Fear of childbirth leading to maternal requested cesarean: risk factors, fears, counseling and treatment

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Dedications

My scholarly project is dedicated to my loving family and friends who have supported me throughout my entire education. This project would not have been possible without the encouragement and support.
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INTRODUCTION
THE RISE OF CESAREAN SECTIONS RATE
In 2007 a record was set in the United States (U.S.) regarding the number of cesarean sections (CS) performed. In that year, 1.4 million births occurred by CS, accounting for 32% of all births in the U.S. (Menacker & Hamilton, 2010). The rate has steadily risen. Just one year earlier in 2006, 1.3 million CS were performed (30% of all births) and 3 years earlier in 2004, 1.2 million CS were performed (29.1% of all births) ("ACOG Committee Opinion No. 394, December 2007. Cesarean delivery on maternal request," 2007; National Institutes of Health state-of-the-science conference statement: Cesarean delivery on maternal request March 27-29, 2006," 2006). The 2007 CS rate is a dramatic increase from previous rates and represents a 53% increase since 1996 when the CS rate was just 21% (Menacker & Hamilton, 2010). In 1981, 17.9% of births were performed by CS and in 1965, only 4.5% of all births occurred by CS (Placek, Taffel, & Moien, 1983). According to the World Health Organization (WHO), worldwide CS rates have increased from 5–7% of births in the early 1970s to 25–30% of all births in 2003 (Christilaw, 2006). The current high rate of CS deliveries is especially discouraging in light of the fact that Healthy People 2010 had an unmet goal of reducing CS rates to 15% of births by 2010 (Shalala & Satcher, 2000).

Reasons for the Rise in Cesarean Sections.
There are several proposed philosophies as to why CS rates have increased over the last several decades in the U.S. and around the world. The theories include: increased number of high risk pregnant mothers, decreased number of vaginal births after cesarean delivery (VBAC), changes in provider practice patterns, and effects of the obstetric-medical legal setting (Barber, et al., 2011). One significant and potentially modifiable reason for the rising rate of CS, of
increasing interest to medical providers and researchers alike, is cesarean delivery on maternal request (CDMR) (Barber, et al., 2011).

One recent study (Barber, et al., 2011) conducted at Yale-New Haven Hospital in Connecticut aimed to investigate the specific factors that were contributing to the increasing CS delivery rate. This investigation recorded data on all births that occurred in the facility from 2003 to 2009 and specifically examined the physician-documented indications for CS (n=32,443). In this investigation, the overall CS rate increased from 26% in 2003 to 36.5% in 2009. Of that total increase in CS over the study period, 50% was attributed to primary (first-time) CS. The rate of both primary CS and repeat CS rose over time (by 6.0% per year [95% CI 4.5-7.4] and 8% per year [95% CI 6.2-9.8] respectively). Coinciding with the increased repeat CS rate, the rate of VBAC decreased in this study from 17.8% in 2003 to 7.8% in 2009 (Barber, et al., 2011).

Barber’s (2011) Connecticut analysis examined specific indications that contributed to the large increase in primary CS rates over the study period. Several CS indications such as arrest of descent, malpresentation of baby, maternal-fetal indications, and other obstetric indications did not significantly increase over the study period. Additionally, although people may attribute the rising CS rate to increasing maternal age or increasing newborn birth weight, this investigation did not find this to be true. The prevalence of both advanced maternal age and newborn birth weight over 4,500g were stable over the 6 years while the CS rate significantly increased. Other indications for CS such as CDMR, arrest of dilation, multiple gestation, preeclampsia, and suspected macrosomia did significantly (P<0.05) increase over the 6 years and were concluded to greatly contribute to the rising CS rate (Barber, et al., 2011).

Barber (2011) then analyzed the data and determined the relative contributions of each indication to the total increase in the primary CS rate. The indication that contributed most (32%)
to the overall rise in the CS rate was non-reassuring fetal status, followed by arrest of labor disorders (18%), multiple gestations (16%), suspected macrosomia (10%), preeclampsia (10%), CDMR (8%), maternal-fetal conditions (5%), and obstetric conditions (1%). Even though the category of CDMR did not contribute the largest percentage (8%) to the overall increase in CS rates during the study period, it was the most rapidly increasing category (27% per year) and the most modifiable (Barber, et al., 2011).

**Prevalence and Rise of CDMR.**

There has been a dramatic increase in the number of women who choose or request to have a CS despite not having any medical indication. These CS deliveries fall into the category of cesarean delivery on maternal request (CDMR) (Husslein, 2001). The U.S. National Institute of health reported that the CDMR rate seemed to be increasing and was estimated to be between 4-18% of all births in 2006 ("National Institutes of Health state-of-the-science conference statement: Cesarean delivery on maternal request March 27-29, 2006," 2006). Another U.S. source estimated the CDMR rate to be slightly lower at 2.5% in 2006 ("ACOG Committee Opinion No. 394, December 2007. Cesarean delivery on maternal request," 2007). A study released by HealthGrades (2005) which covered 17 states in the U.S, extrapolated its data to the entire U.S. and estimated that 267,340 CDMR were performed from 2001 to 2003. The same study demonstrated that the yearly CDMR rate is increasing annually. For example, the rate of CDMR increased by 19% between 1999 and 2001 but then increased by 36.6% between 2001 and 2003. ("Patient-Choice" C-Section Rate Rises 36%; HealthGrades Study; More Women Choosing C-Sections When No Medical Necessity Exists; Florida, New York, New Jersey Have Highest Rates; Nevada, Washington, Florida Increase Most," 2005). Other countries have
experienced similar increasing rates of CDMR. In Sweden the rate of CDMR increased from 1.2% in 1994 to 2.7% in 1999 (Florica, Stephansson, & Nordstrom, 2006).

Over the past few decades, CDMR has become of increasing interest to medical researchers and health professionals around the world and in the U.S. In 2006, questionnaires were sent out to 1,031 American Congress of Obstetricians and Gynecologists (ACOG) Fellows, with a response rate of 68%. These questionnaires asked the physicians about their knowledge, perceptions, attitudes, and practice patterns regarding vaginal and cesarean deliveries and their opinions and experiences regarding elective cesareans. The responses elicited in this study reflect the rising rates of CDMR seen in recent years. Respondents were asked if they had adjusted their practice with regard to CDMR in the last year and 58.4% indicated an increase in maternal requests for CS, 66% of the physicians had increased the number of CDMR they had performed in the last year, and 41.2% talked to their patients about CDMR routinely. Overall, 54.6% believed that a woman has a right to have a CS if she requests. The analysis also evaluated the physician’s acceptance of CDMR and discovered that 53% of the providers had performed a CDMR and 57.4% would perform one if requested by a mother (Bettes, et al., 2007).

CDMR is one of several indications for CS that has increased in recent years. CDMR should be addressed and examined because it has the potential to be a modifiable indication for CS. Also, CDMR has been shown to be the most rapidly increasing indication for CS.

Health Effects of Higher CS Rates.

When mothers are contemplating alternate modes of delivery or debating having a CDMR, they must be fully informed about the possible short and long-term effects their decision may have on them and their unborn children. Many studies have investigated the risks and benefits of elective cesarean sections (ECS) and have compared them to vaginal deliveries.
The 2006 NIH State-of-the-Science conference and the 2007 ACOG were interested in the risks associated with CDMR and reviewed the available literature. They identified that the potential risks of CDMR included increased risk of hemorrhage and longer hospital stays in mothers, increased risk of neonatal respiratory morbidity, and increased risk of complications in mother’s subsequent pregnancies ("National Institutes of Health state-of-the-science conference statement: Cesarean delivery on maternal request March 27-29, 2006," 2006). These areas of potential complications have been explored in numerous studies over the past several decades in the U.S. and around the world.

One of the most concerning effects of CDMR is the detrimental impact it can have on neonatal morbidity. Numerous references in the literature have indicated that neonates born by elective cesarean section (ECS) are at an increased risk for developing respiratory problems that can lead to severe morbidity when compared with those infants born vaginally (Zanardo, et al., 2004). A study (Annibale, Hulsey, Wagner, & Southgate, 1995) in the US from 1983-1992 analyzed 11,700 births and compared infants born through low risk vaginal births to those delivered by CS for reasons unrelated to infant’s condition or health (ECS). This study found that compared to infants born vaginally, infants delivered by ECS were more likely to have 1-minute Apgar scores less than four (1.3% vs. 0.7% [P<0.001]), over three times as likely to be admitted to intermediate or intensive nursery care (4.3% vs. 1.3% [P<0.001]) and significantly more likely to require greater respiratory support (mechanical ventilation, 1.1% vs. 0.3%; oxygen therapy, 5.4% vs 1.4%, [P<0.001]). Another study (Levine, Ghai, Barton, & Strom, 2001) analyzed neonatal respiratory outcomes in over 20,000 Illinois births and found that 4.3% of infants delivered by ECS (n=1889) were diagnosed with respiratory problems compared to 1.4% of infants who were born vaginally (n=21,017), (P<.001).
Infants born by ECS are more likely to be admitted into the neonatal intensive care unit (NICU) with a respiratory diagnosis of transient tachypnea of the newborn, severe persistent pulmonary hypertension of the newborn (PPHN), hypoxic respiratory failure, or respiratory distress syndrome then infants born through vaginal delivery (Jain & Dudell, 2006; Levine, et al., 2001). Levine found that PPHN occurred in 0.37% of neonates born by ECS (n=1889) compared to 0.08% of neonates born vaginally (n=21,017), representing a 4.5 fold increase in the rate of PPHN in neonates delivered by ECS (P<001)(Levine, et al., 2001). Other research has shown that infants born by ECS have increased rates of mechanical ventilation, prolonged oxygen therapy, and extracorporeal membrane oxygenation (Jain & Dudell, 2006). Although most infants with respiratory difficulties fully recover with no long-term sequelae, some worsen and advance to respiratory failure. These infants have increased risk of prolonged stays in the hospital and have a higher chance for developing a chronic lung disease or dying (Keszler, Carbone, Cox, & Schumacher, 1992).

The answer to the question of why infants born by ECS have increased respiratory morbidity when compared to those born vaginally is two-fold. Firstly, because ECS is often performed at gestational age estimated to be between 37 and 40 weeks gestation before the onset of labor, iatrogenic prematurity is a contributor to increased respiratory morbidity in the neonate when the gestational age estimate does not correspond to pulmonary maturity (Hales, Morgan, & Thurnau, 1993; Jain & Dudell, 2006). Second, infants born by CS lack the protective experience of a vaginal delivery. The passage through the birth canal and exposure to the endogenous steroids and catecholamines released in normal labor and delivery improve neonatal pulmonary transition from amniotic fluid to breathing air (Jain & Dudell, 2006).
Research has shown that maternal morbidity is also negatively affected by increasing CS rates. Analysis performed by ACOG concluded that the increasing rate of severe obstetrical complications in the U.S. is associated with the increasing rate of CS (Kuklina, et al., 2009). A Canadian study by Liu (2007), analyzing women who gave birth from 1991 till 2005, found that maternal morbidity is affected by mode of delivery. This study compared healthy women who underwent a low-risk ECS (n=46,766) to a similar group of healthy women who had a planned vaginal delivery (n=2,292,420). The data revealed that the overall risk of severe maternal morbidity was higher in women who had ECS (27.3/1000) compared to those who had a planned vaginal delivery (9.0/1000) (adjusted odds ratio OR 3.1, 95% CI 3.0-3.3). Severe postpartum morbidities that were more common in the ECS group compared to the planned vaginal delivery group included postpartum cardiac arrest (OR 5.1, 95% CI 4.1-6.3), wound hematoma (OR 5.1, 95% CI 4.6-5.5), hysterectomy (OR 3.2, 95% CI 2.2-4.8), major puerperal infection (OR 3.0, 95% CI 1.5-3.2), anesthetic complications (OR 2.3, 95% CI 2.0-2.6), venous thromboembolism (OR 2.2, 95% CI 1.5-3.2), hemorrhage requiring hysterectomy (OR 2.1, 95% CI 1.2-3.8) and longer hospital stay (adjusted mean difference 1.47 d, 95% CI 1.46-1.49 d) (Liu, et al., 2007).

A study conducted in Ohio (Koroukian, 2004) evaluated postpartum complications in women with different modes of delivery from 1991 to 1996 (n=168,736). Similar to the Liu study, Koroukian found an increased risk of major and life-threatening complications in women who had CS compared to those who had vaginal deliveries. Women who underwent CS were significantly more likely to develop puerperal infections (RR=4.07, 95% CI 3.71-4.46) thromboembolic events (RR=4.07, 95% CI 3.02-5.48), anesthetic complications (RR=3.64, 95% CI 2.79-4.76) and surgical wound complications (RR 12.10, 95% CI 10.69-13.69).
well demonstrated that women who undergo CS are at risk of developing surgical wound complications and infections. (Dahlgren, et al., 2009) In one study (Brown & Lumley, 1998), 59% of the women who had an ECS (n=125) still experienced surgical wound pain 6-7 months after their CS.

A Netherlands study (van Ham, van Dongen, & Mulder, 1997) analyzed complication rates in mothers who delivered by CS over a ten-year period and compared intraoperative and postoperative complications between planned ECS and unplanned/acute CS (n=2647). A CS was considered elective if the operation was previously planned, the mother was admitted to the hospital for at least 8 hours before the operation, and there were no symptoms of ruptured membranes, regular uterine contractions or vaginal bleeding. Common indications for ECS included repeat CS and disproportion between the fetus and maternal pelvis. The data revealed that 9.1% of women in the ECS group had intra-operative complications and 26.3% had postoperative complications. Intra-operative complications included blood loss $\geq 1000$ ml, laceration to the uterine corpus, and lesions of the bladder or bowels. Major postoperative complications occurred in 2.6% of women undergoing ECS and included blood loss $>1500$ml, relaparotomy needed, pelvic infections and thrombosis. Minor postoperative complications occurred in 23.7% of women and included: fever, blood loss1000-1500ml, hematoma, urinary tract infections, endometritis, thrombophlebitis, ileus, bladder paralysis and wound infection (van Ham, et al., 1997).

Population-based evidence has shown that CS are associated with longer maternal recoveries compared to vaginal deliveries. A Washington state investigation aimed to assess the association between delivery method and self-reported general health status of mothers 7 weeks postpartum (n=971). Women were asked to complete health status scales regarding their physical
functioning, vitality, mental health, general health perception, bodily pain, social functioning, daily activities, reported change in health, sexual activity and bowel/urinary functioning weeks after their deliveries. Using multivariate analyses, women who had CS had significantly lower scores indicating more negative responses than women with unassisted vaginal deliveries. Physical functioning scores were significantly lower in the CS group, which represented that these women were more likely to report limitations when performing physical activities like running, lifting, cleaning, or climbing stairs than women with vaginal deliveries (P < 0.0001).

Women who had a CS also had significantly lower or more negative scores in mental health (P < 0.007), general health perception (P < 0.006), bodily pain (P < 0.0001), social functioning (P < 0.02) and daily activity (P < 0.004) compared to women with unassisted vaginal delivery (M. T. Lydon-Rochelle, Holt, & Martin, 2001).

The literature also confirms an increased risk of postpartum maternal rehospitalization among mothers who delivered by CS. A Washington state study found that women who delivered by CS were almost twice as likely to be readmitted into the hospital within 60 days of delivery when compared to women who had spontaneous vaginal deliveries. These rehospitalizations among women with CS were associated with diagnoses of uterine infections, surgical wound complications, cardiopulmonary conditions, and thromboembolic conditions (M. Lydon-Rochelle, Holt, Martin, & Easterling, 2000). A recent U.S. study by Belfort (2010) analyzed data from 114 hospitals across 21 states and established that the rate of hospital readmission was significantly more common among mothers who recently had a CS compared to those who recently had vaginal deliveries (P < 0.001). The readmission diagnoses of uterine infection, hypertension, wound infection without disruption, wound disruption, deep vein thrombosis, cardiomyopathy, pneumonia, pulmonary edema and intestinal problem (obstruction,
ileus, fistula) were significantly more common in women who had a CS compared to those who had a vaginal delivery (P < 0.001). Gallbladder disease, sepsis/bacteremia and necrotizing fasciitis were also significantly more likely in women with a previous CS compared to those with previous vaginal deliveries (P < 0.05) (Belfort, et al., 2010).

Less severe maternal morbidities have been examined in studies comparing CS to vaginal deliveries. A recent Australian study by Kealy and colleges (2010) questioned 32 women about their recovery after having a CS and revealed many difficulties that they endured after their operations. The sample included women who had CS for various reasons including CDMR. Thirty of the women (94%) described experiencing at least one health problem or complication related to their CS and 2 were readmitted into the hospital post-CS for surgically related complications. Many women in this study were frustrated with the unanticipated physical restrictions that their CS placed on them and the pain they experienced that hindered their every day activities (Kealy, Small, & Liamputtong, 2010).

Additionally, women who are contemplating having an elective CS need to be aware of the possible complications it could lead to in future pregnancies. It is well established that women with a previous CS are at an increased risk for developing abnormal placentations such as placenta previa or placenta accreta in subsequent pregnancies and that the risk of these placental complications increases with the number of previous CS a woman has had (Ananth, Smulian, & Vintzileos, 1997; Faiz & Ananth, 2003). Placenta previa occurs when the location of placental implantation overlies or is proximate to the internal os of the cervix (Oyelese & Smulian, 2006). One Washington state study (n=96,975) found a 40% increased risk of placenta previa during second pregnancies in women with first-birth cesarean deliveries compared to women with first-birth vaginal deliveries (OR 1.4, 95% CI 1.1- 1.6) (M. Lydon-Rochelle, Holt,
Easterling, & Martin, 2001). A meta-analysis performed in the US including 170,640 pregnant women showed a dose-response pattern for the risk of placenta previa based on the number of previous CS. Relative risks of having a placenta previa were 4.5 (95% CI 3.6 - 5.5) for one previous CS, 7.4 (95% CI 7.1-7.7) for two previous CS, 6.5 (95% CI 3.6-11.6) for three previous CS, and 44.9 (95% CI 13.5 - 149.5) for four or more previous CS (Ananth, et al., 1997).

Placenta previa is related to increased risk of numerous maternal complications, including: need for hysterectomy, antepartum bleeding, intrapartum and postpartum hemorrhage, need for blood transfusion, thrombophlebitis and septicemia. Placenta previa can also have negative effects on the unborn child as it can be linked to preterm delivery and congenital malformations of the child. In addition to the above risks of placenta previa, addressing the risk of placental previa associated with CS is very important because it is a risk factor for other placental abnormalities like placenta accreta (Oyelese & Smulian, 2006).

Placenta accreta, which refers to a placenta that is abnormally adherent to the uterus, is another potential placental abnormality linked to pregnant women who have placental previa or have had a previous CS. The incidence of placenta accreta has increased along with the rising CS rate and, similarly to placenta previa, the risk for accreta increases with the number of previous CS a woman has had. Placenta accreta is a serious and potentially life-threatening condition that can lead to uterine rupture in late pregnancy and massive maternal hemorrhage. Hemorrhage can result in several serious conditions such as: need for hysterectomy, disseminated intravascular coagulopathy, surgical injury to internal organs, adult respiratory distress syndrome, renal failure and death (Oyelese & Smulian, 2006).

Additionally, CS are a risk factor for placental abruptions in future pregnancies. Placental abruption is separation of a normally implanted placenta from the uterine lining. One US study
revealed a 30% increased risk for placental abruptions in second births of women who had a first-birth CS when compared to women whose first births were vaginal deliveries (M. Lydon-Rochelle, et al., 2001). A Finnish study (n=16,938) found a 3.2 times relative risk of placental abruption in women with previous CS compared to those without previous CS (P <0.01) (Hemminki & Merilainen, 1996).

Uterine rupture during pregnancy or delivery is also more common in women with previous CS. In one study by Rageth and colleges (1999) that examined the risks associated with vaginal delivery after a previous CS, 29,046 deliveries after a previous CS were evaluated and compared to outcomes of deliveries in women with no previous CS (n=226,407). Of the women with a previous CS, 0.32% had a subsequent uterine rupture while the incidence of uterine rupture was 0.01% in those who had no previous CS. (P < 0.001) The rate of uterine rupture was higher in women with previous CS who underwent a trial of labor compared to those with previous CS who had a repeat CS (0.40% vs. 0.19% respectively, P=. 002)

Several investigations have supported that CS deliveries have a negative impact on future fertility. A British study found that five years after giving birth, women who had a previous CS (n=165) were 13% less likely to have a second child compared to women who had previous spontaneous vaginal deliveries (n=148) (P < 0.03, RR 1.46, 95% CI 1.07-1.99). Of the women with previous CS who had no further children, 30% were involuntarily infertile, meaning that they did not choose to not have another child (Jolly, Walker, & Bhabra, 1999). The decreased fertility in these women with previous CS may be associated with their amplified chance of having an ectopic pregnancy or miscarriage. CS seem to be a risk factor for women having a subsequent ectopic pregnancy and Hemminki and colleges found a risk ratio of 1.28 for having a subsequent ectopic pregnancy in women with a previous CS compared to those with previous
vaginal deliveries (n=16,938). The same study found that CS increase the probability of having a miscarriage in succeeding pregnancies (Hemminki & Merilainen, 1996). Additionally, a large study (n=120,633) aimed to discover if previous CS were associated with subsequent stillbirths and found that the incidence of unexplained stillbirth was higher in women with previous CS (0.239 per 1000) compared to women with no previous CS (0.144 per 1000) (P < 0.0001) (Smith, Pell, & Dobbie, 2003).

FEAR OF CHILDBIRTH

Association Between CDMR and Fear of Childbirth.

Several researchers have explored the relationship between maternal fear of childbirth and CDMR and have found a correlation between them. It has been established that women with fear of childbirth are more likely to prefer a CS and subsequently request one (Niimenen, Stephansson, & Ryding, 2009). The literature also indicates that fear of childbirth leading to request for CS has increased in all western countries. In the year 2000, 8% of all CS performed at Finland’s Helsinki University Hospital were for the indication of maternal severe fear of childbirth (Ryding, 1991; Saisto, Salmela-Aro, Nurmi, Kononen, & Halmesmaki, 2001).

Multiple studies that have evaluated women’s reasoning for requesting CS on non-medical grounds have found that fear of childbirth is the foremost reason for such a request (Ryding, Wijma, Wijma, & Rydhstrom, 1998; Sjogren & Thomassen, 1997).

One analysis investigated a group of pregnant women to determine how many of them wished to have a CS and their reasoning behind that desire. It was found that in primiparous women (n=1302), fear of childbirth was the only statistically significant predictor for a women’s wish for a CS (P<0.001) (Hildingsson, Radestad, Rubertsson, & Waldenstrom, 2002). This is further supported with comparable results found in a more recent study that determined fear of
vaginal birth was the only factor which predicted CS preference in primiparous women on multivariable analysis (OR 11.79, 6.1-22.59) (Nieminen, et al., 2009). Furthermore, several studies that have evaluated fear of childbirth in pregnant women using instruments for measurement of fear such as the Wijma Delivery Expectancy/Experience questionnaire (W-DEQ) which will be discussed later, have found that women who prefer or request CS score significantly higher on this instrument, indicating stronger fear of childbirth, compared to women who do not prefer or request CS (Rouhe, Salmela-Aro, Halmesmaki, & Saisto, 2009; Wiklund, Edman, Ryding, & Andolf, 2008). An investigation that compared a group of women with fear of childbirth to a reference group showed that physicians are honoring these CS requests as the rates of elective CS was several times higher in the group of women with fear (Waldenstrom, Hildingsson, & Ryding, 2006).

There is a correlation between suffering from fear of childbirth and requesting a CS and both are on the rise as the indication of CS due to fear of childbirth has risen in all studied countries. Multiple investigations have found fear of childbirth to be the most statistically significant reason a woman requests to have a CS. Fear of childbirth should therefore be investigated further and evaluated in patients with the goal of lowering the prevalence of fear of childbirth, CDMR, and overall CS rates.

**Fear of Childbirth Prevalence and Negative Consequences.**

Looking past the issue of the rising rates of CS and CDMR, fear of childbirth needs to be addressed for several other reasons. Fear of childbirth is one of the most common difficulties women experience during pregnancy and it seems to be on the rise over the past several decades (Rouhe, et al., 2009). It has been estimated in previous studies conducted in Nordic countries that 6-10% of all pregnant women suffer from fear of childbirth (Areskog, Kjessler, & Uddenberg,
One Swiss investigation in 2002 had 8,528 pregnant women complete questionnaires regarding their pregnancies. In that study, 5.3% of the women in this study admitted to having “intense fear” of their impending birth while 57.5% admitted to having “some fear” (Geissbuehler & Eberhard, 2002). A previous study performed in 1981 by Areskog and colleagues (n=139), demonstrated that although the prevalence of “intense fear” has stayed relatively constant (6% in 1981 study), the incidence of mild to moderate fear has increased. Only 17% of pregnant women in Areskog’s 1981 study reported “some or moderate” fear compared to 57.5% of women in Geissbuehler's 2002 investigation (Areskog, Uddenberg, & Kjessler, 1981).

Fear of childbirth is emotionally taxing on women and can lead to many detrimental consequences beyond requesting a CS. Research has established that women who experience fear of childbirth while pregnant are more likely to experience negative outcomes during the course of their pregnancies, during the birthing experience, and during the time after the delivery. One study interviewed 26 women that suffered from fear of childbirth and revealed several effects fear of childbirth can have on a woman. Two of the 26 women had aborted a much-wanted pregnancy because they were too fearful to undergo the deliveries. Ten of the 26 women had completed or were planning to complete a sterilization procedure, either tubal sterilization or vasectomy, to avoid the birthing experience. This study also found a high number of these women with fear suffered from hyperemesis gravidarum, defined as a condition characterized by severe vomiting with concurrent electrolyte abnormalities, weight loss or dehydration, during their pregnancies. (Fenwick, Staff, Gamble, Creedy, & Bayes, 2010; Hofberg & Brockington, 2000).
Women with fear of childbirth experience more negative birthing experiences, as illustrated by a study that analyzed factors that predict disappointment with delivery (n=211). This investigation found that women who experienced fear of vaginal birth during their pregnancies evaluated their deliveries more negatively after the birth compared to women who did not have fear during their pregnancy (Saisto, Salmela-Aro, Nurmi, & Halmesmaki, 2001b). A Swedish study interviewed women with and without antenatal fear of childbirth 3-4 days after having vaginal deliveries (n=150). This Swedish inquiry found that women who experienced fear of childbirth in late pregnancy had a less positive delivery experience while those without fear described a primarily more positive experience. Additionally, fearful women were less satisfied with the pain relief offered during the birthing process and experienced more anxiety during delivery than women who did not have prenatal fear (Areskog, Uddenberg, & Kjessler, 1983).

Other studies have found that prenatal fear may foreshadow pain and distress during labor and delivery. One study evaluated perinatal concerns of 115 women during their third trimester and then measured their pain, coping, and distress-related thoughts during their subsequent deliveries. The study revealed that those who had higher levels of fear regarding the delivery during the third trimester had higher levels of pain and distress during all three phases of labor (latent labor P < 0.05, active labor P < 0.01, transition labor P < 0.05) (Wuitchik, Hesson, & Bakal, 1990). A Swedish study compared obstetrical outcomes between 100 expectant mothers who were referred to a Swedish psychosomatic outpatient clinic for severe antenatal anxiety about childbirth to a matched reference group (n=100). It was found that those who were classified as severely anxious about the upcoming birth more frequently required an epidural or pudendal block for pain relief during delivery then those without severe anxiety (p=0.002 and 0.05 respectively) (Sjogren & Thomassen, 1997). Additionally, one study revealed that the
assisted vaginal delivery rate using forceps or vacuum extraction was higher in a group of mothers with prenatal fear of childbirth (n=85) compared to a group of mothers without prenatal fear (n=177) (11% vs. 2% respectively) (Ryding, Wirfelt, Wangborg, Sjogren, & Edman, 2007).

Fear of childbirth also seems to have an effect on medically indicated CS rates, with several studies demonstrating an increased CS rate in women who have prenatal fear of delivery. In Areskog’s study (n=150), 17% of the women analyzed who had antenatal fear had a cesarean while only 8% of those who did not have fear had a CS. The difference in CS rates in these two groups seems to be due to medical indications because only 1 of the CS was performed because of “fear of delivery” (Areskog, et al., 1983). A more recent Swedish study revealed that 26% of the women who experienced fear of childbirth (n=85) had a CS while only 14% of the women who did not have fear had a CS (n=177) (Ryding, et al., 2007).

Women who experience fear of childbirth also endure more difficulties after delivery. These postpartum problems can include emotional instability and difficulty bonding with their newborn (Areskog, et al., 1983). Areskog’s study of 150 women with and without antenatal fear of delivery revealed that women with fear of childbirth were significantly more dissatisfied with breast-feeding and were less comfortable when handling their new infant compared to non-fearful mothers (P <0.01 and <0.05, respectively)(Areskog, et al., 1983). The mental health of mothers can also be affected negatively, as fear of delivery has been associated with an increased risk of postpartum depression (Saisto, Salmela-Aro, et al., 2001b).

**Fear of Childbirth and CDMR are Often not Addressed.**

As demonstrated previously, fear of childbirth can have a grave impact on pregnancy, birthing experiences and psychological well-being. Therefore, it should be acknowledged and addressed in all pregnant women. Currently, there are only a few countries that recognize
antenatal fear of childbirth as a significant problem and that have counseling services available for the majority of pregnant women with fear and those considering CDMR (Waldenstrom, et al., 2006). The U.S. seems to lack policies and protocols to address fear of childbirth and CDMR in pregnant patients. Out of 699 completed questionnaires by ACOG fellows in the U.S. in 2006, 92.2% of the physicians reported that their department or practice had no policy regarding CDMR (Bettes, et al., 2007).

**PROBLEM STATEMENT**

CS rates in the U.S. and worldwide are increasing and this is partly due to the growing rate of CDMR. CS delivery increases medical risks affecting both the mother and child. Fear of childbirth is common and is the most frequent reason for request for CS. Compared to Nordic countries, the United States is deficient in studies and research aimed at evaluating the characteristics and risk factors for fear of childbirth. The U.S. also lacks research discussing methods or protocols that could possibly be applied for identifying and treating women with fear of childbirth.

**PURPOSE OF REVIEW**

The intent of this review is to present data and results from peer reviewed research around the world that will aid clinicians in recognizing, screening, and treating pregnant patients who are struggling with fear of childbirth, in hope of lowering overall CS and CDMR rate in the U.S. This will be accomplished by exploring the risk factors, traits, and characteristics of women who experience fear of childbirth so these patients can be more easily identified in the office setting. This review will also identify the most common reasons and objects of fear women report, so clinicians may better understand their patients and may be better able to discuss these issues with their patients. This review will provide clinicians with methods for screening for fear
of childbirth, with reliable assessment and diagnostic tools that can be used in the office setting to screen and measure the severity of the fear. Additionally, the project will identify some of the counseling techniques and treatment options for fear of childbirth and reasons for referral for more advanced psychological treatment.
BODY

RISK FACTORS AND TRAITS OF WOMEN EXPERIENCING FEAR OF CHILDBIRTH

Understanding the epidemiology, risk factors, personalities and social characteristics that are more common in women who suffer from fear of childbirth is important for clinicians to properly screen and recognize their pregnant patients suffering from fear of childbirth. There have been several studies performed in Scandinavian and other countries that have analyzed the traits and characteristics of women who suffer from fear of childbirth.

The mental health of a woman affects her likelihood of experiencing fear of childbirth and several studies have shown a correlation between previous or current psychological disorders and fear of childbirth. A Norwegian study of 86 women with fear of childbirth that requested a planned CS revealed that fear of childbirth was strongly associated with psychosocial difficulties in most participants. Ninety percent of these women suffered with anxiety, depression, or both, currently or in the past. Twenty-one percent of the women had some other psychiatric diagnosis, which included post-traumatic stress disorder (PTSD) in 7 of the women. Forty-three percent had an eating disturbance or disorder at some point in their lives (Nerum, Halvorsen, Sorlie, & Oian, 2006). In a group of Danish women, symptoms of anxiety and depression were associated with a five-fold and two-fold increase in fear of childbirth, respectively (Laursen, Hedegaard, & Johansen, 2008). A group of pregnant women seeking treatment for their fear of childbirth in Sweden described themselves as significantly more anxiety prone when compared to the reference group (Ryding, et al., 2007).

Another study of 278 women with fear of childbirth illustrated that personal characteristics contributed to fear of childbirth and that variables contributing to fear of
childbirth and anxiety during pregnancy were highly correlated. General anxiety and low self-esteem were independent risk factors for having fear of childbirth. In addition, the more neurotic, vulnerable or depressed a woman was, the more likely she was to report fear. Also, increase in physical complaints during pregnancy was associated with fear of childbirth (Saisto, Salmela-Aro, Nurmi, & Halmesmaki, 2001a). Sjogren analyzed the reasons for anxiety in 100 pregnant women and found that preceding psychological difficulties such as panic disorders and periods of depression along with current emotional crises were associated with maternal vulnerability and were major reasons women feared upcoming deliveries (Sjogren, 1997). Additionally, according to a Swedish study conducted by Ryding, personality traits such as aggressiveness, hostility, irritability, dependency and somatic anxiety are associated with fear of childbirth (Ryding, et al., 2007).

A nationwide study in Denmark looked at the relation between different social, demographic, and psychological characteristics and fear of childbirth. Having poor self-rated health was the greatest risk factor for having fear of childbirth in this study. Other risk factors that were related to fear of childbirth were being a current smoker, having an unskilled job or vocational education, and being unemployed (Laursen, et al., 2008). Several studies have found that unemployment is an independent risk factor for fear of delivery and that these women were considerably more anxious than employed pregnant women (Saisto, Salmela-Aro, et al., 2001a; Waldenstrom, et al., 2006). Additionally, a Finish study demonstrated that students as well as urban inhabitants were at increased risk for fear compared to non-students and those living in rural areas (Melender, 2002).

A strong social network and adequate support from a partner have been found to be protective in regard to fear of childbirth. According to Laursen and colleges, lack of or fragility
of a social network is a risk factor for fear of childbirth (Laursen, et al., 2008; Ryding, et al., 2007; Waldenstrom, et al., 2006). Melender also discovered that fear of childbirth is more common in women living without a partner (Melender, 2002). Saisto reported that the more satisfied a woman was with her partnership and the more social support she had, the less likely she was to be anxious and fearful of her future delivery (Saisto, Salmela-Aro, et al., 2001a).

Several studies support that physical and sexual abuse affect women negatively in many aspects of their lives including their experiences and feelings regarding pregnancy and childbirth. It has been found that women who have previously suffered from abuse have an increased risk of fearing childbirth. Nerum found that 63% of the women in his study (n=86) who feared childbirth and requested a CS were previously abused (Nerum, et al., 2006). Hofberg found that five out of the 27 women with fear of childbirth he analyzed were victims of childhood sexual abuse, which included traumatic rape in 3 of the women. This study hypothesized that a possible cause of this correlation is that history of sexual abuse may be related to aversion to obstetrical care, which is why these women want to avoid the process of childbirth (Hofberg & Brockington, 2000).

Women who had previous voluntary abortions are also more likely to suffer from fear of childbirth according to a study by Sjogren and Thomassen which compared women seeking treatment for fear of childbirth to a reference group (n=100) (Sjogren & Thomassen, 1997). Another study showed that women whose pregnancies were less welcome had more fear regarding the upcoming delivery (Waldenstrom, et al., 2006).

Providers should also take a women’s parity status into account when screening for fear of childbirth. Numerous studies have found an association between a woman’s parity and her likelihood to experience fear of childbirth. In an investigation by Saisto, pregnant women who
had previous pregnancies were much less anxious than those who were expecting their first child (Saisto, Salmela-Aro, et al., 2001a). A study of more then 8000 women in Switzerland showed that increasing parity leads to lower levels of fear regarding upcoming birth. This study split women into 3 groups based on a questionnaire that asked about their level of fear regarding their upcoming birth. The groups were: “no fear”, “some fear”, and “intense fear”. It was found that although intense fear was fairly constant in groups of differing parity, “no fear” increased with increasing parity and “some fear” decreased with increasing parity (Geissbuehler & Eberhard, 2002). Three other studies concur and their data revealed that fear of childbirth was more common in primiparous mothers compared to multiparous mothers (Melender, 2002; Nieminen, et al., 2009; Rouhe, et al., 2009).

Gestational age is another factor that has been evaluated in women with regards to fear of childbirth. Rouhe found that women who were farther along in their pregnancies had more fear of delivery while Nieminen found no association between fear of childbirth and gestational age (Nieminen, et al., 2009; Rouhe, et al., 2009).

Studies addressing the question of whether a woman’s age affects her risk of experiencing fear of childbirth have conflicting results. A large cross-sectional study by Nieminen which included over 1500 pregnant women found that women of higher maternal age had an increased risk of fear of childbirth compared with 25-29 year old women (Nieminen, et al., 2009). In comparison, a large Denmark study (n=30,480) found that younger mothers age 25-29 were at increased risk of suffering from fear of childbirth then women 30-34 (47.4% vs 21.7%) (Laursen, et al., 2008).

**CHARACTERISTICS OF WOMEN WHO REQUEST CESAREAN SECTIONS**

There are also particular characteristics of expectant mothers that are related to an increased chance of her requesting a CDMR. Many of these traits are similar to traits that are
common in women who fear childbirth. One study (n=3061) analyzed these characteristics and found that women who were older than 35, did not live with their child’s father, had a previous abortion, previously delivered by elective CS or emergency CS were more likely to wish to have a CS. Previous stillbirth was a risk factor which doubled the chance of a mother requesting a CS for her next delivery. Other characteristics more common among women who requested CS included poor support systems, unfortunate timing of pregnancy, considered abortion, concerns about previous births, major worries during pregnancy regarding the upcoming birth or caring for the baby (Hildingsson, et al., 2002).

Healthcare providers should be aware of the characteristics of their patients when screening for fear of childbirth. Associations found in previous research can be useful to providers as tools to better recognize women at risk of fear of childbirth. Psychological and personality difficulties and characteristics that are strongly correlated with fear of childbirth include a history of anxiety, depression, panic disorders, low self-esteem, neuroticism, vulnerability, aggressiveness, hostility, irritability and dependency. Women who are having their first child, have experienced previous physical or sexual abuse, or have had a previous abortion are more likely to have fear while women with strong support systems and partners are less likely. Not all women react in the same manner, and even women with none of these risk factors could be suffering with fear of childbirth. Specific traits of women also put her at higher risk of requesting a CS and many of these are the same characteristics of women who fear childbirth.

**OBJECTS OF WOMEN'S FEARS REGARDING VAGINAL CHILDBIRTH**

Understanding patient fears and concerns is an essential component of the provider-patient relationship that is necessary in order to achieve proper counseling and treatment for patients. Several investigations have evaluated the objects of women’s fears regarding childbirth.
Geissbuehler and colleges gathered data from questionnaires filled out by over 8000 pregnant Swiss women from 1991 till 1999 and examined their answers in relation to quality of fears related to childbirth (Geissbuehler & Eberhard, 2002). Sjogren examined the reasons for anxiety in 100 Swedish expectant women who were referred to a psychosomatic outpatient clinic due to fear of childbirth (Sjogren, 1997). Melender evaluated 329 pregnant Finish women by questionnaire and described the objects of their fears concerning childbirth (Melender, 2002).

Fear of pain was a common concern for many women. Of the 329 women studied by Melender, fear of pain during childbirth was the most common fear women expressed (Melender, 2002). Almost 40% of Swiss women questioned in Geissbuehler’s study who had fear chose the answer “fear of pain” when they were asked the question, “Of what are you most afraid with regard to the birth?” (Geissbuehler & Eberhard, 2002). Of the 100 women Sjogren studied, 44 had expectations of intolerable pain during childbirth. (Sjogren, 1997)

Fear for the health of the unborn child was also a source of anxiety among women in all three studies. Almost 50% of the women in Geissbuehlers study answered, “fear for the child’s health” when asked what they were most afraid of and this was the highest rated fear in this study. In the Sjogren investigation, 46% of women described fear of death of their child. Many women in research by Melender reported several fears with regards to the child’s health. These included fear of: giving birth to a dead child, the child being injured during birth, or the child being sick or handicapped (Geissbuehler & Eberhard, 2002; Melender, 2002; Sjogren, 1997).

Research has shown that women are often afraid of not being able to give birth or losing control during the process. In one study, 39% of women believed that their bodies would not be able to deliver and another 26% reported that psychological issues would inhibit them from performing well during delivery (n=100) (Sjogren, 1997). Women studied by Geissbuehler
reported fears that included fear of: failing, breaking down, appearing silly or stupid, losing control, not having adequate strength or being helpless (Geissbuehler & Eberhard, 2002). Many women from the Melender study were afraid of “getting into a panic” during childbirth (Melender, 2002).

Some of the fears of expectant mothers stem from their lack of confidence in health care providers and their worry of losing their own autonomy. Evidence has shown that women often have concerns regarding the obstetrical staff during their upcoming delivery. In the Sjogren, study, 73% of women had these concerns and were afraid of not having adequate support or not being able to maintain decision-making power during the birthing process (Sjogren, 1997). Expectant Swiss women had similar concerns which included fear of being totally dependent on others, fear of being alone and of not being able to contribute to making decisions (Geissbuehler & Eberhard, 2002).

Other objects of fear in expectant mothers are fears of obstetric procedures. These include fear of: cesarean deliveries, general anesthetic, epidural anesthetic, or surgical vaginal delivery (Geissbuehler & Eberhard, 2002). Some women also experience a fear of dying and others have fear of total chaos developing during the birth or of the birthing process lasting a very long time (Melender, 2002; Sjogren, 1997).

All women who experience fear of childbirth are unique and have very different and individual fears. The birthing experience is one of the most important aspects of a woman’s life and health care staff and medical providers should take her concerns and fears seriously.

CAUSES OF CHILDBIRTH FEAR

An important research question is why some pregnant women have fear of childbirth while others do not. Women who had fear of childbirth in the Melender investigation (n=329)
were questioned about causation of fears. Common reasons women gave for their fears were related to having a negative mood, a bad conscience, or feeling lonely. Many women reported that they were pessimistic or timid by nature. Others said “I always have bad luck”. In this same investigation, causation of fear was found to be related to alarming information that expectant mothers received from health care workers or other professionals (Melender, 2002).

Many of the women reported that their fears developed after hearing negative stories told by other people about childbirth and reading pessimistic stories or information regarding childbirth in books or magazines (Melender, 2002). Wiklund was interested in why primiparous women have fear of childbirth when they have no previous experience of childbirth. He hypothesized that these fears could arise from stories of complicated or frightening deliveries heard from female acquaintances (Wiklund, et al., 2008). Furthermore, in the Sjogren study of 100 pregnant women with anxiety related to childbirth, many of the women who had anxiety related to childbirth were aware that their mothers had a complex or problematic delivery (Sjogren, 1997).

Nerum and colleges theorized “Fear of birth with a concurrent request for cesarean delivery may be understood as a crisis reaction in which the impending birth activates previously unprocessed life events and problems.” He explains these problems could be traumatic experiences such as psychiatric disorders, previous abuse, or painful life events that the woman has experienced previously which may be triggered during pregnancy. Therefore having a CS is a crisis reaction in order to avoid re-experiencing these traumatic life events. This study suggests that providers must identify these traumatic experiences in their pregnant patients and help them work through them so that the women can separate them from the upcoming birth.
IDENTIFYING AND ASSESSING FEAR OF CHILDBIRTH

Interview Techniques.

Fear of childbirth can be an emotional and sensitive subject for women to discuss, a topic that they may be ashamed of and not bring up freely during their prenatal appointments. It is imperative that providers be aware of the prevalence of these concerns and are able to properly and effectively elicit sensitive histories from their female patients. One strategy providers can use to identify women with fear of childbirth is to have an open discussion in the office with pregnant patients about their feelings regarding fear of childbirth and their wishes concerning their upcoming delivery. There are many general interview techniques and specific strategies the provider can utilize to build trust with the patient, ask sensitive questions, and encourage an open conversation. (Bickley, 2009)

As with any health related discussion with a patient, it is important to maintain patient privacy and have sensitive discussions in a setting that is as comfortable and private as possible so the patient will feel secure in the confidentiality of the conversation and feel free to express her true feelings. (Bates) When discussing fear of childbirth, it is appropriate to start with an open-ended question related to the patients feelings about their future childbirth before using focused questions. An example of a question that was used in one study was “How do you feel when thinking about labor and (child) birth”? (Waldenstrom, et al., 2006). As the patient answers the open-ended questions, providers should encourage with continuers, which are words, gestures, and postures that encourage the patient to say more. These include nodding, remaining silent but relaxed and attentive, making adequate eye contact, and using minimal facilitators like “mm-hmm” or “go on.” Asking questions like “how has this affected you?” and “how do you feel about that?” may open up further discussion. A mnemonic used to explore patient’s
perspectives and feelings that may be useful in these situations is FIFE (feelings, idea, function, expectations) reflecting 4 domains of patient centered questions that should be explored and evaluated. The first patient perspective domain is patient feelings, which may include concerns or fears about their particular problem. Patient ideas about the nature and cause of their fears should also be discussed. The effect fears are having on functioning and life should be discussed, as well as expectations of the care they will receive and what will happen next. (Bickley, 2009)

Providers should be aware that these questions might bring up many frightening, saddening, or shameful emotions and feelings in the patient. Offering empathetic responses may give comfort and encourage honest sharing of feelings. Verbal empathetic responses include, “that sounds upsetting” or “I understand”. Non-verbal empathetic responses include offering the patient a tissue or touching their arm appropriately. Also, offering validation to the patient throughout a sensitive conversation is key, as it will help patients feel affirmed, feel that their emotions or concerns are both legitimate and understandable. A validating statement to share with a woman who had a previous difficult operative vaginal delivery would be “going through that difficult delivery must have been very frightening for you”. A mnemonic a provider can utilize when responding to emotional cues is NURS, which stands for naming, understanding, and respecting. Naming would be to say, “that sounds like a scary experience”. A provider can show understanding by saying “I understand why you feel that way”. Respect can be displayed by saying, “you are handling this better then most would be able to”. (Bickley, 2009)

Furthermore, during the discussion, providers must be sure to effectively reassure the woman while avoiding giving premature reassurance. Prematurely reassuring a patient may cut short further disclosure, as the patient may feel the provider does not appreciate the extent of her distress or is uncomfortable with the anxiety the patient feels. Saying things early on like “don’t
worry, everything will be alright” is an example of premature reassurance and should be avoided. Reassurance is more appropriate later in the discussion after listening to the concerns the patient has brought forth. At that time, making the patient fully aware that their concerns have been heard, understood, and will be addressed, as well as sharing information with the patient would be a form of proper reassurance. (Bates) Importantly, offering the patient a continuing sense of partnership is paramount when dealing with any medical condition that may be chronic in nature or is emotionally charged. Above all, it is important that providers tell their patients that they will be there for them and will continue their partnership no matter what the patient feels or experiences. (Bickley, 2009)

**Tools to Screen for Fear of childbirth.**

A second appropriate manner to identify fear of childbirth in women is the use of questionnaires. Questionnaires were successfully utilized in several of the previously mentioned studies to evaluate fear of childbirth in pregnant women and have the potential of being employed as screening tools for providers. One of these tools is the Wijma Delivery Expectancy/Experience Questionnaire (W-DEQ).

In the late 1990’s, the W-DEQ was introduced to provide an objective estimate of patient’s degree of fear regarding childbirth. Since that time, several studies have used this tool when evaluating pregnant women and fear of childbirth (Nieminen, et al., 2009; Rouhe, et al., 2009; Ryding, et al., 1998). Before the W-DEQ was developed, general anxiety evaluation tools were utilized to measure anxiety during pregnancy and there was no specific instrument available for assessing fear of childbirth in pregnant women. The W-DEQ development was based on the theory that the expectations a pregnant woman has of her upcoming delivery affect her experience of the delivery and her behavior during the delivery. Therefore, the W-DEQ
questionnaire uses a woman’s cognitive appraisal concerning the delivery of interest to measure her fear of childbirth (Wijma, Wijma, & Zar, 1998).

There are two versions of the W-DEQ; one is used to measure fear related to childbirth during pregnancy while the second measures fear of childbirth after the delivery. Version A (antepartum version) asks women about their expectancies of childbirth while still pregnant and version B questions women about their experiences of the birth after the delivery. In version A, women are asked to rate 33 items, based on personal feelings and cognitions regarding childbirth, on a six-point Likert scale with endpoints being ‘not at all…’ and ‘extremely…’.

The actual W-DEQ can be found in the article entitled "Psychometric aspects of the W-DEQ: a new questionnaire for the measurement of fear of childbirth" (Wijma, et al., 1998) Scoring of the W-DEQ ranges from a minimum of 0 to a maximum of 165, with a higher score indicating a greater fear of childbirth. A score above 84 represents a clinically significant fear of childbirth and a score above 100 is cutoff for very severe fear of childbirth (Ryding, et al., 1998).

The W-DEQ questionnaire has several positive characteristics. It is a quick assessment that takes only 5 to 10 minutes to complete and it can be employed in both primiparous and multiparous women (Ryding, et al., 1998). Additionally, the W-DEQ has been found to be both a valid and reliable measurement of fear of childbirth. Both internal consistency reliability and split-half reliability of the questionnaire were ≥ 0.87 (Wijma, et al., 1998). A study of over 1500 pregnant women being evaluated for antenatal fear of childbirth at various gestational ages demonstrated that the W-DEQ can be used at any time throughout a woman’s pregnancy with the same norm values. The results elicited in the research did not show any correlation between intensity of fear of childbirth and current gestational age (Nieminen, et al., 2009).
Other instruments have been proven to be effective when screening for fear of childbirth in pregnant women. A study of 1400 expectant mothers used a visual analogue scale (VAS) to evaluate and screen for fear of childbirth in pregnant women. A VAS is a testing method for measuring subjective phenomena in which subjects select from a gradient of alternatives arranged in linear fashion. This study used a patient rated VAS in addition to the W-DEQ to obtain information regarding fear of childbirth and to examine the appropriateness of using a VAS when evaluating fear of childbirth (Rouhe, et al., 2009). In this study the women were asked to complete the W-DEQ and then indicate how afraid they were of childbirth from 1-10 on a VAS. After obtaining the results, Rouhe and colleges compared findings and scoring of the W-DEQ to the patient rated VAS. It was found that the correlation between the W-DEQ and VAS was good. (Pearson correlation coefficient r=0.7, P=0.01) The VAS was also found to detect mothers fear quite well when compared to the W-DEQ. When a patient rating of 5 or above on the VAS was used as the threshold for identifying fear, the VAS had a sensitivity of 97.8% and a specificity of 65.7% in identifying fear of childbirth (fear of childbirth defined as a score ≥100 on W-DEQ) (Rouhe, et al., 2009).

The analyses also revealed that even though VAS is less accurate than W-DEQ, VAS may be more appropriate than W-DEQ for screening because it is simple, easy to use and evaluate, and has a higher compliance rate when compared to the W-DEQ. While 98.3% of the women completed the VAS, only 91.1% of the same group completed the W-DEQ. A protocol suggested for screening pregnant women for fear of childbirth was to administer patient rated VAS to women in mid pregnancy. With a score of 5 or below, no further questionnaires are needed because significant fear is unlikely. If the VAS score is above 5, the study recommended
administering the W-DEQ to gain more information about fears and decide if more attention needs to be given to the issue (Rouhe, et al., 2009).

A Finnish study, which had the objective of describing the objects, causes and manifestations of pregnant women’s fears of pregnancy and childbirth, developed an instrument to identify women who had fear and to reveal characteristics of those fears. The instrument was a questionnaire that was created based on a review of the available literature, and information about pregnancy and childbirth fears that was gathered through semi-structured interviews with women who had recently given birth. The questionnaire consisted of 3 sections that included: objects of fears, causes of fears, and manifestation of fears. Similarly to the W-DEQ, this was a structured questionnaire that used a 4-point scale (1=agree, 2=agree to some extent, 3=disagree to some extent, 4=do not agree) and a dichotomous scale (yes or no) for responses. Some examples of statements used in this instrument to elicit information about fear of childbirth included: “I am afraid of pain in childbirth”, “I am afraid that I’ll give birth to a dead child”, “I always have bad luck”, “others have told me negative stories about childbirth”, “I’ve experienced sleeplessness because of fears associated with pregnancy and/or childbirth”. The complete questionnaire can be found in the article titled "Experiences of fears associated with pregnancy and childbirth: a study of 329 pregnant women" by Melender. There were a total of 64 statements/questions. The questionnaire was pretested 3 times to improve validity and was found to have fairly high reliability (Melender, 2002).

Several other questionnaires have been used in the past to evaluate childbirth related fears and anxieties in women during pregnancy, and these have the potential for use as diagnostic tools. A Finnish study of almost 300 women used both the “Pregnancy Anxiety Scale” (PAS) and the “Fear of vaginal delivery scale” as tools in evaluating fear of vaginal childbirth in pregnant
women. Both instruments were found to be easy to use, valid, and well accepted by patients. The study suggested that the PAS and the fear of vaginal delivery questionnaire should be administered in outpatient maternity clinics to pregnant women in early pregnancy to enable recognition of patient fear and to assist them in getting the psychological support, education, and obstetrical guidance they need (Saisto, Salmela-Aro, et al., 2001a). The Pregnancy Anxiety Scale (PAS) consists of 10 statements related to anxieties about the pregnancy, the childbirth, and the hospitalization that women were asked to rate on a scale of 1 to 5 (“not at all” to “a lot”) (Levin, 1991; Saisto, Salmela-Aro, et al., 2001b).

The other instrument used was the “Fear of Vaginal Delivery Scale” which has been utilized in several studies. It is a simple questionnaire consisting of 10 questions related to fears of delivery that are answered in a yes or no fashion (Saisto, Salmela-Aro, Nurmi, Kononen, et al., 2001; Saisto, Toivanen, Salmela-Aro, & Halmesmaki, 2006). Women can have a low score of zero meaning no affirmative answers to any questions and a high score of 10 meaning affirmative answers to all of the questions (Saisto, Salmela-Aro, et al., 2001a). A fear of childbirth diagnosis is made if a woman has five or more affirmative answers or if she answered yes to question 10 (Do you prefer a cesarean section to an ordinary delivery?) (Areskog, et al., 1982; Saisto, Salmela-Aro, Nurmi, Kononen, et al., 2001).

One analysis compared the “Fear of vaginal delivery Scale” to personal interviews with pregnant women and found that the results correlated well. Women who verbally expressed significant fear of childbirth during personal interviews were also identified by the “Fear of vaginal delivery scale” (Areskog, et al., 1982). This scale was used along with the PAS in one study and the two instruments were found to highly correlate (Saisto, Salmela-Aro, et al., 2001a).
Due to the prevalence of fear of childbirth and the effects it can have on a woman physically, mentally, and psychologically, it is imperative that providers have a protocol for identifying women suffering from fear of childbirth early in pregnancy or before conception. Discussing fear of childbirth before conception is important, since some women may be avoiding pregnancy because of fear. There are many options practitioners can apply in their practice for screening for fear of childbirth. Open-ended discussion with a patient may be the right choice for identifying those suffering from fear. Providers could also choose to use more than one tool or to develop their own protocols, tools, or questionnaires to bring up the topic of fear of childbirth. Some patients may be more likely to express fears through open questioning while others may feel more comfortable filling out a questionnaire.

TREATMENT, INTERVENTIONS, AND COUNSELING OF WOMEN WITH FEAR

Fear of childbirth is one of the most common and potentially detrimental problems women suffer from while pregnant. Rouhe and colleagues raised an interesting question when they asked just how much effort is spent in treating fear of childbirth compared to other problems related to pregnancy (Rouhe, et al., 2009). Caring for women with fear of childbirth who are contemplating CS can be a very difficult and sensitive situation. Saisto points out that compared to pregnant women in general, pregnant women with fear of childbirth need more education, obstetric guidance, and psychological support (Saisto, Salmela-Aro, et al., 2001a).

Although providers have several options when deciding how to proceed with caring for their patients with fear of childbirth, the issue of timing of care is less flexible and treatment or counseling should begin earlier rather than later. One study by Rouhe, that evaluated fear of childbirth in pregnancy in 1400 pregnant women, found that fear measured by the W-DEQ and VAS was significantly milder in early compared to late pregnancy. This study pointed out that
women are often referred to treatment for fear of childbirth too late and that there may be opportunity to better treat women if screening occurs earlier. Rouhe recommends screening for fear early in pregnancy and beginning treatment quickly in order to lessen the anxiety as soon as feasible, to avoid the worsening of fear, to avoid unnecessary CS, and to begin preparation for vaginal childbirth (Rouhe, et al., 2009).

**Referral Options for Treating Childbirth Fear.**

If a provider does not have the time to treat a patient in office or does not believe they have the adequate resources to properly do in-office counseling, they may choose is to refer their patients with mild fear of childbirth to attend special classes early in pregnancy with their families or partners. These classes should focus on birth education, giving psychological support to parents facing the stresses of childbirth and parenthood, and discussing the delivery (Saisto, Salmela-Aro, et al., 2001a).

Several investigations have evaluated specific treatment and counseling techniques used for women who suffer from fear of childbirth. Many of these successful treatment options involve counseling by trained mental-health providers such as psychologists and require the provider to refer patients for treatment. One Norwegian study evaluated 86 pregnant women with fear of childbirth who all requested a CS and were referred for counseling by a psychosocial team. These 86 women underwent counseling by a team consisting of a senior obstetric consultant and 2 experienced midwives with additional training in mental health. The goal of this counseling was to have all women attempt to give birth vaginally. The basis of the counseling technique of this study was when women are allowed to verbalize their problems, they are able to distinguish between their actual fear and the causes for their fear. The counseling approach was patient oriented and focused on firstly encouraging the women to have open expression of
their thoughts and concerns that were related to fear of birth. The counseling then focused on processing those concerns and giving the women information that could help correct their mistaken perceptions about pregnancy and birth. The mean number of consultations was 3.5 and the mean duration of total intervention was 5.1 hours (Nerum, et al., 2006).

In 74 cases (86%), women changed their minds about mode of delivery and prepared to have vaginal deliveries. All of the women previously determined to have moderate fear of childbirth changed their mind and decided to have vaginal deliveries and 79% of those with severe fear of birth changed their mind and decided to have vaginal deliveries. Follow-up questionnaires were sent to the women and 76% responded. In all, 98% of the respondents were satisfied with the counseling they received and all of the women who changed their original request for CS were happy with that decision and 93% who had vaginal deliveries would prefer a vaginal delivery in the future. The authors of this study concluded that when evaluating pregnant women with fear of childbirth it is not appropriate to allow them to decide to have a CS without first preceding with counseling. Counseling may allow women to realize potential underlying psychological issues. It was also concluded that many women who request to have a CS due to fear of childbirth do not want to be delivered by CS and would like to become mentally capable to deliver vaginally (Nerum, et al., 2006).

Another treatment option for women suffering from fear of childbirth utilized in a Finish study is group psychoeducation. Psychoeducation means giving information with a psychological understanding with the goal of teaching patients cognitive understanding and assisting behavior change. The goal is for the patient to understand and be better able to deal with the presented fear or illness and to reinforce the patient’s own strengths, resources and coping skills. Psychoeducation is appropriate for group settings and has been shown to be
effective when treating fear of flying and eating disorders. Additionally, group sessions led by therapists have been shown to be effective in treating fears (Saisto, et al., 2006).

This investigation performed at Helsinkis University Central Hospital in Finland was the first time group psychoeducation therapy was used to treat fear of childbirth. Previous studies have shown that relaxation exercises can help relieve fear of childbirth and aid in accelerating labor. Each session included performing and learning relaxation and visualization techniques, using audio discs that guided women through all stages of delivery in a relaxed state of mind while receiving positive suggestions. Women were also encouraged to use visualization by creating mental images related to childbirth (Saisto, et al., 2006).

This Finish study compared group psychoeducation treatment in 102 pregnant women who were experiencing severe fear of childbirth and had requested a CS to a similar group of women who received “conventional” treatment, which was treatment of fear of childbirth through 2 appointments with an obstetrician. The experimental group consisted of 17 groups of 6 primiparous women who met 2 hours per week for 5 weeks starting at the 31st gestational week. A psychologist who was qualified in psychodynamic therapy led the groups. Each session consisted of discussions of fear and feelings about the upcoming birth and parenthood in a therapeutic atmosphere, visualization exercises, and 45 minutes of relaxation exercises focused on imagined childbirth. The study theorized that discussing feelings of fear and insecurities, learning methods of coping with pain and receiving training in relaxation are imperative for alleviating anxiety related to childbirth. Each meeting had a different theme, one of which focused on pain relief, which is one of the most common fears women experience. At this session, a trained midwife described the course of labor and childbirth and educated the women about pain relief options (Saisto, et al., 2006).
Of the women who initially requested a CS in the experimental group, 86% of them chose vaginal deliveries after the intervention. Compared to the conventional treatment group, fewer women in the experimental group had CS due to fear of childbirth (12.7% vs. 22.4%).

After the study the women were asked to rate session usefulness. Women said that discussions with other mothers was the most helpful component, followed by support from the group, and third was receiving information (Saisto, et al., 2006).

There are many options providers have when deciding how to treat their patients suffering from fear of childbirth. These range from in office discussions and counseling, to referring to birthing and education classes or individual and group counseling with mental health specialists. Fear of childbirth is a complex issue that has many unique etiologies, risk factors, and consequences and therefore, it is a good idea for providers to treat each patient as an individual and utilize additional resources outside their office when necessary. Several investigations have shown that counseling can have beneficial impacts on women overcoming their fears and promote the choice of vaginal delivery.
DISCUSSION AND CONCLUSIONS

Statistics over the past several decades have established that the incidence of CS is increasing in the U.S. and around the world. Studies have shown that several factors and indications have contributed to this rising rate; one of which is CDMR. The incidence of CDMR is rising and coincides both with the increasing rate of CS and the increasing rate of fear of childbirth. Although the prevalence of CDMR is a popular topic that has been the focus of several U.S. obstetric and national health conferences, U.S. research is lacking compared to other countries in regards to why women are choosing CS and with regard to the causes, evaluations, and treatments for fear of childbirth. Further U.S. investigations evaluating CDMR and its relation to fear of childbirth would be interesting and helpful in understanding the reason why women are now requesting CS more than in the past. Is it because in today's society people are more in charge of their health care and are offered more autonomy than in the past? Are patients really aware of the logistics of both vaginal and CS births, and the risks and benefits that both entail? Are providers taking the time to have prenatal discussions that may help alleviate patient fears through education about childbirth and discussing available options?

Compared to elective vaginal deliveries, ECS lead to more negative consequences for the health of both mothers and newborns. The U.S. seems to have realized these significant consequences and have set goals to lower the CS rate. The goal of lowering the CS rate to 15% in 2010 was not met and therefore it seems the U.S. has additional work to do in evaluating methods and techniques to lower the CS rate. Compared to other indications for CS such as maternal-fetal indications, malpresentation of baby, and other obstetric indications that are less modifiable and have been shown in studies to have not significantly increased over time, CDMR has increased over recent years and is more modifiable with treatment then other indications. For
those reasons, CDMR may be the proper CS indication to target first when addressing the goal of lowering the CS rate.

Fear of childbirth is increasing and is the foremost reason women request CS. Fear of childbirth in itself is a very difficult crisis for women to experience and therefore should be addressed even without regard to CS rates. Fear of childbirth has negative effects on women during their pregnancy, during the delivery, and after the delivery. As discussed previously, women have aborted wanted pregnancies and undergone sterilization procedures because they are frightened to undergo a vaginal delivery. Post-partum effects of fear include maternal depression and decreased bonding between mother and baby. With all these complications and difficulties known to be associated with fear of childbirth, the question arises as to why fear of childbirth is not treated as seriously in the U.S. as other prenatal problems like gestational diabetes or preeclampsia. Is fear of childbirth identified by providers as an actual pregnancy disease? How much time, effort, and resources are spent on addressing and treating fear of childbirth compared to other pregnancy complications?

The question arises that if the U.S is known as one of the paramount countries that provides comprehensive and exceptional healthcare, why has there not been more research and development of management protocols set in place to recognize and treat women suffering from fear of childbirth?

For women suffering from fear of childbirth the right time to address these issues or prevent them from occurring may be before a woman is even pregnant. The literature has revealed that many underlying psychological issues and illnesses like depression, anxiety, panic disorders, eating disturbances, PTSD, and low self-esteem are correlated with fear of childbirth and women with these psychological illnesses are more likely to have fear of childbirth in their
futures. Perhaps the treatment of mental and psychological health problems is not being addressed or treated adequately or early enough and women suffering from these illnesses go unrecognized and untreated and because of that develop fear of childbirth when they become pregnant. If the U.S. and the world were more aggressive with the screening and treatment mental and psychological illnesses, would the rate of fear of childbirth and CDMR decrease?

It seems the social changes of society have also influenced the increased rate of fear of childbirth. Inadequate support from a partner or not living with a partner puts a woman at risk for enduring fear of childbirth. In today’s society, it is not unusual for a woman to become pregnant without a spouse or partner involved in her life. Medicine may need to make a change and help women receive necessary additional support.

Objects of women’s fears regarding vaginal childbirth include: fears regarding the vaginal birthing process, fears about the health consequences on the fetus, anxieties about the obstetric staff failing to keep the mothers autonomy and wishes, and expectant mothers not feeling strong enough emotionally or physically to endure labor. All of these objects of fear can be addressed by providing prenatal education about the process of labor, pain relief, and obstetrical staff roles, and discussing with the expectant mother the rarity of neonatal fatalities and problems associated with vaginal delivery. In addition, sitting down with a patient and assisting her in instilling confidence in her own body, mind, and abilities through discussions and counseling can help overcome these obstacles and fears. The fact that first time mothers are more often afraid of vaginal childbirth compared to multiparous mothers reiterates that fear can stem from lack of knowledge and experience. Overall, prenatal education provided by health care professionals may be the most important key in relieving fears and reducing overall incidence of fear of childbirth and CDMR.
Research has shown that both screening and initiating treatment for fear of childbirth is more beneficial if done early in pregnancy. A proper time to have an open discussion or utilize a fear of childbirth questionnaire is at expectant mothers’ initial visits, as often more time is allotted at these visits. It would also be appropriate to ask questions about concerns with childbirth in women of childbearing age who may be considering conception. A key component to keep in mind when asking about fear of childbirth is to be open and non-judgmental so the patient can feel comfortable with revealing their true feelings. A provider should evaluate each patient individually and decide which patients would respond better to an open discussion compared to a questionnaire. Questionnaires are useful in patients who are more likely to open up through a questionnaire; they should not be used just for the indication of saving the provider time by avoiding the discussion.

When deciding which treatment option to use in patients with fear of childbirth, a provider should keep in mind the individual patient's preferences and personality, the severity of the patient's fear, any underlying medical or mental conditions the patient may have, and their own knowledge, abilities, resources, and time constraints. All of these factors and patient preference should be considered by the provider when deciding between providing in office treatment and counseling or referring the patient to outside treatment, which may include group counseling or treatment by a specialist in mental health and fear of childbirth. Several studies have shown that women who are referred to specialized counseling do very well and overcome their fears. The idea of referring to other providers reiterates the beneficial effects of a team approach in healthcare.
References


Abstract

Objective. This review of international research will help clinicians recognize and treat patients who have childbirth fear, a contributing cause to the high cesarean section rate in the U.S. in hopes of lowering that rate. Methods. A review of the literature was performed using PubMed, Medline, and Science Citation Index. Search terms included "(elective) cesarean section", "cesarean section on maternal request", "vaginal versus cesarean","fear of childbirth", "screening for/treatment for fear of childbirth". Results. Cesarean sections engender many risks to mothers and newborns and the current rate of cesarean sections is high. Psychological, social and demographic characteristics put women at risk for suffering from childbirth fear, and lead to request for cesarean delivery. Screening for childbirth fear can be done using simple tools, and counseling women suffering from fear can decrease the fear and reduce cesarean rates.

Conclusion. There is a benefit to screening for and treating fear of childbirth.