sciences Research Institute, University of Hertfordshire, College Lane, Hatfield, Herts. AL10 9AB

Annick Bogaerts, RM MSc Lecturer at Vroedvrouwenopleiding Limburg, Belgium
Marlene Reyns, RM Hospital and Independent midwife, lecturer, President of the Flemish midwives' association (Vlaamse Organisatie van Vroedvrouwen - VLOV)

Corresponding author - MM (m.m.p.mead@herts.ac.uk)

Abstract

Objective

To explore midwives' perception of intrapartum risk for healthy nulliparous women in spontaneous labour at term of a healthy singleton pregnancy, in the Belgian Flanders, and compare these results with those of a previous study undertaken in England.

Design

Survey of the care midwives would advocate and their perception of intrapartum risk using a standardised scenario. This study replicates part of a survey undertaken with British midwives (Mead &Kornbrot 2004), with an added section to capture the particularities of the Belgian situation and explore the likelihood of midwives being fully responsible for the whole intrapartum care of healthy women, including their delivery. The questionnaire was translated into Dutch by MR and distributed by the Flemish midwives' association..

Participants

All 845 midwives and 143 student midwives members of VLOV were sent a questionnaire with their invitation to take part in their annual conference. Two hundred and seventy-five midwives and 107 students attended the conference, and 128 questionnaires were returned at the conference: 99 midwives (36% of the attendees), 26 students (24% of attendees), with three unidentified respondents. This convenience sample represents 12% of all midwives and 18% of all students.

Analysis

SPSS for Windows was used for the statistical analysis. Descriptive statistics were used and differences between categorical variables were analysed using chi-square and Fisher's Exact tests and differences between continuous variables were analysed by ANOVA.

Findings

Midwives generally described a more medicalised approach to intrapartum care on admission and during the first stage of labour than their British counterparts, but were much more optimistic about the chances of healthy women in spontaneous labour achieving a normal delivery within 12 hours. However Belgian midwives had only a very limited ability to

undertake normal deliveries because of the very high proportion of obstetricians who fulfil this responsibility. This contravenes the EU directive on the activities of the midwife.

Key conclusions

Despite a much greater involvement of obstetricians in the care of women suitable for full midwifery care and a more medicalised approach to intrapartum care, the Belgian Flanders has a significantly lower caesarean section rate than the UK. However the inability of Belgian midwives to fulfil the activities of the midwives as identified by the EU directives raises questions about the migration of midwives trained in Belgium to other EU member states.

Keywords

midwives, nulliparae, risk perception, labour, Belgium, EU

Introduction

A previous study undertaken in the UK had revealed that midwives underestimated the ability of healthy nulliparous women in spontaneous labour at term to progress normally, but had overestimated the benefits of interventions, particularly epidural analgesia (Mead &Kornbrot 2004; Mead &Kornbrot 2004). Replication of studies, particularly where health systems vary, is desirable if initial findings are to be more widely generalised. An invitation to speak at a midwifery conference in the Flanders, Belgium, was therefore seen as an ideal opportunity to replicate the study in this country. Midwifery is a well established profession in the UK, but the picture varies significantly in the rest of Europe despite European directives aimed at ensuring that midwives are at least able to undertake a list of activities, including the intrapartum care of healthy women (European Midwives Liaison Committee 1996). Previous surveys have shown that Belgian midwives struggle to achieve the minimum level of midwifery activity that European Union member states must ensure midwives are at least entitled to undertake (European Parliament &European Council 2005), particularly in the area of intrapartum care (European Midwives Liaison Committee 1996; Emons &Luiten 2001). This may be partially explained by a much higher rate of obstetricians, but paradoxically this situation is also associated with a lower caesarean section rate: 17.8% for singleton pregnancies in The Flanders (Cammu et al. 2005) compared to an overall rate of 22.7% in England (Government Statistical Service 2005), in 2004. However, despite being lower, the caesarean section rate is also rising. As the previous study had demonstrated that midwives had a higher perception of risk that actual data would support, and given that midwives probably play an important role in the monitoring of labour and the summoning of medical

aid when they believe that a deviation from the norm is present, it would be useful to examine midwives' risk perception for healthy women in other countries.

This study was therefore undertaken to replicate the initial study undertaken in the UK and measure midwives' perception of the intrapartum risk of healthy nulliparous women in spontaneous labour in the Belgian Flanders, and identify the extent to which Flemish midwives are able to provide complete intrapartum care.

Methods

An extensive questionnaire based on a standardised scenario of a healthy nulliparous woman in spontaneous labour at term of a healthy singleton pregnancy had been developed for the UK study to compare midwives' perception of intrapartum risk for healthy nulliparous women in higher and lower intervention units. The elements of the questionnaire that related to midwives' personal clinical choices and perception of risk were selected for this study. This took into consideration observations undertaken on admission and during the first stage of labour: temperature, pulse, blood pressure and urinalysis, as well as information about intrapartum care: nutrition in labour, use of vaginal examinations, and methods of fetal monitoring. The second part of the questionnaire dealt with midwives' perception of risk on admission and during labour, focussing specifically on maternal observations, fetal presentation, birth weight, length of labour, fetal oxygenation, use of epidural analgesia and method of delivery, given three distinct scenarios: no intervention, artificial rupture of membranes (ARM) only and epidural analgesia.

The last part of the questionnaire asked respondents to identify their status - registered midwife or student, length of qualification and area of practice. Because of the difficulties experienced by midwives in Belgium, a small section was added asking midwives to quantify the number of women in labour they had looked after in the previous two months and the number of deliveries they had undertaken during that period. Where midwives had not deliver any woman, they were asked to identify the reason why, and one of the options included "obstetricians do all the deliveries". Where the information was available in the Flemish annual report on maternity services (Cammu et al. 2005), comparisons of perception and overall audited figures were made.

Specific funding was not available for this study; however, the Flemish midwives association (Vlaamse Organisatie van Vroedvrouwen - VLOV) bore the cost of translation and

administration of the survey. MR translated the English questionnaire into Dutch and it was then distributed by the Flemish midwives' association (VLOV) to all midwives and student who were going to attend the conference, where the completed questionnaires were collected.

The data were coded and entered on SPSS for Windows, version 11.0. Frequencies, Pearson chi-squares and 2-sided Fisher's Exact tests were used for the analysis of the categorical data, and ANOVA for the comparison of means. Statistical significance was set as $p < 0.05$.

Findings

Background of respondents

At the time of the conference, VLOV had a membership of 845 midwives and 143 student midwives. Two hundred and seventy-five midwives and 107 students (a 33% overall response rate) attended the conference. One hundred and twenty-eight questionnaires were returned at the conference: 99 midwives (36% of the attendees), 26 students (24% of attendees) and three respondents who did not identify whether they were qualified midwives or students. The majority of midwives (75/99) worked in a maternity unit, 12 were both employed and self-employed, four were self-employed and eight were midwife teachers. All but one student were in their third and final year of study. The number of years of practice for the registered midwives varied between 0 and 35 years - mean 12.6 years (SD 9.5 years). The number of deliveries in 2003 in the units of the respondents varied between 28 and 4200, mean = 1011 deliveries (SD 710 deliveries). The number of midwives per unit varied between 4 and 70, mean = 27 (SD 13.5 midwives) and that of obstetricians between 2 and 30, mean = 7 obstetricians (SD 5.5 obstetricians). These figures demonstrate wide variations in the practices of the respondents, both in terms of background and type of maternity units.

Admission

Observations such as temperature, pulse, blood pressure and urine testing were undertaken but there were some significant differences in the practices of students and qualified midwives for observations of pulse, proteinuria and glycosuria, and a trend towards students being more likely than midwives to make all observations, except that of the blood pressure (see Table 1). On admission, the respondents were far more likely to use an electronic form of fetal monitoring than either a fetal stethoscope and/or a hand-held Doppler (108/122 - 89% vs. 14/122 - 11%). Of those who recommended the use of electronic fetal monitoring, 30 minutes was the favoured length of time, recommended by 61% of the registered midwives

and 57% of the students. The differences in the use of CTGs were not significant between qualified midwives and students.

The great majority of respondents reported that they would perform an abdominal palpation (106/122 - 87%) and use an admission cardiotography (CTG) rather than use an handheld Doppler or fetal stethoscope (108/122 - 89%). A 30 min admission CTG was the favoured length. The majority of respondents would inform the medical staff of the labour admission (98/122, 80%). The differences between qualified staff and students on these three items were not significant.

Intrapartum care

Respondents were then asked what maternal observations they would undertake during the first stage of labour. A distinction was offered for the observation of the maternal temperature when membranes are intact, ruptured spontaneously or artificially. Observation of the temperature was more likely to be undertaken with spontaneous rupture of membranes than artificial rupture, and less than two-thirds of the respondents would measure the blood pressure on a regular basis. Students were again more likely to make some of the observations than qualified midwives, and significantly so for the temperature in the event of an artificial rupture of membranes (ARM), pulse and blood pressure (see Table 2).

Nutrition during labour for healthy women in spontaneous labour was then investigated. A number of alternatives were offered, from nil by mouth to normal meal. These nutrition categories could be summarised into "Nil by mouth", "drinks only" and "food". The analysis of these recoded variables showed that still only 3 respondents (2.4%) would opt for the "nil by mouth" alternative, 76 (59.8%) for any type of drink and 48 (37.8%) for any type of food. Students were far more conservative than their qualified colleagues. Only 19% of them were prepared to allow any solid food whereas 42% of the qualified midwives reported allowing solid food for healthy nulliparous women in spontaneous labour ($\chi^2 = 4.721$, df 1, $p = 0.040$).

The majority of respondents (95/125 - 76%) favoured intermittent electronic monitoring, followed by the hand held Doppler (26/125, 22%). Only 3 respondents would have favoured continuous CTG and one the exclusive use of the fetal stethoscope. There was no significant difference between the qualified and the student midwives.

Respondents were asked whether they would undertake vaginal examinations to assess the progress of labour on a regular basis or as and when they judged it necessary. The large

majority (101/125 - 81%) opted for the "when necessary" option. The most common frequency of the respondents who favoured regular vaginal examinations was 2 hourly (14/24 - 58%), followed by the hourly regime (7/24 - 29%) and the three hourly option for only 2 respondents (13%). For the respondents who opted for the "when necessary" option, the same proportion (54/89 - 61%) identified that on the whole vaginal examinations were undertaken about 2-hourly, but another 23 respondents (26%) thought a three hourly regime would probably be required, 7 respondents (8%) an hourly regime and another 4 respondents (5%) a four hourly regime and just one midwife thought it would be a 6 hourly regime. The differences between qualified midwives and students were not significant.

For most respondents (108/127 - 85%), an ARM was sometimes an augmentation of labour, for 18/127 (14%) always, and for one respondent it never was. The students were slightly more likely to regard and ARM as always being a form of augmentation of labour (19% vs. 13%), but the differences were not significant.

The majority of respondents (106/125 - 85%) thought that a minimum cervical dilatation ought to be reached before an ARM could be performed. The most common dilatations identified as the minimum to be reached were 3 (32%), 4 (27%) and 5 cm (18%), a cumulative frequency of 84% at this dilatation. To the question of whether an ARM should be performed once a particular cervical dilatation had been reached, 35/125 (28%) responded positively. Only 7 of the 29 respondents who identified a dilatation suggested 3 or 4 cm; three respondents each opted for 7 and 8 cm, five for 9 cm and 16/29 (55%) for full dilatation, a median of 9.5cm.

Respondents were then asked if there was a particular cervical dilatation that ought to be reached before an epidural could be sited. Only 20/124 (16%) responded positively. The minimal cervical dilatation ranged from 0 to 10 cm, with a median measurement of 5 cm. The great majority of midwives believed that women who had an epidural should have continuous monitoring (110/125 - 88%). There was no significant difference between registered midwives and students.

Midwives' perception of risk

The second part of the questionnaire asked respondents to identify the risk of specific outcomes given specific situations: admission of 100 healthy nulliparous women in spontaneous labour at term of a healthy singleton pregnancy, outcome of labour if no intervention, if ARM, if CTG, if epidural, if ARM & CTG & epidural.

Admission

For the admission, respondents were asked what percentage of women would have a temperature below 37.5°Celsius, a pulse ranging from 60 to 100 beats per minute, a diastolic blood pressure below 90mmHg, proteinuria ++, ketonuria, cephalic or breech or transverse presentation, an engaged fetal head, a baby weighing between 3 and 4 kg as well as below 3kg and above 4kg, a normal, slightly abnormal or highly abnormal CTG, spontaneous ruptured membranes and if so meconium stained liquor.

Table 3 provides a summary of the findings, with the mean and median for each result. The median for each measurement is given because the results are not normally distributed. Where possible the figures provided by the Flemish epidemiology centre is also given to provide a comparison of the risks with the reality of the clinical situation. It is important to note that the SPE figures deal with the overall figures rather than the details of healthy women in spontaneous labour at term of a singleton pregnancy.

As in the previous UK study (Mead &Kornbrot 2004), midwives estimated the expected birth weight correctly, but overestimated the likelihood of breech presentation or transverse lie. However it is unlikely that 18% of these healthy nulliparous women would have a temperature higher than 37.5°Celsius, or that 15% would have a pulse either below 60bpm or above 100bpm. It is extremely unlikely too that 16% of these healthy women would have a diastolic blood pressure higher than 90mmHg. Similarly, when membranes are intact, it is highly unlikely that 19% of these women would have ++ proteinuria. The actual rate of breech presentations for all pregnancies, including preterm deliveries, was identified at 4.6% (Cammu et al. 2005), but was perceived to be about 8% by the respondents.

On admission, it is unlikely that a fifth of these healthy women would have a slightly (16.4%) or very abnormal CTG (4.4%). Indeed several previous studies on home births or on the outcome of low risk labour suggest that the proportion of babies who develop fetal hypoxia during labour does not reach 10% (Anderson &Murphy 1995; Arya et al. 1996; Olsen 1997; Janssen et al. 2002). On the other hand, the proportion on meconium stained liquor on admission is not generally recorded in the literature, but its overall rate during labour often reaches 13-16% (Maymon et al. 1998). The rate recorded by these respondents on admission was 8.75%.

Midwives' perception of risk for the first stage of labour

Respondents were then asked similar questions about various outcomes given three main situations: no intervention, ARM and epidural. The questions asked respondents to assess the proportion of women who would have:

- a spontaneous rupture of membranes on admission,
- delivered within 6, 7-12, 13-18 or more than 18 hours,
- continuous electronic fetal monitoring by the time of delivery,
- asked for an epidural,
- normal, slightly abnormal or very abnormal levels of fetal oxygenation,
- meconium-stained liquor,
- a spontaneous vaginal delivery, forceps or vacuum extraction or emergency caesarean section.

Table 4 summarises the results for the three scenarios. An ARM and an epidural were associated with a slight increase in the perception that women would be more likely to deliver within 12 hours. Mild and severe fetal hypoxia were perceive to increase slightly in the event of an epidural. This intervention was also associated with a slight increase in the mean rate for operative vaginal deliveries and caesarean section, but the median measurements demonstrated that at least half the respondents did not perceive any risk increase. The rate of continuous CTG was already high at 53% in the "no intervention" and 56% in the "ARM" scenario, but it increases considerably and reaches a mean of 90%, and a median of 100%. Indeed 93% of respondents stated that the use of continuous CTG was unit policy once an epidural had been sited.

Midwives' and student midwives' perception of risk

There were several significant differences in the risk perception of midwives and student midwives. The students were systematically more pessimistic than the qualified midwives about either maternal or fetal outcome. For the admission scenario of this healthy woman in spontaneous labour, they were less likely to anticipate a normal CTG, but more likely to anticipate meconium stained liquor. Where the scenario proposed the progress of labour without intervention, they were more likely to suggest continuous electronic fetal monitoring, and less likely to think that fetal oxygenation would be normal or that the mother would proceed to a normal delivery. Similar differences were found for the ARM and the epidural scenarios (see Table 5).

Midwives' labour and delivery practice

The majority of respondents had labour ward experience in the two months preceding the survey, looking after between 1-2 women to more than 20 women. However they had very limited experience of assisting the mother at the birth: 43/83 respondents did not undertake a single delivery during the previous two months and identified that where this was the case, obstetricians routinely took over the care of the women at the point of delivery (see Table 6). This was the case for only 1 of the 15 students who looked after women during labour in the two months preceding the study. The Spearman correlation coefficient between intrapartum care and delivery was $r = 0.100$ for qualified midwives and $r = 0.791$. This would suggest a potentially very limited level of clinical experience whereby students observe or assist midwives undertaking normal deliveries.

The annual rate of deliveries in the various maternity units did not have an effect of the proportion of deliveries that qualified midwives could undertake. These results suggest that the midwives who cared for a greater number of women were slightly more likely to deliver a smaller number of women, but this may be associated with the inevitable deliveries occurring before an obstetrician can arrive on the scene rather than with a policy of enabling midwives to undertake the activities of the midwife as defined by the European Directives (European Parliament &European Council 2005).

Discussion

The opportunity to speak at a Belgian midwives' conference provided the opportunity to replicate part of an earlier study on midwives' intrapartum risk perception (Mead &Kornbrot 2004). The absence of funding forced the use of a convenience sample of all midwives and students attending the conference was targeted. This and the response rate suggest that some care must be exercised in the interpretation of the findings. However, despite the fact that the perceived risks were compared to the actual data of healthy nulliparous women in spontaneous labour at the end of a normal singleton pregnancy in the UK, and overall data for the Flemish data, there were some striking similarities between some aspects of the English and the Belgian study, and in particular for the perception of risk on admission or during the first stage of labour. Midwives in both countries had a relatively accurate prediction for birthweight, but generally overestimated the likelihood of several abnormalities, e.g. temperature > 37.5°C on admission, diastolic blood pressure ≥ 90mmHg, breech presentation. Midwives in Belgium were however much more optimistic than their British counterparts in terms of labour outcomes. Depending on the scenarios, 77-83% of the Belgian respondents thought that labour would not last more than 12 hours whereas in the most optimistic rates

varied between 59-76% in the "lower intervention" British units. The Belgian midwives also varied considerably from their British colleagues in estimating that delivery within 12 hours was more likely with either ARM or epidural. Midwives in the UK were more likely to think that an ARM would be associated with a shorter labour, but the opposite if an epidural was used. In this case, the differences between the two countries were striking: 83% of Belgian midwives thought delivery would have been concluded within 12 hours, but the figures were 59% in "lower intervention" and 54% in "higher intervention" units in the UK. The actual times were not available for the Belgian maternity units, but if the length of labour is relatively similar between the two countries, i.e. 71% of nulliparous women who had an epidural delivered within 12 hours of the onset of labour, this would suggest that this risk perception was over optimistic in Belgium but over pessimistic in the UK. The Belgian midwives were also much more optimistic about the chances of women achieving a normal delivery, although they did perceive a slight decrease in the rate with an ARM and an epidural (81% - no intervention, 78% -ARM, and 69% - epidural). This was in marked contrast to the results of the British study (72%, 71% and 57% in the "lower intervention" units respectively). The overall risk perception for caesarean section rates varied between 5%-8% in Belgium, and between 12%-14% in the UK, demonstrating again a much more optimistic risk appreciation by the Belgian midwives. However the actual caesarean section rate in the SMMIS data for healthy nulliparae in spontaneous labour at term varied between 1% (no intervention), 2% (ARM) and 20% (epidural). It is difficult to gain access to precise and comparable national statistics on the outcome of the spontaneous labour of healthy nulliparous women at term because statistics are not usually collected on that basis (Macfarlane 1998) and direct comparison with the Belgian figures were not easily available. However, it is worth noting that the overall rate of caesarean section is lower in Belgium - 17.8% vs. 23% in England (Nationmaster.com 2005), but that the elective caesarean section is similar in both countries at 10.5% and 9.6%, and that therefore it is the emergency caesarean section rates that vary substantially - from 7.2% in The Flanders to 13.1% in the UK (Cammu et al. 2005; Government Statistical Service 2005). This situation is paradoxical because the health services organisations differ considerably between the two countries, with a much higher use of the private sector in Belgium (Cammu et al. 1998).

Belgium has a compulsory health care system based on the social health insurance model. A comprehensive benefit package is available to 99% of the population through compulsory health insurance. Health care is publicly funded, but mainly privately provided. Patients have free choice of provider, hospital and sickness fund. Reimbursement by individual sickness funds depends on the nature of the service, the legal status of the provider and the status of the insured person (WHO Regional Office for Europe 2005). Belgians have direct

access to specialist services whereas the UK uses a gatekeepers' system manned by GPs to filter access to the secondary health care system (Verhaak et al. 2004). The number of obstetricians varies significantly with 1/297 deliveries in the UK and 1/78 deliveries in the Flanders in 2000 (Cammu et al. 1998; WHO Regional Office for Europe 2005). Obstetricians and gynaecologists work both inside and outside the hospital setup and most women will visit a gynaecologist for services normally provided by general practitioners in the UK, e.g. family planning and cervical smears. Medical practitioners tend to be self-employed and paid by patients according to items of activity. Patients are reimbursed for some or their whole contribution, depending on the nature of consultation, investigation or treatment. When a woman who has regularly consulted a particular gynaecologist becomes pregnant, she will more naturally access that specialist for antenatal, labour and postnatal care. Specialist doctors in Belgium are therefore much more involved in the care of healthy women than in the UK where women would be expected to access a midwife rather than an obstetrician, and where primary care covers areas of activities often covered by obstetricians in Belgium, e.g. cervical screening or mammography. These factors partially explain how access to obstetric care is much more likely to be via the private sector in Belgium than in the UK. However whereas private patients are much more likely to have a caesarean section in the UK (Mead 2004), this is clearly not the case in Belgium.

The organisation of the health care system may therefore provide a financial incentive that may encourage obstetricians to undertake activities that could be performed by midwives. Indeed, more than 94% of deliveries are undertaken or supervised by an obstetrician in Belgium (Cammu et al. 2005). Clearly this is not associated with untoward pregnancy outcomes in Belgium, but the very high use of specialist medical services has an effect on the role of the midwife, and therefore on the experience of student midwives, and this must be a concern for the other European Union member states if Belgian midwives wish to migrate within the EU. In this study, the number of deliveries undertaken by midwives did not match the number of women these midwives had cared for in labour. This was not the case for students, suggesting that during their training Belgian students are "allowed" to deliver the women they have cared for during labour. The fact that a large number of deliveries are not undertaken by midwives when they have cared for the women in labour would suggest that the students are not able to observed the full extent of midwifery practice. In line with the above, the statistically significant differences between the perception of intrapartum risk for healthy women in spontaneous labour between qualified midwives and students suggest some concern. Students were systematically less liberal in their approach to the care of healthy women in spontaneous labour and more pessimistic about the chances of positive outcomes during the labour of a healthy woman in spontaneous labour at term. This would suggest that

the students might not fully benefit from the knowledge of qualified midwives who appeared more optimistic about the physiology of labour.

Previous research had demonstrated that Belgian midwives were less likely than their British colleagues to provide full antenatal and intrapartum care for healthy women and this situation clearly contravenes the principles of the EU directives on the activities of the midwife that all EU member states must comply with. In particular, the Directive specifies that *"States shall ensure that midwives are at least entitled to take up and pursue the following activities: […] 5. to care for and assist the mother during labour and to monitor the condition of the foetus in utero by the appropriate clinical and technical means; 6. to conduct spontaneous deliveries including where required an episiotomy and in urgent cases a breech delivery"* (European Midwives Liaison Committee 1996).

Despite these differences Belgian midwives share the same desires than many of their international colleagues and struggle to be able to provide midwifery care to healthy women throughout their pregnancy (UPAB 2005; VLOV 2005).

Conclusions

This replicated study demonstrated some similarities and some major differences in the delivery of care and in the midwives' perception of risk for the intrapartum care and outcomes of healthy nulliparous women at term and in spontaneous labour. An increased medicalisation of childbirth is not associated with an increased level of negative outcomes, such as caesarean sections, even though both countries continue to report a steady rise. Further studies on midwives' perception of risk will be undertaken in other EU member states to describe intrapartum midwifery practice and identify, where possible, any potential links between risk perception and practice.

This study also demonstrated that Belgian midwives face significant difficulties in being able to fulfil their role. Evidence suggests that good midwifery practice benefits women (Oakley et al. 1995; de Veer &Meijer 1996; Fullerton et al. 1996; Oakley et al. 1996; Tucker et al. 1996; Law &Lam 1999), but accepting that midwives should be encouraged to practise to the full extent of their professional role is not always easy (Blais et al. 1994; Cheyne et al. 1995; de Veer &Meijer 1996; Fullerton et al. 1996; Gau et al. 2002; Hyde &Roche-Reid 2004). The evidence from the study suggests that it is imperative for midwives to utilise the European legislation to ensure that Belgium, a member state of the European Union, implements to the full Directive 80/155/EEC on the activities of the midwife.

Table 1 - Difference in the rate of admission observations between staff and students

	Staff n = 99	Students n = 26	χ^2	- *p*
Temperature	48%	65%	2.354	0.125
Pulse	54%	80%	5.673	0.017
Blood pressure	97%	100%	0.842	0.349
Proteinuria	44%	81%	11.257	0.001
Glycosuria	25%	69%	18.143	<0.001
Ketonuria	11%	21%	1.791	0.181
Addominal palpation	84%	96%	2.381	0.123

Table 2 - Frequency of labour observations

Observation	Frequency	%	Midwives	Students	Fisher's Exact test -*p*
Temperature					
- membranes intact	8/125	6	8%	0%	0.166
- spontaneous rupture	63/124	51	51%	71%	0.140
- artificial rupture	56/124	45	48%	67%	0.038
Pulse	24/126	19	13%	40%	0.004
Blood pressure	75/127	59	51%	92%	< 0.001
Proteinuria	4/125	3	3%	4%	1.000
Glycosuria	2/125	2	1%	4%	0.353
Ketonuria	3/125	2	1%	8%	0.097

Table 3 - Risk perception on admission - descriptive statistics (%)

	n	Mean	Median	SPE 2004*
Admission - T° < 37.5°	126	82	90	
Admission - pulse 60-100bpm	126	85	90	
Admission - diastolic < 90mmHg	127	83	85	
Admission - protein ++	123	19	10	
Admission - ketonuria	115	12	5	
Admission - cephalic	127	90	91	95.1
Admission - breech	127	8	7	4.6
Admission - transverse lie	127	2	1	0.3
Admission - head engaged	125	69	75	
Birth weight 3000-4000 g	127	71	70	68.9
Birth weight < 3000 g	127	17	15	22.1
Birth weight > 4000 g	127	12	10	8.8
Admission CTG - normal	127	79	80	
Admission CTG - slightly abnormal	127	17	15	
Admission CTG - very abnormal	127	5	5	
Admission - spontaneous RM	125	35	30	
Admission - meconium stained liquor	125	9	5	

* SPE for birthweight > 500g (Cammu et al. 2005)

Table 4 - Risk perception during first stage of labour (n = 120 to 127)

	No intervention		ARM		Epidural	
	Mean	Median	Mean	Median	Mean	Median
ARM	62	65				
Delivery within 12 hours	77	80	83	89	83	87
Continuous CTG	53	60	56	60	90	100
Requesting an epidural	63	65	69	70		
Normal oxygenation	82	85	78	80	75	76
Mild hypoxia	13	10	16	15	19	18
Severe hypoxia	4	3	5	5	6	5
Meconium stained liquor	12	10	14	10	14	10
Normal delivery	81	81	78	80	69	70
FD/VE	14	10	16	15	23	20
Emergency caesarean section	5	5	6	5	8	5

Table 5 - Midwives' and student midwives' differences in risk perception

Risk	Midwives	Students	*p**
Admission CTG - normal	82	67	< 0.001
Admission - meconium	8	13	0.022
No intervention - continuous CTG	50	69	0.003
No intervention - normal fetal oxygenation	84	73	< 0.001
No intervention - meconium	11	16	0.019
No intervention - normal delivery	83	74	< 0.001
ARM - delivery within 12 hrs	85	77	0.035
ARM - continuous CTG	51	76	< 0.001
ARM - epidural request	68	75	0.041
ARM – normal fetal oxygenation	81	69	< 0.001
ARM – normal delivery	80	69	< 0.001
Epidural - delivery within 12 hrs	84	77	0.030
Epidural - normal fetal oxygenation	78	67	< 0.001
Epidural - meconium stained liquor	13	18	0.033
Epidural - normal delivery	71	63	0.008

* Comparison of means by ANOVA

Count

		Labour						
Deliveries		1-2	3-5	6-10	11-15	16-20	> 20	Total
Midwives	None	1	7	10	13	1	11	43
	1-2 women	1	3	4	6	4	8	26
	3-5 women		1	4	2		2	9
	6-10 women			1	1	1	1	4
	> 20 women						1	1
		2	11	19	22	6	23	83
Students	None		1					1
	1-2 women	1	2					3
	3-5 women			1	1	1		3
	6-10 women				2	2		4
	4 11-15 women				1	2	1	4
		1	3	1	4	5	1	15

Table 6 - Number of deliveries vs. intrapartum care for midwives and student midwives

Deliveries		Labour						
		1-2	3-5	6-10	11-15	16-20	>20	Total
Midwives	0	1	7	10	13	1	11	43
	1-2	1	3	4	6	4	8	26
	3-5		1	4	2		2	9
	6-10			1	1	1	1	4
	11-15							
	16-20							
	>20						1	1
	Total	2	11	19	22	6	23	83
Students	None		1					1
	1-2	1	2					3
	3-5			1	1	1		3
	6-10				2	2		4
	11-15				1	2	1	4
	16-20							
	>20	1	3	1	4	5	1	15

References

Anderson, R. Murphy, P. (1995). Outcomes of 11,788 planned home births attended by certified nurse-midwives. Journal of Nurse-Midwifery 40(6): 483-492.

Arya, R., Pethen, T., Johanson, R., et al. (1996). Outcome in low risk pregnancies. Archives of Diseases of Childhood 75(2): F97-102.

Blais, R., Lambert, J., Maheux, B., et al. (1994). Controversies in maternity care: where do physicians, nurses, and midwives stand? Birth 21(2): 63-70.

Cammu, H., Martens, G., De Coen, K., et al. (2005). Perinatale activiteiten in Vlaanderen 2004. Studiecentrum voor Perinatale Epidemiologie,, Brussels.

Cammu, H., Martens, G. Van Maele, G. (1998). Epidural analgesia for low risk labour determines the rate of instrumental deliveries but not that of caesarean sections. Journal of Obstetrics and Gynaecology 18(1): 25-29.

Cheyne, H., Turnbull, D., Lunan, C., et al. (1995). Working alongside a midwife-led care unit: what do obstetricians think? British Journal of Obstetrics and Gynaecology 102(6): 485-487.

de Veer, A. Meijer, W. (1996). Obstetric care: competition or co-operation. Midwifery 12(1): 4-10.

Emons, J. Luiten, M. (2001). Midwifery in Europe. Touche, D. The Netherlands: 175.

European Midwives Liaison Committee (1996). Activities, responsibilities and independence of midwives within the European Union. EMLC.

European Parliament European Council (2005). Directive 2005/36/EC of the European Parliament and of the Council on the recognition of professional qualifications

Brussels, European Union. 2005.

Fullerton, J., Hollenbach, K. Wingard, D. (1996). Practice styles. A comparison of obstetricians and nurse-midwives. Journal of Nurse-Midwifery 41(3): 243-250.

Gau, M., Chung, U., Kao, C., et al. (2002). A survey of obstetricians willingness to practice collaboratively with midwives in Taiwan. J Nurs Res 10(3): 205-216.

Government Statistical Service (2005). NHS Maternity statistics, England: 2003-04. Bulletin 2005/10. Department of Health, London.

Hyde, A. Roche-Reid, B. (2004). Midwifery practice and the crisis of modernity: implications for the role of the midwife. Social Science & Medicine 58(12): 2613-2623.

Janssen, P., Lee, S., Ryan, E., et al. (2002). Outcomes of planned home births versus planned hospital births after regulation of midwifery in British Columbia. Canadian Medical Association Journal 166(3): 315-323.
Law, Y. Lam, K. (1999). A randomized controlled trial comparing midwife-managed care and obstetrician-managed care for women assessed to be at low risk in the initial intrapartum period. Journal of Nurse-Midwifery 25(2): 107-112.
Macfarlane, A. (1998). At last - maternity statistics for England. BMJ 316(7131): 566-567.
Maymon, E., Chaim, W., Furman, B., et al. (1998). Meconium stained amniotic fluid in very low risk pregnancies at term gestation. European Journal of Obstetrics & Gynecology and Reproductive Biology 80(2): 169-173.
Mead, M. (2004). Midwives' practice in 11 UK maternity units. In: Downe, S. (Ed.).Normal childbirth - evidence and debate. Edinburgh, Churchill Livingstone.
Mead, M.M. Kornbrot, D. (2004). The influence of maternity units' intrapartum intervention rates and midwives' risk perception for women suitable for midwifery-led care. Midwifery 20(1): 61-71.
Mead, M.M. Kornbrot, D. (2004). An intrapartum intervention scoring system for the comparison of maternity units' intrapartum care of nulliparous women suitable for midwifery-led care. Midwifery 20(1): 15-26.
Nationmaster.com (2005). Map & Graph: Health: Births by caesarean section 2005.
Oakley, D., Murray, M., Murtland, T., et al. (1996). Comparisons of outcomes of maternity care by obstetricians and certified nurse-midwives. Obstetrics & Gynecology 88(5): 823-829.
Oakley, D., Murtland, T., Mayes, F., et al. (1995). Processes of care. Comparisons of certified nurse-midwives and obstetricians. Journal of Nurse-Midwifery 40(5): 399-409.
Olsen, O. (1997). Meta-analysis of the safety of home birth. Birth 24(1): 4-13.
Tucker, J., Hall, M., Howie, P., et al. (1996). Should obstetricians see women with normal pregnancies? A multicentre randomised controlled trial of routine antenatal care by general practitioners and midwives compared with shared care led by obstetricians. BMJ 312(7030): 554-559.
UPAB (2005). Union Professionnelle des Accoucheuses Belges - Vos compétences. Brussels, UPAB. 2005.

Verhaak, P.F.M., Brink-Muinen, A.v.d., Bensing, J.M., et al. (2004). Demand and supply for psychological help in general practice in different European countries: Access to primary mental health care in six European countries. Eur J Public Health 14(2): 134-140.
VLOV (2005). Vlaamse Organisatie Van Vroedvrouwen.
WHO Regional Office for Europe (2005). European Health for All Database, WHO.
WHO Regional Office for Europe (2005). Highlights on health, Belgium 2004. Copenhagen, WHO. 2005.