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A qualitative study of mothers' and fathers' experiences of routine ultrasound examination in Sweden

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**A qualitative study of mothers' and fathers' experiences of routine ultrasound examination in Sweden**

***Objective:*** to conceptualise mothers' and fathers' thoughts and feelings before, during and after the routine ultrasound examination during the second trimester of pregnancy.

***Design, setting and participants:*** a grounded theory study. Two to four weeks after their ultrasound examination 22 Swedish mothers and 22 fathers were interviewed in their homes.

***Findings:*** The basic social process was *confirmation of a new life*. The four categories, *visualising - the evident option, overwhelming to see life, becoming a family and reassuring*, all represent a time span in the parents' process towards *confirmation of a new life*. The caregivers' way of assisting and supporting the process by information and treatment were very important to parents.

***Key conclusions and implications for practice:*** As the ultrasound examination is perceived as a confirmation of a new life it is an extremely important milestone for both parents so the father should be encouraged to participate. It is an important and unique event for both women and men in their process towards becoming parents. This process was largely dependent on the treatment the parents had received during the examination and the information given. The results of this study can be of interest to midwives and others who perform ultrasound examinations as it explains why the examination must be allowed to take time and the importance of the information given before hand. When introducing new forms of fetal diagnosis in the future it should be kept in mind that this might irrevocably be accepted by parents who long for confirmation of a new life.

**Keywords:** ultrasound, pregnancy, mothers' and fathers' experiences, confirmation.

## INTRODUCTION

Informed consent/choice is of the utmost importance before having an ultrasound examination performed in pregnancy, as emphasised by WHO as early as 1984. The recommendations made then were that women should be fully informed, prior to the examination, about the benefits, potential risks and available alternatives. In a Swedish study (Crang-Svalenius et al. 1996a) it was shown that this was not always the case. One third of 100 women interviewed after routine ultrasound could not recall that they had been informed by any professional that malformations could be detected during the scan and two thirds thought that the scan was a compulsory part of antenatal care. According to Health Technology Assessment (Bricker et al. 2000), the few studies concerning women's views on antenatal ultrasound were mainly published about ten years ago. Since then, hopefully, improvements have been made concerning the imparting of information in all respects of health care and especially concerning pregnancy and childbirth (Oliver et al. 1996). It is also easier for parents to find facts themselves today, as a considerable amount of information, of variable quality, is available via Internet. Still, there is always a risk that the decision to participate in an ultrasound examination is not always an active decision. This can partly be due to the fact that there is limited time for women to consider the choice and partly because the examination is offered to all pregnant women, as a routine, as a part of the maternity care programme. The presentation of ultrasound as a routine examination might give a signal to women that the examination is safe and valuable (Thorpe et al 1993) making them accept the offer without further consideration of the possible consequences. Santalahti et al.(1998) found in a questionnaire study that the most often mentioned personal reason for participating in prenatal screening was the need for reassurance about the health of the fetus. The questionnaire was answered by more than 400 women. The ultrasound examination was a very positive

experience to almost all of the mothers and fathers. Similar findings have also been reported in several other studies (Eurenius et al. 1997, Bricker et al 2000, Whynes 2002). Despite the fact that it has also been found that waiting for an ultrasound examination tends to increase women's and their partners' depressive reactions and stress, which after a scan with normal findings, immediately decreases (Kowalcek et al.2002).

Since the 1980's all pregnant women in Sweden have been offered an ultrasound examination as a routine part of antenatal care and 97% accept this offer (The Swedish Research Council 2001). The examination is performed by specially trained midwives and usually carried out in the second trimester, around the 16-20th week of pregnancy. The main purpose of the scan is for dating, detecting the number of fetuses and identifying the location of the placenta. Today, at most units, the examination also aims to diagnose certain malformations (SBU 1998). It has become a widespread and popular technique with both physicians and childbearing couples. Parents cannot resist the offer (Sandelowski 1994).

Previously there have been no systematic studies about the fathers' experiences of a routine ultrasound examination, despite the fact that they are encouraged to be present during the examination and often are. Technique and care also change rapidly and consequently research regarding parents' opinions has to follow the development, especially concerning informed consent (Santalahti et al. 1998).

## **Aim**

The aim of this study was to conceptualise women's and their partners' thoughts and feelings before, during and after the routine ultrasound examination in the second trimester of pregnancy.

## **SUBJECTS AND METHODS**

### **Participants**

Twenty- two women and their partners, in all  $n=44$ , participated in this study. Their second trimester ultrasound examination had been performed at a university hospital, during the latter half of 2001. They were consecutively recruited with the help of the ultrasound departments booking list during a three-week period. To be included, the women should have had a normal scan, be able to understand and speak Swedish, have had their partner present at the examination which should also have been their first routine ultrasound screening during the pregnancy. The midwives performing the examinations noted when these criteria were fulfilled. The researchers then sent written information to both the woman and the man. The women were later contacted by 'phone to ask if they and their partners were willing to participate. Of the parents (couples) contacted 22 of 43 accepted and gave their written and verbal consent. Those who did not wish to participate referred either to lack of time or to not being fluent in Swedish. In some cases parents thought the subject too private to speak about and therefore declined. The expectant parents who accepted were asked to choose the location for the interview and they all chose their own homes.

### **Data collection**

The first author, who did not work at the ultrasound department, conducted the interviews. They generally took place two to four weeks after the examination had been performed. The parents were interviewed one at a time and were asked to speak freely about their experiences of ultrasound before, during and after the procedure. Attendant questions focused on information, communication, thoughts, feelings, wellbeing and decision making. The

interviews were taped and transcribed verbatim, 16 of them by the first author and the remaining by a secretary. Ethical approval and permission to undertake the study was obtained from the Research Ethics Committee of the Medical Faculty of the University. Permission to conduct the study was also given by the Head of Department. The staff at the ultrasound department was also informed and willing to assist in the recruitment of couples.

### **Data analysis**

Grounded theory (Glaser & Strauss 1967) was used to analyse the material. All three authors analysed the first eight interviews separately and then comparatively. The following interviews were analysed by the first author and continually discussed with the other two. Analyses started after the first interview, constantly and comparatively, with open coding to break down the data into codes and concepts, thus naming the phenomena (Strauss & Corbin 1990). In time, by classifying and grouping concepts that seemed to be related, categories evolved. From the open coding rose new hypothesises concerning the phenomena, thereby leading to new questions and discoveries that widened the contents of the categories. Each interview generated new questions for the next interview. For example in one interview both parents separately stated that the experiences of friends, who had had a handicapped child, affected their own experience of the ultrasound examination. This led to asking the next couple interviewed if the experiences of others had affected them. Constant regrouping and theoretical sampling of the data led, later in the process, to the next level of analysis, called axial coding (Strauss & Corbin 1990) which included making connections between categories and their subcategories. Four categories and twelve subcategories emerged. During the last coding process, called selective coding, the basic social process was found and categories were further developed to attain theoretical saturation (Strauss & Corbin 1990). To confirm this, the two final interviews were made three months later than the majority. Nothing new

emerged in these. During the whole process memos were written down and mind-maps were drawn, to help understand the process and the results. The text, when nearing completion, was sent to one couple who had participated in the study in order to see if they could recognise their experiences, which they did.

## **FINDINGS**

### **Subjects**

The women were 22 to 39 years old and the men were 27 to 41 years of age, married or co-habiting. Twelve of the couples were expecting their first baby and the others had one to three previous children. They represented both the rural and urban parts of the hospital's catchment area and also different educational levels, ranging from basic schooling to university education. One of the fathers was not born in Sweden. One couple had had an abnormal ultrasound scan (false positive) during a previous pregnancy. This was not a problem for them, in context to the interview. The quotations that best represented the category were chosen, irrespective of whether they were made by a woman or a man or whether or not it was the first baby. Only the parents expecting their first baby have been indicated to protect the identity of the parents. The others had one to three children prior to the current pregnancy.

### **Confirmation of a new life**

*Confirmation of a new life* was the basic social process. This incorporates the content of all the other categories, which contributes to this process:



*Yes when (she) got pregnant I didn't really understand it. But after we had had the ultrasound I did. ... It was the most exciting thing I have done as far as the baby is concerned. It was more exciting than when I heard that we were going to have a baby (Father no 8, first baby).*

The four categories, “*visualising - the evident option, overwhelming to see life, becoming a family and reassuring*”, all represent a time span in the parents' process of confirming that they are expecting a baby. The caregiver's way of assisting and supporting the process were by giving information and treatment. This influenced the parents' experience of the ultrasound examination. In Fig.1 the fetus represents the basic social process, encircled by the categories.

**(Fig. 1 about here)**

### **Visualising - the evident option**

#### *Choice*

None of the parents interviewed expressed any doubts or hesitation at all concerning the choice as to whether to have an ultrasound examination performed or not. The thought of declining the offer was not near at hand:

*No, the thought hadn't crossed my mind. Not... no I think that it's part of the pregnancy in some way to have an ultrasound. (Father no 18)*

*No, it was, yes it felt obvious in some way. I didn't ask J if he was interested. I just took it for granted that he would be there, I think. (Mother no 7, first baby)*

All the parents had understood that ultrasound screening was a choice and not a compulsory part of antenatal care, except for one woman who was expecting her first baby:

*Is it? It's optional? I don't have to go if I don't want to?..... I don't think of anything as compulsory, more like of a kind of map that one follows.....And you'll follow it, kind of without thinking. (Mother no 8 first baby)*

### *Motives*

The parents' motives to have an ultrasound examination performed were primarily to know that the baby was alive and apparently healthy.

Although they already knew that they were pregnant it was important for them to have their pregnancy confirmed by a professional and to see the fetus for themselves.

The dating process and assessment of the number of fetuses seemed to be of less importance to most parents and none of them mentioned the possibility of having an early scan, just for these two purposes, as an alternative. Not all of them had had deep thoughts about their own motives to have the ultrasound examination performed, as reasons like “don't know, fun, others do it, exciting, to get pictures” were mentioned by different fathers. It was also obvious that the parents had been looking forward to the examination, six women and two men mentioning that the visits to the maternity care centre were too few and far between in the beginning of pregnancy.

Generally, the parents had not really considered other forms of fetal diagnosis to complement the ultrasound examination, but eight women and two men mentioned amniocenteses and nuchal translucency, although none had undergone these examinations. The woman who did not know that the ultrasound examination was optional had thought about how she would handle the results of invasive fetal diagnosis, as had one other woman:

*Because I had heard a lot about amniocentesis so when I was with the midwife, we also talked about it. Should I take the test or not etc. She (the midwife) told me to go home and think about what I would do with the information I would get. And that was just it. In some way if we say that the baby is not healthy and I still want to keep it maybe. That's the problem, yes. (Mother no 8 first baby)*

#### *Apprehension for consequences*

When asked about what had worried the parents before the ultrasound examination mothers and fathers explained that they had thought about what the result of the examination would show and what decisions it might lead to. Earlier experiences, personal or those of others, were important as well as their personality and philosophy of life. Parents had done their best to avoid thinking about it:

*I hadn't thought much about it. But it was there a little, little bit. We know a couple whose first child had a spina bifida so they chose not to have that baby. So there is that possibility but it feels very far away for some reason. It won't affect us. This power of life makes one just believe that everything will be fine. (Father no 14)*

It was obvious that parents wanted to tackle problems if and when they occurred. The women had thought more about what they would do than the men had - and they could express it more precisely:

*... all I can say is that even if there should be some fault, if an arm or leg was missing I would never for my life be able to take it away. And even if it had Down syndrome or something like that I would never manage to have an abortion. Never in my life. (Mother no 22 first baby)*

*No. I hadn't thought it through like it could be like this and then we have alternative A, if that's bad we take alternative B etc. ... I hadn't been thinking about different consequences and things. (Father no 14)*

Two of the fathers referred to expert help when talking about how to handle the situation if anything should occur:

*It's a damned difficult question if you try to think it over – what should we do? But we would have to talk to an expert in that case and be given some opinion about the chances and how life would be like etc. With someone who knows better than us. But anyway it's difficult that we nearly have a life in our hands. (Father no 18)*

Parents considered it best to know about malformations even if it was a very difficult thought.

### **Overwhelming to see life**

This category mainly consists of concepts in subcategories expressing the overwhelming feelings the parents had experienced when they saw their fetus moving - when they in an obvious way, according to themselves, experienced the unbelievable fact that they were expecting a baby. Subcategories were called amazement and elation, tangible/intangible and visual proof:

*That you can see so much! Awesome. Small, small fingers and everything looked perfect. And just everything works. There is a little heart beating and you can see so much even if the baby is only 18 cm (long). That there actually is something so almost completely developed it just has to grow. That such good technology exists - it's unbelievable..... they can see so much.*  
*(Mother no 6 first baby)*

Fathers' and mothers' experiences did not differ even if they used different words to express them. Men had more comments concerning the technique. Eight women stressed that they enjoyed the examination so much that they would have had more ultrasound scans if that had been possible. Not all of the parents had seen as much as they had hoped for or expected, three expressing this fact.

Even if the ultrasound examination was an overwhelming experience for the parents, making the pregnancy feel more real, it was also an unreal experience for those women who could see but not yet feel the fetus, or baby (as they described it) move:

*Yes, it was unreal in a way: Also real in a way too. This confirmation. But also a bit unreal.*  
*(Mother no 8 first baby)*

The men also described or commented on fetal movements:

*Of course the big thing was that something moved in her tummy. That was the big thing!*  
*(Father no 19 first baby)*

Parents felt that it was easier to understand the image in their second pregnancy than it had been in their first one.

## **Becoming a family**

### *Togetherness*

Immediately after seeing the fetus parents began to think of it as their baby and started to imagine themselves as a mother or father. They felt that they had been in contact with their baby, and one man even stated that it felt like their baby had been in contact with them, the parents:

*And it became so very alive and I felt very close to the baby. Yes it felt like a fine moment, it was a very philosophic.. emotional moment. ..It felt very good. (Father no 12)*

Five men and three women did not believe that their experiences differed very much from their partners, but the majority, (13 men 12 women) commented on the fact that it is the woman who carries the baby.

The parents not only felt closer to their baby, but also closer to each other, somehow becoming a family for the very first time:

*Ultrasound has really been an important moment for all three of us. M and the baby. It has been a very important moment where we have felt we have become much closer to one another in some way. It has felt like that. (Father no 12)*

*Then it was so that ‘ Yes I am going to be a mother. And we will be a family’. Yes, it was important. The most important thing that has happened so far I really think. (Mother no 8 first baby)*

It was very important for all the women to be accompanied by their partners at the ultrasound examination. One woman experienced that her husband acted differently towards her after the ultrasound, in a more understanding and gentle way.

### *Personalisation*

The parents liked looking for their baby’s characteristics and sometimes found them, both in appearance and personality. When recognising family traits the fetus became their baby and a future member of the family:

*So it feels fun that we could get to know her personality already there (during the ultrasound examination). (Mother no 12)*

### *Divulgence*

Parents mentioned that the ultrasound was important as a sort of proof to others that they were to become a family. One of the first-time mothers even considered the ultrasound examination to be an initiation rite into pregnancy, making it obvious not only to herself but also to others that she really was expecting a baby:

*Then I had kind of come far enough in some way: When I had done it (ultrasound) I could say ‘Yippee’ and then I got out my little picture. ‘Here it is’( laughs). It was rather nice. It was kind of a real step in the pregnancy. (Mother no5 first baby)*

The pictures were important to other parents too. They were shown to grandparents and friends and also saved for later on show to the child. Two women stated that it had been important for their older children, so that they too could see their brother or sister.

## **Reassuring**

After the ultrasound examination, both mothers and fathers mentioned two things: the sense of joy and the sense of relief. These feelings were felt immediately at the moment during the examination when the parents heard from the midwife that the results were normal.

Afterwards they deepened. Although reassured two women and one man commented on the fact that not more than half of the serious malformations can be detected at this time. Even those parents who had not felt worried before the ultrasound, suddenly felt relieved. Relief was also a subcategory, as were security and confidence:

*I was relieved. Not that I had been going round thinking about it before rather that it had been in the back of my head. By the way I reacted I could feel that I was relieved anyway.*

*(Mother no 12)*

Six of the fifteen couples who mentioned this issue had waited until after ultrasound had been performed to tell their friends and acquaintances that they were expecting a baby.

None of them felt unaffected by the ultrasound examination but the degree of excitement differed:



*Ultrasound is just a fun bonus - most of all it's a fun bonus really. And this gives a bit of extra security, really. (Father no 17)*

*This is definitely one of the top ten on the list of fantastic memories in life I think. I really believe that. It is really completely fantastic. It's a really big thing I think. (Father no 21)*

The impressions from the ultrasound examination could also give parents inner pictures that they later connected with fetal movements, giving them a more profound experience. It was also comforting to have had a normal scan before feeling quickening. Women thought that it was a relief to know they had a ventral placenta that could delay their perception of fetal movements.

Parent's confidence in health care was apparent, stating "Medicine today - it is so advanced and you can see a lot with ultrasound" and "most things can be treated".

### **Factors influencing the parents' experiences**

#### *Information*

When asking parents about the information they had received and its sources, it seemed to be individual how much information parents needed and sought before their ultrasound examination. All parents, except two men, knew about the possibility before the pregnancy and called it "common knowledge". Parents were satisfied with the information given even if there were fathers who were less well informed, as they had not been present at the booking visit or not read any information. Women tended to be more interested, reading everything available that concerned pregnancy.

The parents seemed to have made their decision to have an ultrasound before the midwife's information, which they were still interested in as a type of preparation. Some individuals sought and asked for more information than others, especially couples expecting their first baby or if they were used to looking for information.

For parents, the most important information was the information given to them during the examination:

*And then we started looking at the different parts (of the fetus).....I remember it really clearly. Everything. And she (the midwife) was really nice and asking questions wasn't a problem..... She was really clever and really told us about everything she saw. (Father no 9 first baby)*

The information was not only connected with how much they understood of what was shown, but it was also important to get as much information as possible to be able to feel like a participant in the examination and thereby gain deeper satisfaction. All but two men and two women felt well informed, but commented on the fact that time was an important factor for them to enjoy and understand the examination fully:

*I wish there was more time for the ultrasound so that she could explain more and also go through what can and cannot be seen. (Mother no 22 first baby)*

### *Treatment*

The midwives' treatment of the parents during the ultrasound examination was very important. Both the men and the women had felt that the midwife had addressed both of them.

Mothers and fathers wanted the midwife to be professional but also to act in a personal way.

A calm atmosphere where they could feel unique was important to them:

*It was very professional and I felt she really knew what she was doing but it was also with a feeling for the baby- that it was a baby and not just something... And she talked to the baby and said ‘ please lie still now, what are you doing?’ and things like that. ... And then I felt like an expectant, yes like a parent. ... I look at it as a baby already of course and I want other people to do so too. That was what I thought was so positive. (Mother no 17)*

Time played an important roll for the parents’ experiences of the ultrasound examination.

Comments from eight women and five men which concerned treatment were about time, linking it to the experience of how well they felt they were taken care of:

*She seemed very nice and friendly and really explained everything and took time doing it I think which felt good..... It was great fun to watch and get pictures. She was really very nice. (Mother no 12)*

Parents drew connections between treatment and information. When they felt well informed, concerning both the procedure itself and the results of the examination, by an enthusiastic midwife, they also tended to feel satisfied with the treatment. If parents were not satisfied with this, it could also affect other components of the examination:

*Of course as it’s our first baby we have great expectations. Maybe we have painted a picture that is much better than the one we actually see. Even if what we saw was fantastic, we had*

*maybe expected better pictures and a more positive attitude from the midwife that we met.*

*(Father no 20 first baby)*

Parents requested more oral information and closer to the time of the examination. Four men stressed that all parents should have the examination done and that it was important for fathers to be present.

## **DISCUSSION**

Lincoln and Guba (1985) claim that the criteria for trustworthiness of a qualitative study, corresponding to validity in a quantitative study, could be judged by its credibility, transferability, dependability and confirmability.

To establish credibility (Lincoln and Guba 1985), theoretical saturation (Strauss and Corbin 1990) was sought and new angles and hypotheses, which emerged during the analysis, were tested during the following interviews. For the couples who did not wish to participate, a hidden reason, not mentioned by the women, might be ambivalence to their pregnancy or problems in their relationship with their partner. The transferability of this study might be limited, as only those who had their partner present at the examination were included in this study. For practical reasons only Swedish-speaking parents were interviewed which can also be a limitation. The dependability refers to the stability of data over time and conditions (Polit & Hungler 1999). In our study, the analysis of the first interviews was done by all three authors in effort to make the interpretation as valid as possible. The author who performed the interviews has not worked with ultrasound screening in practice, which might reduce the pre-understanding. The other two authors had been or were working with ultrasound screening

and might thereby understand the process in a complimentary way. The extent of confirmability was investigated by all three authors analysing the material first separately and then comparatively and also by the fact that the couple who read the transcript could recognise themselves.

This study showed that mothers' and fathers' experiences of routine ultrasound examination during pregnancy with normal findings are much the same. Only minor differences between first time parents and those who already had at least one child were found.

Parents' experiences were summarised by the basic social process; *confirmation of a new life*. The start of this process is described in the category *visualising - the evident option*, because the decision to have a routine ultrasound examination was an easy one, so easy that the choice was obvious to the parents. None of the parents had considered declining the offer of an examination, although everybody, except for one woman, was aware of this possibility. This supports the theory (Sandelowski 1994) that the desire to see their fetus is so strong that parents can not resist the opportunity. Sandelowski also states that the ultrasound examination is becoming a "milestone almost as important as the biological ones" (page 262). The fact that about half of the parents had waited, until after the examination before generally announcing the pregnancy, indicates what an important roll for confirming this that the ultrasound examination plays today. The information given to parents in this study, before the examination, seemed to be unimportant for their decision to accept the offer or not. There is a potential risk that the midwives who inform about the technique also find the choice obvious and therefore inform about it in a different way compared to other forms of prenatal diagnosis. This is shown by the example when the woman, who did not know that the ultrasound examinations was an option, got thorough information about amniocenteses. She

was advised to go home and think about what she would do with the answer before making the decision about having one or not. She decided not to have one. Would she have decided differently concerning the choice about having an ultrasound examination if it had been presented to her in the same way? It is important to decision makers to know that parents might be positive to any form of prenatal fetal screening once it is introduced, as their longing for confirmation of a new life is so strong. Whynes (2002), who has analysed diary-notes from over 300 women, also reported that they accepted the procedure uncritically. Giving information about fetal diagnosis today is becoming so complex that it is worth considering that it should be given on a separate occasion and not only at the booking visit. Parental preference concerning information about ultrasound was that it should be oral and given at a time closer to the examination

While waiting for the ultrasound to take place, parents tried to avoid thoughts of abnormal findings. Parents seemed to have strong defence mechanisms, which they expressed in terms like the strength of the power of life. It might be so that they did not want to hear from caregivers about the possibility of malformations. In many cases they definitively did not think, in advance, about what to do with the knowledge if this would be the case. As other studies (Thorpe et al. 1993, Santalahti et al. 1998) have pointed out, one of the parents' reasons for wanting an ultrasound examination is to exclude malformations, not to know if there are any. This was illustrated in the current study by the parents somewhat hesitating answers about whether it would be of benefit to know about a malformation or not, should there have been one. We know from earlier studies (Crang-Svalenius et al. 1996b) that some parents might be interested in an early dating-scan as an alternative to the second trimester one. Caregivers might have to alter their information routines, as no parents in the current study mentioned that they had known about this possibility. Dykes and Stjernqvist (2001)

believed that a part of the women's anxiety before the scan is due to the possibility of having to make a difficult decision if the fetus should be malformed. Parents referred to advice from experts who thereby indirectly may exert influence on these difficult decisions.

*“Overwhelming to see life”* was the category to describe parents' feelings and reactions when they first saw their fetus move. A British professor in Art has described, in his book about art and the brain, the concept of vision as an active seeking for knowledge (Zeki 1999). To see is a passive part of vision but understanding, which is found in another cortex area of the brain, is the active part of vision. In analogy with this, the screen that parents see is the passive part of vision, but when it is explained and fetal movements are understood, it is an active process, strongly inspired by amazement, love and longing. Most of the parents stated that they had understood what they saw because they were carefully informed, by the midwives who performed the examinations. The parents linked the impression of good treatment to the information given. Villeneuve et al. (1988) found during routine screening's infancy, a poor understanding of the image amongst 60% of 154 Canadian women. Some women in their study were not shown the image at all, which caused disappointment. In Sweden, health professionals have a long tradition of informing, not least the nurses and midwives. It is also gratifying that all the parents in this study felt that the midwives addressed the men as well as the women during the examination. This is especially important since an earlier study concerning the interaction between the midwife and the expectant couple, at a maternity care centre, showed that “the minor role of the expectant/new fathers was a common feature in all patterns found” (Olsson & Jansson 2001). Four men wanted the pre-scan information to stress the fact that an ultrasound examination is important and should be done. That sort of statement also showed what great importance the routine ultrasound examination had to the fathers, and what an overwhelming experience it had been for them. Villeneuve et al. (1988)

also found, when interviewing fathers, that their feelings and reactions were just as strong as those of the mothers. This research group also discovered that mothers felt it very important that their partners were present during the examination, which might have increased the intensity of their excitement and grade of bonding. Evidence about the impact of ultrasound on the attachment process is inconclusive (Bricker et al. 2000), but it is clear that attachment begins during pregnancy (Cranley 1981). The current study supports the thesis also claimed by, for example, Lerum et al. (1989) that ultrasound is related to parent-fetal attachment, also called the process of bonding. Cranley (1981), who has developed a scale to measure the growth of maternal-fetal attachment during pregnancy, defines it “as the extent to which women engage in behaviours that represent an affiliation and interaction with their new-born baby”(page 282). The current study shows that this process also starts for men before the birth of their baby. Stern (1999) showed that a woman’s sense of her baby makes a big leap around the fourth month, which also is the time for the routine ultrasound examination. She called the process a “personality-genesis”(page 9). This is represented in this study by the parents who tried to look for personal characteristics in their fetus and sometimes found them, maybe seeing what they wanted to see. This could be the resemblance to their first baby or just anything that made the fetus become more like the baby they were longing to meet.

As both mothers and fathers have been interviewed, this study has shown that they not only seem to get closer to the fetus but possibly also to each other during the ultrasound examination. This might be a new positive outcome of the routine ultrasound examination with normal findings and another reason for recommending both parents to be present. Further research may show what reactions might be, concerning family life, with an adverse outcome.



The routine ultrasound examination was a valuable experience for all parents, as the scan gave normal results. However it was also shown that the midwives' participation, as an informer and "event-creator", is of great importance to the parents. Our results indicate that to be able to fully develop the positive feelings of meeting their baby, possibly to feel like a family for the first time and to be reassured, parents need the support of a committed professional. The longing for confirmation of a new life might come from the fact that it is unbelievable to be expecting a baby - parents irrefutable need of proof to be able to believe it. Becoming a parent is a part of the mystery of life.

## **CONCLUSIONS**

The experiences of routine ultrasound screening in pregnancy are much the same for the women and their partners. For the parents in this study, the choice of having an ultrasound examination was obvious as their longing for confirmation of expecting a healthy baby was stronger than their fears for adverse findings, which they tried to suppress. They felt well informed about the reason for the examination and the fact that scanning was optional, although more oral information given closer to the time of the examination was requested. To see the fetus during the examination was a great experience for the parents, making them feel like a family for the first time. Afterwards they felt relief and joy. The process was largely dependent on the way they were treated by the midwives performing the examination and the information given by them. Not only was professional treatment requested, but a calm and personal atmosphere with an obvious understanding of the uniqueness of the situation.

## **Implications for practice and further research**

This study might serve as an inspiration for midwives and others who perform ultrasound examinations as it iterates what an important and unique event it is to men and women, in their process of becoming parents. For decision-makers it might be interesting to know why the examination must be allowed to take time, both during the visit and also concerning the information given before. When introducing new forms of fetal screening and diagnosis in the future, it might be interesting to consider that they can easily be unquestionably accepted by parents, who long for confirmation of a new life.

Further research on a larger group of parents will show if the results of this study can be generalised. It is of future interest to compare the experiences of parents with a normal scan to those of parents with different and adverse outcomes and to see if the health care's goals of informed choice and satisfaction with treatment are reached.

## REFERENCES

Bricker L, Garcia J, Henderson J et al. 2000 Ultrasound screening in pregnancy: a systematic review of the clinical effectiveness, cost-effectiveness and women's views. Health Technology Assessment Vol. 4: No. 16

Crang-Svalenius E, Dykes A-K, Jörgensen C 1996a Organized Routine Ultrasound in the Second Trimester- One Hundred Women's Experiences. Journal of Maternal- Fetal Investigation. 6: 219-222.

Crang-Svalenius E, Dykes A-K, Jörgensen C 1996b Women's Informed Choice of Prenatal Diagnosis: Early Ultrasound Examination- Routine Ultrasound Examination- Age-Independent Amniocentesis. Fetal Diagnosis Therapy 11:20-25.

Cranley M 1981 Development of a Tool for the Measurement of Maternal Attachment During Pregnancy. Nursing research 30;5: 281-284.

Dykes K, Stjernqvist K 2001 The importance of ultrasound to first-time mothers' thoughts about their unborn child. Journal of reproductive and Infant Psychology, 19: 95-104

Eurenius K, Axelsson O, Gällstedt-Fransson et al. 1997 Perception of information, expectations and experiences among women and their partners attending a second-trimester routine ultrasound scan. Ultrasound Obstetrics and Gynecology 9:86-90.

Glaser B, Strauss A 1967 The discovery of grounded theory: Strategies for qualitative research. Aldine, Chicago

Kowalcek I, Mühlhoff A, Bachmann S et al. 2002 Depressive reactions and stress related to prenatal medicine procedures. *Ultrasound in Obstetrics and Gynecology*. 19: 18-23.

Lerum C, Major R, LoBiondo-Wood G 1989 The relationship of Maternal Age, Quickening, and Physical Symptoms of Pregnancy to the Development of Maternal-Fetal Attachment. *Birth*: 16:-13-17

Lincoln Y, Guba E 1985 *Naturalistic inquiry*. Sage, Newbury Park

Oliver S, Rajan L, Turner H et al. 1996 Informed choice for users of health services: views on ultrasonography leaflets of women in early pregnancy, midwives, and ultrasonographers. *BMJ* 313: 1251-1253.

Olsson P, Jansson L 2001 Patterns in midwives' and expectant/new parents' ways of relating to each other in ante- and postnatal consultations. *Scandinavian Journal of Caring Science* 15:113-122

Polit D, Hungler B 1999 *Nursing research Principles and Methods*. Lippincott Williams & Wilkins, Philadelphia

Sandelowski M 1994 Channel of desire: fetal ultrasonography in two use-contexts. *Qualitative Health Research*. 4: 262-280.

Santalahti P, Aro A, Hemminki E et al. 1998 On what grounds do women participate in prenatal screening? *Prenatal Diagnosis* 18: 153-165.

SBU-report nr 139 1998. Routine ultrasound examinations during pregnancy. Stockholm: SB Offset AB. (In Swedish.)

Strauss A, Corbin J 1990 *Basics of Qualitative Research*. Sage Publications, Newbury Park

Stern N 1999 Motherhood: The Emotional Awakening. *Journal of Pediatric Health Care* 13; 8-12.

Thorpe K, Harker L, Pike A, et al. 1993 Women's views of ultrasonography. A comparison of women's experiences of antenatal ultrasound screening with cerebral ultrasound of their newborn infant. *Social Science in Medicine*. Vol 36 (3):311-315.

Villeneuve C, Laroche C, Lippman A et al. 1988 Psychological Aspects of Ultrasound Imaging During Pregnancy. *Canadian Journal of Psychiatry* 33:530-536.

The Swedish Research Council 2001 Early foetal diagnosis. Consensus statement. Elanders Gotab, Stockholm (In Swedish).

Whynes D 2002 Receipt of information and women's attitudes towards ultrasound scanning during pregnancy. *Ultrasound in Obstetrics and Gynecology* 19: 7-12.

World Health Organization 1984 Diagnostic ultrasound in pregnancy: WHO view on routine screening. *Lancet* 11:361

Zeki S 1999 *Inner vision. An Exploration of Art and the Brain*. Oxford University Press, Oxford

Text to Fig. 1 The central point - the fetus - represents the basic social process, encircled by the categories which represent the uterus.

