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Sexual Activity during Pregnancy in Childbirth and after Childbirth

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Additional information is available at the end of the chapter

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1. Introduction

According to the World Health Organization (WHO) [1] sexual health is a complex biological and sociological concept that requires a positive and responsible approach to sexuality and sexual relationships. It cannot be merely defined as the absence of sexual dysfunction. Sexual health can be greatly altered during pregnancy, birth and the postpartum period.

This chapter discusses selected important issues in sexual health during pregnancy, birth and the postpartum period. Pregnancy is a period where many physical and psychological changes occur. Such changes influence couples' lives in many ways, and their sexual life changes. Healthy sexuality during pregnancy appears to be a key stage in the evolution of a couple towards becoming parents. Sexual activity is reported to decrease throughout pregnancy, and the prevalence of reduced sexual interest and enjoyment in this period is over 60% [2]. Decreased sexual activity may be attributable to nausea, fear of miscarriage, fear of harming the foetus, lack of interest, discomfort, physical awkwardness, and fear of membrane rupture, fear of infection or fatigue or others [3].

Sexual activity is known to have an effect on the spontaneous onset of labour. This effect is thought to be due to the presence of prostaglandin E in human semen, which matures the cervix and initiates uterine contractions; the female orgasm with the liberation of oxytocin, which is responsible for uterine contractions; and breast stimulation, which initiates the oxytocin release reflex [3]. Although the effect of sexual activity in reducing the risk of prolonged pregnancies has been well documented, less is known concerning its potential consequences on the prognosis of labour [3]. Many pregnant women (and some physicians) believe that sexual intercourse at term will have an impact on the onset of labour. However, recent studies show that sexual intercourse at term is not associated with ripening of the cervix and does not hasten labour [4].

Postpartum sexual function is influenced by the many significant changes in anatomy, hormonal milieu, family structure, and partner relationships that accompany childbirth [5], yet women's experiences of postpartum sexuality have rarely been explored beyond physical dimensions and focus mostly on issues related to pregnancy, vaginal trauma and breastfeeding [6].

Despite the lack of large well designed studies on the discussed topic, the evidence available so far shows that pregnancy, childbirth and the postpartum period determine a relevant, even if reversible, negative effect on sexuality. Sexual health during pregnancy, birth and the postpartum period is increasingly being recognized as an important component of women's lives and an important area of maternity service provision, and therefore deserves our greater attention.

2. Sexual activity during pregnancy

Pregnancy is a period where many physical and psychological changes occur. Such changes influence couples' lives in many ways. Hormonal, physical and social changes commonly impact on women's physical wellbeing, mood, relationships and sexuality.

Sexual activity is reported to decrease throughout pregnancy, and the prevalence of reduced sexual interest and enjoyment in this period could be over 50% [2, 3]. Changes in the sexual life of a pregnant couple usually come gradually. Meta-analysis from von Sydow [7] and a study from Pauleta et al. [8] both demonstrated that sexuality does not significantly change in the first trimester and is slightly altered in the second trimester of pregnancy; however, the third trimester of pregnancy showed more than a 50% decrease in sexual activity [8] compared with prepregnancy states.

Decreasing sexual activity during pregnancy may be attributable to nausea, fear of miscarriage, fear of harming the foetus, lack of interest, discomfort, physical awkwardness, and fear of membrane rupture, fear of infection or fatigue or other factors which will be presented in the next subchapters.

What researchers have noticed is that sexual life during pregnancy is rarely discussed between pregnant couples and their midwives or doctors, although most women feel it should be discussed and wish to receive more information about it [9].

2.1. Social, cultural factors and norms, fears and myths

Social and cultural factors and related myths can influence the sexual life of a pregnant couple. Demographic factors such as education level, full time employment, and duration of marriage and ethnic group have been reported to influence sexual function during pregnancy [9, 10, 11]. Tosun Güleröğlü and Gördeles Beşer [10] wanted to evaluate sexual functions of pregnant women and to determine the factors that negatively affect their sexual health, determining that the sexual lives of the pregnant women were negatively affected by factors such as old age, low educational status, and arranged marriages lasting for more than ten years. They gathered data using a personal information form and the Female Sexual Function Index (FSFI)¹ from

over 300 participants, and also found out that 88.9% of their participants had sexual desire disorders, 86.9% had sexual arousal disorder, 42.8% had lubrication disorders, 69.6% had orgasm disorders, and 48% had sexual satisfaction disorders. Chang et al. [11] wanted to examine overall sexual function in Taiwanese women during the three trimesters of pregnancy and discovered that full time work has a significant negative effect on overall sexual function and on engagement in sexual activity during the second trimester of pregnancy.

There are numerous different sexual practices during pregnancy based on cultural factors, myths and norms, usually depending on where the couple comes from. A study by Naim and Bhutto [12] in Pakistani women revealed a decline in sexual function during pregnancy due to the belief that sexual intercourse might harm the baby, induce preterm labour and even cause abortion. Adinma [13] investigated the sexual behaviour and beliefs of 440 pregnant women from southeastern Nigeria. The mean frequency of sexual intercourse during pregnancy (1.5 times per week) was less than that before pregnancy (2.3 times per week). The husband was the main initiator of sexual activity (41.6%), while the wife was only rarely (2.7%). A total of 44.3% of the respondents believed that sexual intercourse during pregnancy widens the vagina and facilitates labour; 30.2% believed that it caused abortion in early pregnancy while 21.1% had no knowledge of any repercussions of sexual intercourse in pregnancy. In contrast to the previous mentioned study, 34.8% of women in Nigeria believed that sexual intercourse during pregnancy improves foetal wellbeing. A study among Iranian women [14] revealed their fear about sexual activity during pregnancy because of the possibility of causing rupture of the hymen of the female foetus or possible foetal blindness. They also believed sexual intercourse might be an act of adultery while carrying a female foetus. A study conducted later in the Iranian population [15] revealed that the prevalence of sexual dysfunction is high during pregnancy and reaches higher levels in the third trimester. The authors concluded that pregnant women and their partners in Iran need counselling about physical and psychological changes in pregnancy. However, teaching about harming the foetus through sexual intercourse during pregnancy is not uncommon. In China, for example, a prospective cross-sectional study [16] revealed that Chinese pregnant women had less sexual activity and desire during pregnancy. A total of 80% of 298 participants and their partners worried about the adverse effects of sexual activity on the foetus. Similarly in Taiwan a study performed by Liu, Hsu and Chen [17] explored changes in sexual experiences in pregnancy in order to identify the decrease of coital frequency in Taiwan. The majority of their subjects stopped engaging in sexual activity during pregnancy, one reason for which being the fear of harming the foetus.

Contrasting results and perceptions about having sex in pregnancy come, for example, from Poland. According to the study by Malewitz [18], sexuality in pregnancy to Polish couples means quite a stimulus to search for new ways of pleasing each other in love play. Their research makes it evident that experiencing sexual satisfaction by pregnant women improves their self-esteem, facilitates mutual relationship between partners and tightens the marital bond [18].

1 FSFI is a multidimensional instrument developed by Rosen et al. in the United States in 2000 in order to assess female sexual functions (6).

Regardless of the social or cultural background of a pregnant couple, their positive or their negative perceptions about sexuality in pregnancy have an influence on their sexual behaviour in this fragile time of their life.

2.2. Biomedical, psychological and relationship factors

Sexuality and problems during the transition to parenthood are influenced by a complex interplay of biomedical, psychological and relationship factors, claims von Sydow [7]. In pregnancy, female hormonal function as well as physical and psychological changes may provoke and promote decline in sexual activities.

Hormonal changes (increased oestrogen, progesterone, and prolactin) cause nausea and breast tenderness, which together with fatigue, weakness, exhaustion and anxiety can reduce sexual desire and arousal or in other ways determine the difficulty of sexual life [19]. Relaxin, for example, causes epithelia cells in the vagina to enlarge and vaginal circumference lumen to increase, and this subsequently might cause a decrease in vaginal sensitivity [20]. Recent studies also suggest that hormones cause symptoms of diminished clitoral sensation, orgasmic disorders that may last up to six months postpartum and lack of libido [21]. Some authors [22-24] correlate diminished sexual desire with sex hormone alterations, but there are no valid studies so far to prove their major impact on women's sexuality during pregnancy [21]. To be exact, in pregnancy serum androgen levels have the highest levels in the beginning of pregnancy and then they fall in the third trimester, which should theoretically lead to a decrease in sexual desire. However, this was explored by Erol et al. [25] in a cross-sectional study where no significant correlation was found. Thorne and Stuckey [26] think that if lower sexual desire towards the end of pregnancy is hormone-related, the most likely explanation is that high progesterone, as seen in the experimental evidence with exogenous hormones, negatively influences sexual behaviour, rather than decreased androgen levels. Although men may not experience the hormonal changes that occur within their partners' bodies, they often have emotional and visceral reactions to the pregnancy [27].

Morning sickness and fatigue are one of the most common problems and reasons for loss of sexual desire during pregnancy. Even though weight gain is one of the normal processes in pregnancy, it has been suggested that worry about gaining fat and physical appearance is still a prominent preoccupation during pregnancy [19]. Kitzinger [28] is convinced that the nausea and vomiting many women experience during the first trimester may diminish their feelings of eroticism, and fatigue may lead to insufficient energy to participate or enjoy in sexual intercourse. There are also other physical changes, and we can only speculate as to the extent to which they influence or alter couples' sexuality. In the first trimester breasts may become quite tender and enlarged. Kitzinger [28] notes that while a male partner may find larger breasts exciting, the female partner may find any breast or nipple stimulation to be painful rather than erotic. Some investigators notice in their research an increase in frequency and responsiveness during the second trimester of pregnancy, possibly related to pelvic congestion at that time [29]. This pelvic congestion may lead to a marked increase in the intensity of a woman's orgasm. Many women who never have experienced orgasm during intercourse have

their first orgasms during this time; women who previously have been orgasmic may have the experience of multiple orgasms [30].

Sexual pain disorders, including vaginismus and dyspareunia, are quite prevalent in pregnancy. Results suggest that about half of women may develop genito-pelvic pain during pregnancy, which will persist for about a third, and a subset will develop this pain after childbirth [31].

Studies have shown that pregnancy involves anatomic changes to the lower genitourinary tract and pelvic floor that may result in urinary incontinence [32]. In a retrospective study of women in the general population, urinary incontinence had negative effects on sexual function, but no significant correlation between urinary symptoms and sexual function in pregnancy has so far been found [27]. However, by the third trimester physical changes of pregnancy also become obvious on the outside, and women might feel less attractive due to their increased size. Lewis [27] noticed that some couples feel as if a third person is in bed during lovemaking, which can be distracting. Foetal movements, and Braxton-Hicks contractions may serve to diminish feelings of intimacy, and the woman's increasingly large abdomen may make usual sexual practices uncomfortable or difficult [27].

Johnsson [21] says that sexual difficulties during pregnancy might be psychological in origin, occurring as an emotional response to the changed state of the woman. Naki Radoš et al. [33] examined the role of maternal body image and body image self-consciousness in sexual satisfaction and intercourse frequency during pregnancy when controlling for satisfaction with the partnership. The findings suggested that satisfaction with body image and body image self-consciousness were related to sexual satisfaction. Nevertheless, other aspects of partnership, such as communication, appeared to be much more important predictors of sexual satisfaction than body image variables [33]. There are also many other psychogenic factors that might affect women's sexual desire; besides the already mentioned fear about harming the foetus, anxiety of delivery or capability of being a good mother could also cause distress [25].

There is limited research about the psychological benefits of sexuality in pregnancy, but at least meta-analysis from von Sydow [7] has found that sexual enjoyment during pregnancy is associated with higher relationship stability, tenderness and communication at four months and three years postpartum.

2.3. Those who are at risk

There is limited evidence in advising pregnant women at risk on sexual activity. Most common risks to sexual intercourse during pregnancy are listed in Table 1.

Johnsson [21] talks about absolute and relative contraindications to sexual intercourse during pregnancy. According to her, absolute contraindications include unexplained vaginal bleeding, placenta praevia, premature dilatation of cervix and premature rupture of membranes, and relative contraindications include a history of premature delivery and multiple gestation. These indications have not been validated with the study. The author of this chapter, however, thinks it is better to talk about risk instead of contraindications. In the case of placenta praevia, for example, it has been advised not to do an examination of the cervix [34], and it has also

been theorized that penile contact during intercourse could result in a similar risk of haemorrhage [35]. A study by Timor-Tritch and Yunis [36] evaluated the safety of transvaginal ultrasonography in the diagnosis of placenta praevia, by determining whether the angle between the cervix and the vaginal probe is sufficient for alignment of the probe with the cervix. In 18 cases of placenta praevia, their findings showed that the angle between the cervix and vaginal probe is sufficient to prevent the probe from inadvertently slipping into the cervix. Although the study used a small number of participants, researchers claim that their study supports the safety of transvaginal sonography in diagnosing and monitoring patients with known placenta praevia. There are no studies of alignment of penile contact with the cervix during intercourse, so we cannot, based on the Timor-Tritch and Yunis [36] study, definitely claim that some women with placenta praevia might have or not have sexual intercourse during pregnancy. Although doctors think it is the best way for women to advice to abstain from sexual intercourse [35] we should consider every case separately and evaluate how much are they at risk rather than say that sexual intercourse is contraindicated for every women with placenta praevia.

Serious risks:
<ul style="list-style-type: none"> • unexplained vaginal bleeding. • placenta praevia. • premature dilatation of cervix. • premature rupture of membranes.
Increased risks:
<ul style="list-style-type: none"> • history of premature delivery. • multiple gestation. • repetitive bacterial vaginosis.

Table 1. Most common risks to sexual intercourse during pregnancy

There is a common misconception that pregnant woman are not at risk for developing pelvic inflammatory disease (PID) due to a mucus plug in their cervix and obliteration in the uterine cavity due to decidua capsularis and parietalis. Theoretically they are at increased risk of getting the infection [35], but when they get ill they are at greater risk due to a possible delay in treatment, which could be a hazard to pregnant women or their unborn children. There are several case reports and studies that prove that PID and pregnancy can coexist [37-40], and that treatment is much more complicated. In addition, there are also studies that have found a link between bacterial vaginosis and cervicitis, endometriosis and salpingitis [41]. Special attention should be paid when advising about sexuality to pregnant women with repetitive bacterial vaginosis, and women with no symptoms or evidence of lower genital tract infection should be reassured that sexual activity in pregnancy does not increase the risk of preterm delivery.

Although some people consider twin or higher multiple gestation pregnancies at serious risk of preterm labour as a result of sexual activity, none of the studies confirmed that. Neilson and

Mutanbira [42] studied the effect of coitus on the precipitation of preterm labour in 126 women with twin pregnancies. The data indicate that coitus is not an important precipitant of preterm labour and that coitus need not be discouraged in women with twin pregnancies. Similar Stammler-Safar et al. [43] wanted to evaluate changes in sexual activity in women with twin pregnancies and whether a higher frequency of sexual intercourse was associated with an increased risk of pregnancy complications. Their results demonstrate a decrease in the frequency of sexual intercourse, and they found no association between sexual activity and preterm delivery.

Substantial evidence about the safety of having sexual intercourse during pregnancy in those women who are at greater risk is missing. A woman's risk of an adverse pregnancy outcome as a result of sexual intercourse should be considered separately for each individual.

2.4. Counselling

Healthy sexuality appears to be a key stage in the transition of a couple to a family [21, 44]. Problems in sexual functioning during this stage may be amplified during this period of profound physical, emotional and psychological changes [21]. Polomeno [45] discovered that the way in which a couple deals with this sensitive period could also impact on the labour and birth. However, this area needs further investigation.

A pregnant woman may come for the first time to the antenatal clinic anytime between the first and last trimester, and she may or may not return to the clinic before birth. It is imperative, therefore, to make the most of her first visit [46]. Sometimes couples are not aware of alterations in sexual functioning in pregnancy and might be frightened or having a hard time adapting to changes. Many studies exploring sexual functions of pregnant women [9-18] identified that couples do not receive adequate (if any) information about changes in their sexual functioning. Women or couples are also not always comfortable in raising sexual concerns [21]. Therefore, it is extremely important for a healthcare provider to demonstrate good counselling skills, and specific behaviours that improve communication and/or make the client feel comfortable include [46]:

- Introducing oneself before proceeding with the interviews.
- Asking permission to talk about personal or sensitive issues.
- Asking open-ended questions using simple words.
- Encouraging clients to ask questions.
- Treating clients with respect.
- Seeing clients in private.
- Assuring the client's confidentiality.

Discussing sexuality in pregnancy with the healthcare provider is well within the scope of a routine consultation. If healthcare providers are comfortable discussing sexuality and intimacy they might also help the client to feel safe to disclose other relationship issues [47]. However,

patients may have difficulty talking to healthcare providers about sexuality and sexual health in pregnancy. Most people are not used to discussing sexual matters openly.

When a woman comes to her first antenatal check-up, at history-taking there are, according to Johnsson [21], several points to consider beside regular pregnancy-related issues: assessment of the relationships (sexual and otherwise), patient support network, whether the pregnancy was planned, previous outcomes of pregnancies, previous deliveries, current health, contraception (past and future), etc. Taking a patient's sexual history can facilitate a discussion on sexuality and sexual health and need not take an inordinate amount of time. Kinsberg [48] proposes the following scheme to initiate discussion of sexual issues:

- Are you or your partner having any sexual difficulties at this time?
- Are you satisfied with your current sexual relationship?
- Do you have any sexual concerns you would like to discuss?

If a patient's answers suggest that she wants to discuss sexual issues, the following questions might be productive:

- Tell me about your sexual history— first sexual experiences, masturbation, how many partners you've had, any sexually transmitted infections or sexual problems you've had, and any past sexual abuse or trauma.
- How often do you engage in sexual activity?
- What kinds of sexual activities do you engage in?
- Do you have difficulty with desire, arousal, or orgasm?

The answers to this question should give us an orientation to incorporate targeted counselling on expected changes in sexual health related to pregnancy. To facilitate effective communication with patients on sexuality and sexual health, providers should [46]:

- Promote sexual health in clinical practice environments.
- Provide patients with current information regarding sexual health.
- Acknowledge their patients' feelings, attitudes, and norms that may be obstacles to individual sexual health and use this information to help patients establish realistic goals.
- Assist patients with the development of skills they may need to achieve personal goals for sexual health (e.g., communication, negotiation, and planning strategies).
- Participate in continuing education activities focused on sexual health.
- Be aware and respectful of their patients' sexual values and lifestyles.
- Understand how values of the healthcare provider or the clinical setting may influence practices and take care to provide unbiased and comprehensive care.

Johnsson [21] is convinced that healthcare providers should reinforce the normal reduction in the frequency of sexual intercourse as well as libido, sexual desire and orgasm that commonly

occur particularly until the end of the pregnancy; however, what is normal to one couple might not be normal for the other, so each case should be considered separately. It is also essential that couples know that having sexual intercourse during pregnancy is usually safe and is not harming their unborn child. Healthcare providers should also discuss other options for the expression of intimacy with couples, such as different forms of non-coital contact that could also be pleasant and satisfying for both partners.

During the following visits the healthcare provider should ask for any new things that might emerge and give advice on problems that might arise. There is a strong evidence-based argument in favour of discussing sex and relationships at every opportunity, and maternity care providers must have access to resources to provide sexual education and support, within ethical boundaries [48].

Key points:

- Sex is generally considered safe in pregnancy.
 - During the last weeks of pregnancy female sexuality is universally low or non-existent [7].
 - There is limited evidence of advising pregnant women at risk on sexual activity.
 - In every other phase of the transition to parenthood female sexuality is very variable depending on perspective mother physical and mental health, her sexual or nonsexual history, relationship of the couple and her life circumstances [7].
 - Healthy women and their partners can stay sexually active during the entire pregnancy; however, sexual activity needs to be discouraged if certain problems occur [7].
 - Discussion of sexuality in pregnancy with a healthcare provider is essential for every pregnant couple and should be part of routine practice for those who are providing maternity care.
-

3. Sexual intercourse and/at the onset of labour, review of evidence

Many women believe that sexual intercourse at term will hasten the onset of labour. Shaffir [5] reports a study where over 73% of pregnant women knew about this concept and 46.1% believed it to be true. It is very common also for midwives and doctors to suggest sexual intercourse or love making as a means to ripen the cervix and induce labour. Even Varney's Midwifery [49], a professional midwifery text, and May Gaskin's books [50-52] as lay midwifery reading include sexual intercourse as a method for the onset of labour. But Myles textbook for midwives [53] as another important professional midwifery book says: '... insufficient data are available...' (p. 540).

It has been speculated that nipple stimulation, clitoral stimulation and uterine activity provoked by orgasm may aid initiation and augmentation in labour. The production of oxytocin and prostaglandins as a result of both is thought to provide that physiological basis [53]. Toth et al. [54], in their study, measured cervical mucus concentrations of prostaglandins E (PGE) and F (PGF) in 30 pregnant women during their entire pregnancy. During the first and second trimester, the concentrations of PGE and PGF were similar, but during the third

trimester PGF levels were ten to 20 times higher. Two to four hours after intercourse, prostaglandin concentrations in the cervical mucus were found to be about ten to 50 times higher than normal. Researchers thought that the prostaglandins in cervical mucus might participate in the gradual changes in the extracellular matrix of the cervix that result in the extensive remodelling of the cervix during pregnancy [54]. F and E series prostaglandins play an important role in ripening the cervix and contribute to the contractility of the uterus, are produced by the cervix, are known to be produced by the foetal membranes and the decidua, and are detectable in liquor in increasing quantities before term [53]. F and E series prostaglandins result in uterine contractions, E series prostaglandins are relatively more uteroselective and are clearly superior to F series prostaglandins in producing cervical ripening [55]. Increased prostaglandin concentrations in the Toth et al. [54] study could be due to the presence of semen, which contains prostaglandin. In fact, the richest source of prostaglandins in humans are indeed seminal vesicles [56]. Therefore, there is a biological plausibility regarding the effect of sexual intercourse on the onset of labour from this point of view. However, when Shaffir [5] conducted a study where he wanted to determine the effect of sexual intercourse on cervical status he did not find a significant association. He used a weekly Bishop score as a method of evaluation of the cervix and found no significant difference in scores in those women who had sexual intercourse and those who did not.

A Brustman et al. study [57] investigated changes in the pattern of uterine contractility before, between and after sexual intercourse. The study population consisted of 30 pregnant subjects. In group 1 were 15 women treated for an episode of preterm labour with intravenous and oral tocolysis in this pregnancy, and in group 2 were low-risk volunteers. Using home uterine tocodynamometric systems they monitored uterine contractility for three 60-minute time periods related to coitus. A significant increase in uterine contractility in the immediate postcoital period was observed for the high-risk women, but not for the controls. This increased uterine activity subsided spontaneously within two to three hours, returning to baseline. A small-scale experimental study of three normal gravid women between 28 and 38 weeks of pregnancy was performed by Chayen et al. [58] where they measured uterine contractility and foetal heart rate during sexual intercourse. Baseline traces were obtained 20 minutes before coitus. Increased uterine activity and a variety of foetal heart changes were seen in most (four out of 13 recordings) instances immediately following orgasm.

There are a variety of studies that have aimed to find the connection between coitus and onset of labour, but most of them found no association. Perhaps one of the largest scale studies on the effect of sexual intercourse on labour was done by Mills et al. [59] in this study, data on 10 981 singleton, low-risk pregnancies were examined. The mothers were asked at time of delivery if there were any months when they did not have sexual intercourse during pregnancy. Pregnancy outcomes were determined by medical record review. Those having intercourse showed no increased risk of premature rupture of membranes, low birthweight or perinatal death at any gestational age. Women abstaining from intercourse had more unfavourable outcomes in the seventh and eighth months, but these differences were almost eliminated by adjustment for maternal age. Preterm delivery was no more frequent in those having intercourse than in those abstaining. Chiong Tan et al. [60] wanted to determine coital

incidence at term and to estimate its effect on labour onset and mode of delivery. They analysed 200 healthy women with uncomplicated pregnancies who kept a diary of coital activity from 36 weeks of gestation until birth and answered a short questionnaire. Reported sexual intercourse at term was influenced by a woman's perception of coital safety, her ethnicity, and her partner's age. Coitus at term had no significant effect on operative delivery. Reported sexual intercourse at term was associated with earlier onset of labour and reduced requirement for labour induction at 41 weeks. A year later, Chiong Tan et al. [61] estimated the effect of coitus on the onset of labour. A total of 102 women with a non-urgent labour induction at term were recruited. Women randomly assigned to the advised-coitus group were encouraged to have sex to promote the onset of labour. The control group was neither encouraged nor discouraged regarding coitus. Participants kept a coital and orgasm diary until delivery, and standard obstetric care was provided to both groups. Primary outcomes were reported for coitus and spontaneous labour. Secondary outcomes included reported orgasms, initial Bishop score at the admission for induction, preterm rupture of membranes, use of dinoprostone, oxytocin, or epidural, meconium-stained amniotic fluid, caesarean delivery, maternal fever, and neonatal morbidity. Spontaneous labour rate was no different [55.6% compared with 52.0%]. Caesarean delivery rate and neonatal and other secondary outcomes were also not different. Among women scheduled for labour induction who were advised to have sex, the increase in sexual activity did not increase the rate of spontaneous labour. In 2009 Chiong Tan et al. [62] tried to evaluate the relationship of reported coitus and orgasm with spontaneous labour at term. Women at term scheduled for non-urgent labour induction were asked to keep a coitus and orgasm diary. These women were recruited for a randomized trial on the effect of coitus to promote spontaneous labour as mentioned above. Women who reported coitus were less likely to go into spontaneous labour prior to their scheduled labour induction. Reported coitus and orgasm were not associated with adverse pregnancy outcomes.

Premature rupture of membranes (PROM) as a possible adverse pregnancy outcome due to coitus was also researched. Ekwo et al. [63] tested the hypothesis that during late pregnancy sexual behaviours including sexual positioning related to the occurrence of premature rupture of membranes. They included women aged 15 to 45 years having preterm premature rupture of membranes, term premature rupture of membranes, or preterm delivery without premature rupture of membranes and were matched singly by age, race, and parity to control women who delivered term infants. Information about six sexual activities, obstetric history, cervical infections, smoking during pregnancy, and sociodemographic information was obtained by interview. Their results showed that only the male superior position was significantly associated with preterm premature rupture of membranes and preterm delivery without premature rupture of membranes after confounding variables were controlled for. No sexual positioning or sexual activities related significantly to term premature rupture of membranes. Oboro et al. [64] researched the possibility of sexual activity causing the PROM in Nigeria. They studied 97 consecutive patients [194 including control group without PROM) with a singleton normal pregnancy who had spontaneous prelabour rupture of foetal membranes. All patients were between 20 and 40 years of age, and at not less than 28 weeks of gestation at delivery. After delivery, a self-administered questionnaire with 17 items was offered to the women. Their findings did not show greater sexual activity in patients who had PROM. Coital

frequency decreased progressively towards the end of pregnancy and was similar in both groups. There were no significant differences in the frequency of orgasmic coitus between the two groups. As seen so far, no study confirming sexual activity is associated with premature rupture of membranes.

Nipple stimulation has also been researched as a method of natural inducing labour. It has been reported to encourage cervical ripening, with an increase in the number of women spontaneously starting in labour [65, 66]. The stimulation was, for the purpose of the study, used three hours per day for three days, and this is barely considered to be natural.

There seems to be no scientifically proven natural sexual methods of induction of labour. However, a quest to find them still exists, probably because medical methods of induction are invasive, require hospitalization and include vaginally administered prostaglandins or amniotomy with or without intravenous oxytocin administration. Besides this, they are too often used without any strong medical justification.

Key points:

- Sex is generally considered safe late in pregnancy, at term.
 - F and E series prostaglandins play an important role in ripening the cervix and contribute to contractibility of the uterus.
 - Increased uterine activity and a variety of foetal heart changes were observed immediately following maternal orgasm.
 - Sexual activity at term is not associated with increased risk of premature rupture of membranes.
 - Sexual activity at term is not associated with increased risk of premature birth.
-

4. Sexual activity after childbirth

The first months after birth can have a great impact on women's sexual lives [21]. Postpartum sexual functioning is influenced by many factors, by significant anatomical changes, hormonal milieu, by the relationship between the partners, the way the family and support is structured and many other things. Sexual health after birth in the past did not receive enough attention from healthcare providers, but recent literature provides emerging attention to this aspect of postpartum care [67]. It is almost impossible to say what optimal sexual function after birth is. Connolly et al. [68] based on the results of their longitudinal prospective study, claim that within three months of birth 80-93% of women resume sexual intercourse, with sexual problems dissolving typically within one year postpartum. Luire et al. [69] speak of three mechanisms which may contribute to sexual dysfunction afterbirth: dyspareunia, birth canal injury and overall general health of mother. Much more precisely von Sydow [7] divides factors associated with decreased sexual interest, activity and enjoyment and increased sexual problems during postpartum (see Table 2). She sees possible sexual dysfunction as a complex interplay by biomedical, psychosocial, couple/relationship factors as well as attributes of the baby and mother-child relationship.

Biomedical factors:

- Degree of perineal birth trauma.
- Assisted vaginal delivery.
- Tiredness.
- Kegel exercise not performed.
- No reliable method of contraception.

Psychosocial factors:

- Mental symptoms (depressed mood, emotional lability).
- Prepregnancy sexual history and sexual symptoms.
- Poor childhood relationship with father.

Couple relationship factors:

- Low relationship satisfaction.

Attributes of the baby and mother-child relationship:

- Male babies: mothers of boys are perceived less tender by their partners as mother of girls.
 - Mothers with rigid and overprotective relationship to their baby.
 - Breastfeeding.
-

Table 2. Factors associated with sexual dysfunction [7]

Postpartum sexual dysfunction (including dyspareunia) is identified in 41-83% of women at two to three months postpartum [70]. Leeman [70] describes that sexual dysfunction can be primary, indicating lifelong dysfunction, or secondary, indicating a change in function. Although many women are reporting more than one sexual disorder at a time, most common is lack of desire or sexual interest [70].

4.1. Physical changes associated with birth

Physical changes associated with birth and postpartum may influence a woman's sexuality. Following normal spontaneous delivery the vagina is wider and can be bruised and swollen [53]. The hormonal milieu causes the vaginal wall to lubricate poorly. This usually causes vaginal soreness during intercourse [71]. This is caused by lower levels of oestrogen. For breastfeeding mothers, levels of oestrogen are lower than in those who are not breastfeeding, and the dryness can be more marked. Experiencing discomfort with sexual intercourse is likely to discourage women from desiring sexual intercourse on subsequent occasions and reduce their sexual satisfaction [72].

Perineal or genital tract trauma is associated with postpartum dyspareunia. The research about whether this perineal trauma negatively impacts on sexual health after childbirth carries confounded results due to a variety of factors such as a postpartum timeframe, elective versus restrictive episiotomy and suturing or not suturing [73]. Compared to women who had normal spontaneous deliveries, women with episiotomies complained of increased perineal pain, decreased sexual satisfaction and a delay in restoring sexuality after birth [74-77]. Rathfish et

al. [78] report that women who had episiotomy or second degree tear had lower levels of arousal, orgasm and sexual satisfaction and dyspareunia at three months postpartum, compared to women with an intact perineum. Leeman et al. [79] compared the postpartum pelvic floor function of women with sutured second-degree perineal lacerations, unsutured second-degree perineal lacerations, and an intact perineum. At 12 weeks postpartum, no differences were noted between groups regarding complaints of urinary or anal incontinence, sexual inactivity, or sexual function. However, in the same study Rodgers et al. [80] assessed sexual function at three months postpartum in women with genital trauma at birth. Trauma was categorized into minor trauma (no trauma or first-degree perineal or other trauma that was not sutured) or major trauma (second-, third-, or fourth-degree lacerations or any trauma that required suturing). Women who underwent episiotomy or operative delivery were excluded. Both trauma groups were equally likely to be sexually active. Significant differences were demonstrated: women with major trauma reported less desire to be held, touched, and stroked by their partner than women with minor trauma, and women who required perineal suturing reported lower Intimate Relationship Scale scores than women who did not require suturing.

4.2. The mode of delivery

There is extensive literature that has researched modes of delivery and their impact on sexual function after birth. The evidence does suggest a strong link between operative vaginal delivery and impaired sexuality after birth [81–87]. The somewhat protective role of caesarean sections has been noted as contributing to an early reestablishment of sexuality [21]. Johnsson [21] says that potential mechanisms may include minimal pudendal nerve injury, less trauma to the pelvic floor by the process of labour and the elimination of lacerations, episiotomy and diminished pain postpartum. There are some studies that have demonstrated this [87, 88] and some that have not [89]. Trauma to the pudendal nerve, however, has been demonstrated after vaginal delivery [21]. The main symptom of pudendal nerve trauma is pain in one or more of the areas innervated by the pudendal nerve or one of its branches. These areas include the rectum, anus, urethra, perineum, and genital area. In women this includes the clitoris, mons pubis, vulva, the lower 1/3 of the vagina, and labia [57]. Intrapartum pudendal nerve injury may be caused by compression of the foetal head. Stretch injury of pudendal nerve may be caused by a prolonged second stage of labour, operative delivery and large foetus [21]. Recovery usually takes two to six months [90].

Hicks et al. [91] performed a systematic review of the literature on selected postpartum sexual function outcomes as affected by caesarean, assisted vaginal, and spontaneous vaginal delivery. The studies all showed increased risks of delay in the resumption of intercourse, dyspareunia, sexual problems, or perineal pain associated with assisted vaginal delivery. Some studies showed no differences in sexual functioning between women with caesarean delivery and those with spontaneous vaginal delivery, whereas others reported less dyspareunia for women with caesarean delivery. A systematic review of the literature suggests an association between assisted vaginal delivery and some degree of sexual dysfunction. The reported associations between caesarean delivery and sexual dysfunction were inconsistent [91].

Safarinejad et al. [92] sought the relationship between mode of delivery and subsequent incidence of sexual dysfunction and impairment of quality of life in women and their husbands. A total of 912 pregnant women (mean age 26 +/- 2, range 21-32 years, parity I) and their husbands were recruited in this prospective study. The subjects were subdivided into five groups according to their mode of delivery, including: group A, spontaneous vaginal delivery (SVD) without injuries; group B, vaginal delivery with episiotomy (VDE) or perineal laceration; group C, operative vaginal delivery (OVD) (instrumental delivery), group D, planned caesarean section (PCS); and group E, emergency caesarean section (ECS). Of women in groups A, B, C, D, and E, 42.6%, 37.1%, 32.7%, 64.3%, and 38.3% resumed sexual intercourse (SI) within eight weeks of delivery. Women who experienced a PCS had the lowest pain scores, and women who had OVD had the highest pain scores at first SI ($P = 0.001$). The research has shown that the quality of life parameters for PCS women were generally higher than for the other groups, and this concerns almost all categories. In healthy women with normal singleton pregnancies at term, instrumental deliveries are associated with the highest and PCS associated with the lowest rate of long-term maternal and paternal sexual dysfunction [92]. Connolly et al. [69] on the other hand found no difference at three or six months postpartum in timing of reestablishment of sexuality, dyspareunia or achieving orgasm whether women had caesarean section or vaginal delivery. Additionally, no impact was found of planned mode of delivery (vaginal vs. caesarean) on satisfaction with sexual relationship two years postpartum [93] and six years postpartum [94].

4.3. Dyspareunia

A very important determinant of postpartum sexual function is perineal pain and resultant dyspareunia (painful sexual intercourse). Perineal pain after a laceration is the most common cause of dyspareunia [79]. Dyspareunia is reported by 41%-67% of women two to three months postpartum and strongly associated with degree of perineal trauma. It has been reported that episiotomy with or without operative delivery is associated with dyspareunia and that spontaneous second-degree tears cause less perineal pain than episiotomy [95]. Connolly et al. [69] conducted a study to evaluate the effects of pregnancy and childbirth on postpartum sexual function. A total of 150 women were enrolled. Questionnaires were completed regarding sexual function prior to pregnancy, at enrolment, and at two, six, 12, and 24 weeks postpartum. At six, 12, and 24 weeks postpartum, 57%, 82%, and 90% of the women had resumed intercourse. At similar postpartum timepoints, approximately 30 or 17% of women reported dyspareunia; less than 5% described the pain as major. Delivery mode and episiotomy were not associated with intercourse resumption or anorgasmia; dyspareunia was only associated with breastfeeding at 12 weeks. However, no association was found with mode of delivery or the use of episiotomy.

Signorello et al. [96] wanted to investigate the possible association between the occurrence or/and persistence of dyspareunia after childbirth and mode of delivery. Research was carried out with a retrospective cohort design in three groups of primiparous women after vaginal birth: Group 1 ($n = 211$) had an intact perineum or first-degree perineal tear; group 2 ($n = 336$) had second-degree perineal trauma; group 3 ($n = 68$) had third- or fourth-degree perineal

trauma. At six months postpartum about one quarter of all primiparous women reported lessened sexual sensation, worsened sexual satisfaction, and less ability to achieve orgasm, as compared with these parameters before they gave birth. At three and six months postpartum, 41% and 22%, respectively, reported dyspareunia. Women with second-degree perineal trauma were 80% more likely and those with third- or fourth-degree perineal trauma were 270% more likely to report dyspareunia at three months postpartum. At six months postpartum, the use of vacuum extraction or forceps was significantly associated with dyspareunia, and women who breastfed were four times as likely to report dyspareunia as those who did not breastfeed. Women whose infants were delivered over an intact perineum reported the best outcomes overall, whereas perineal trauma and the use of obstetric instrumentation were factors related to the frequency or severity of postpartum dyspareunia [96]. These results were recently confirmed by Baksu et al. [97] who evaluated the effect of mode of delivery on postpartum sexual functioning in primiparous women. A total of 248 primiparous women were recruited into this study. Women who delivered vaginally and had mediolateral episiotomy reported significantly higher pain between six months postpartum than women with caesarean or spontaneous delivery. Not only pain, but also other important aspects of sexual function, such as arousal, lubrication, orgasm, and satisfaction were also affected by performing mediolateral episiotomy during vaginal delivery, well beyond the puerperal period. Concerning these effects, the authors recommended a policy of restricting mediolateral episiotomy.

It is seen from these study results that dyspareunia is mostly related to mode of delivery and problems that originate from that, and it is important that healthcare providers have knowledge of altered sexual life due to dyspareunia. The care they offer should be evidence-based and sensitive. Studies that have examined obstetricians' personal preferences toward delivery have indicated the major reason for avoiding vaginal delivery to be a fear of childbirth and concern for postpartum sexual health [21]. Caesarean delivery, as mentioned, appears to decrease the incidence of dyspareunia in the first three to six months postpartum, but has no effect beyond that frame. Despite the fact that some might see a caesarean section as a preventive measure for postpartum dyspareunia, studies have not confirmed this, and the fact that it is a major operation with possible serious side effects still remains.

4.4. Pelvic floor dysfunction

The pelvic floor is formed by the soft tissues that fill the outlet of the pelvis, and the most important of these is the strong diaphragm of muscle slung like a hammock from the walls of the pelvis, through it pass the urethra, the vagina and the anal canal [54, p. 107]. Pelvic floor dysfunction means weakened pelvic floor muscles cause the internal organs not to be fully supported and can this lead to difficulties in controlling the release of urine or faeces.

Studies suggest that vaginal delivery is associated with a higher rate of urinary or faecal incontinence than women who have undergone caesarean delivery [98-99]. It has to be noticed that none of the studies differentiate between an emergency caesarean section or planned caesarean section, or perhaps the length of the second stage in normal spontaneous delivery, which would be of great importance to the rate of urinary or faecal incontinence. It is also

important, however, to address this issue due to the fact that urinary and faecal incontinence have a great impact on impaired sexual life and therefore quality of life postpartum [100].

4.5. Breastfeeding

There is quite strong evidence that suggests that breastfeeding reduces women's sexual desire and frequency of intercourse in postpartum [101-102]. Breastfeeding mothers have high levels of prolactin, which are maintained by babies' suckling. These high prolactin levels suppress ovarian oestrogen production, which results in reduced vaginal lubrication in response to sexual stimulation [54]. On the other hand, oxytocin release with breastfeeding causes milk ejection and appears to have positive effect on mood. Avery et al. [103] found that breastfeeding caused sexual arousal. The investigators used a descriptive design, analysing data from the 576 primiparous breastfeeding women who, as part of a larger study, completed the Breastfeeding and Sexuality Tool at the time of complete weaning. The women were from a large, private hospital in urban Minnesota. Subjects completed initial questionnaires during postpartum hospitalization. Follow-up data were collected by phone at one, three, six and 12 months postpartum. Those who had not been weaned by 12 months were followed every three months until complete weaning was reported. Overall, women perceived that breastfeeding had a slightly negative impact on the physiological aspects of sexuality, but did not greatly affect the woman's sexual relationship with her partner. In addition, breastfeeding mothers perceived their partners' attitudes towards breastfeeding and sexuality as slightly positive, and did not worry that sexual activity would harm their milk supply or their ability to nurse. Breastfeeding caused arousal frequently for 16.7% of women and infrequently for 23.7% of women. Quite different results came from another study where breastfeeding women have reported experiencing vaginal dryness, dyspareunia, increased nipple sensitivity, leaking milk and decreased arousal [67]. Barrett et al. [104] identify in their study a lack of interest in sexual activity at two months after birth that is strongly associated with breastfeeding, and dyspareunia is reported to persist for up to six months in some breastfeeding women. As seen, there are conflicting data as to whether breastfeeding increases or decreases sexual arousal. Some women also report physical contact with their infant as fulfilling a desire for contact that may otherwise be fulfilled with their partners; moreover, experienced breastfeeders report less of a reduction in sexual frequency than first-time breastfeeders [104].

4.6. Fatigue

Fatigue is a key component in the experience of parenting, and one of the most common problems women experience postpartum [6]. In three different studies [105-107] 62% of women report fatigue to interfere with their sexual life four months postpartum. Byrd et al. [108] state that fatigue accounted for considerable variability in postpartum women's decreased sexual desire. Despite this, fatigue is rarely studied as an independent variable.

4.7. Some psychological issues

There are many psychological issues that could affect postpartum sexuality such as stress and depression, relationship factors, perceived motherhood and others. There are few studies that

research the relationship between depression and sexual activity postpartum. Morof et al. [109] researched the sexual health experiences of depressed and nondepressed postnatal women within a six-month postnatal period. Sexual health problems were common after childbirth in both depressed and nondepressed group; however, depressed women were less likely to have resumed intercourse at six months and more likely to report sexual health problems. Depressed women have decreased sexual desire, which may contribute to increased postpartum sexual function [21]. Research surrounding relationship satisfaction postpartum consistently demonstrates associations between partnership dissatisfaction and reduction in sexual activity, desire and enjoyment [104], while high-level support from a partner has been associated with greater sexual enjoyment [21]. For most women motherhood is a positive experience [110], but some might find negative aspects, such as a lack of uninterrupted time to pursue personal interests, quite disturbing [111]. There is some empirical evidence that such difficulties have an impact on sexual life; Pertot [112] found some evidence to suggest that problems in women's postpartum sexual responsiveness might be associated with difficulties with their mother role. Positive body image is generally thought to contribute to postpartum sexuality in women, though the associations are ambiguous [104]. It is already known that women who are satisfied with the way they look enjoy more sexually [7], but the fact that below 30% of women are satisfied with the way they look still remains [104]. Additionally, postpartum, besides adaptation to the role of mother, a lot of physical changes occur, weight needs some time to drop, breasts are changing, women might have abdominal striae or varicose veins, they might be lacking sleep and be experiencing many other things that potentially influence her body image in a negative way. Olsson et al. [113] conducted a series of focus group interviews to determine how some women experienced their sexual life with their partner after giving birth. Four themes were identified: body image after childbirth, how sexual patterns are altered following new stresses of family life, discordance of sexual desire with partners, and the necessity for reassurance. The women did not feel comfortable with the physical changes that had taken place and their body image. Childbirth meant less sleep and less free time; consequently, instead of having sex, women wanted to sleep or have time for themselves, and that led to a changed sex pattern. Discordance of sexual desire with the partner was a problem but most of the women expressed confidence that their sexual desire would return shortly. Reassurance and confirmation that they were physically acceptable and back to normal was essential. New mothers are concerned with their body image and their ability to adapt to parenting [113]. It seems that women need reassurance from healthcare professionals that their physical, psychological and bodily changes are a normal part of their childbearing.

Some risk factors for altered sexual health postpartum were identified. There might also be cultural or societal aspects regarding resumption of sexual activity but which were not discussed in this subchapter. Recommendations for practice by healthcare providers will be given in the concluding chapter.

5. Conclusion

Sexuality of expectant parents is of great importance, from a medical and psychological point of view. Childbearing is a period of incredible change on many levels of health, and requires

the adaptation of a couple to the new addition to their family. A couple might not be aware that these changes commonly occur, and a majority of women may not receive adequate information or anticipatory guidance on these alterations from their healthcare providers [21].

Although some aspects about communication with prospective parents were already given in the second subchapter, this conclusion will, rather than summarize what is already written, contain valuable information for healthcare providers about how to approach and talk to parents about their sexuality and how to minimize some of the adverse events in pregnancy and birth for optimizing the sexual health of a couple postpartum. Recommendations are summarized and adapted from two authors who are well known researchers and professionals on the selected topic; von Sydow [7] and Leeman et al. [79].

As mentioned in the second subchapter, healthcare professionals do not always have the awareness, knowledge and skills to deal with sexual problems. Many gynaecologists are uncertain about what sexual advice to give when problems occur in pregnancy [7] or are uncomfortable speaking about it with women [21]. However, since it is known by now that healthy sexuality in pregnancy is a key stage in the evolution of being a parent [44], healthcare providers should keep open conversations about this throughout the duration of their care.

von Sydow [7] summarized recommendations for taking a sexual history and giving patients sexual advice. She believes that a partner should always be included in this conversation if possible. Healthcare providers have to ask open questions and listen to the answers.

Depending on what time a healthcare provider approaches couples the following information should be obtained:

- Pregnancy: the current emotional, marital and sexual situation and the information needs of a woman and her partner
 - Postpartum: sexual interest, behaviour, coital pain or incontinence
-

Then, the healthcare provider should give the couple the information about normal changes during the transition into parenthood, for example:

- Pregnancy: some women have no sexual interest whereas in others sexual interest is intensified
 - Postpartum: Some mothers experience erotic feelings during breastfeeding, and some fathers are jealous about breastfeeding. Vaginal dryness might be associated with breastfeeding.
-
- Acknowledge women's and partners fears and uncertainties and respect the inner limitations that they probably have.
 - Give technical advice about the range of sexual options; tenderness, non-coital sexual activities, alternative coital positions...
 - Instruct the patient in self-help: post birth self-inspection of vulva with a hand mirror, exercises...
 - Be sensitive to sexual and non-sexual domestic violence.
-

Table 3. Recommendations for taking a sexual history and giving a patient sexual advice in pregnancy or postpartum [7]

Research has shown [7] that couples wish to receive more information about bodily changes and sexuality postpartum, and that counselling has been helpful. Leeman et al. [79] divides a clinical approach for prevention, evaluation and treatment of postpartum sexual concerns into three parts based on prenatal care, postpartum and postnatal care (see Table 4).

Prenatal Care

- Determine whether dysfunction was present before pregnancy.
 - Discuss changes in anatomy, physiology, and sexual function that commonly occur during pregnancy.
 - Discuss the likely safety of continuing sexual activity throughout pregnancy for most women.
 - Evaluate presence of depression during pregnancy.
 - Discuss option of perineal massage to minimize perineal trauma and postpartum pain.
-

Intrapartum

- Judicious use of operative vaginal delivery and selection of vacuum rather than forceps will decrease the incidence of anal sphincter lacerations.
 - Limit the use of episiotomy.
 - Careful postpartum examination to increase the detection and repair of anal sphincter lacerations.
 - Repair perineal lacerations with synthetic absorbable suture.
 - Discuss perineal pain, dyspareunia, and initiation of postpartum sexual activity before hospital discharge.
-

Postpartum

- Assess sexual function and address concerns, including considering the use of a brief sexual function screening questionnaire.
 - Assess perineal repair if dyspareunia is present.
 - Assess for presence of urinary and anal incontinence symptoms.
 - Encourage vaginal lubricants, particularly in breastfeeding women with a physiologic hypoestrogenic state.
 - Consider alternative positions.
 - Assess for postpartum mood changes, adequate rest, and time for intimacy.
-

Table 4. Clinical approach for prevention, evaluation and treatment of postpartum sexual concerns Leeman et al. [79]

Leeman and his colleagues [79] have offered the possibility of perineal massage as an option to minimize perineal trauma and postpartum pain. There are also many other things we can advise women to practice in order to minimize the risk of birth injury or to prepare her body optimally. One of them is pelvic floor exercise, formerly known as Kegel exercise. Research shows that exercising the pelvic floor muscles during pregnancy makes it less likely that urinary incontinence will occur after birth [104]. Continuing these exercises after pregnancy can help to prevent long-term problems, such as prolapse. Both prolapse and urinary incontinence have a great impact on altered sexual life [21]. What seems to be missing from Leeman et al.'s [79] intrapartum list is also the way that the second stage is delivered, the use of unnecessary actions to speed the birth process and not letting the nature taking its course, which are all influences on birth outcomes that have an impact on pain and subsequently on sexual life postpartum. A study confirms that midwifery-led care is associated with low rates of episiotomy and operative delivery and very low rates of postpartum pain measured by a validated pain scale [114].

Optimal sexual health for women consists of a variety of physical and psychological factors, and open dialogue to encourage women to discuss these sensitive issues should be part of routine maternity care. Endocrine and psychosomatic factors as well as anatomical changes

during pregnancy and the different forms of delivery may provoke female sexual dysfunction. Concerning sexual dysfunction after birth, almost 25% of women report sexual dysfunctions after birth such as low desire, dyspareunia, anoorgasmy and difficulty in lubrication, and many complain of more than one dysfunction. Leeman et al. [79] say that for many women the primary factors affecting the resumption of satisfying sexual activity postpartum relate not only to healing perineal trauma, vaginal dryness associated with lactation, or the effects of treatment for postpartum depression, but are dependent also on achieving an acceptable amount of rest and adequate time and physical space for intimacy. Although during antenatal visits healthcare providers have a tendency to avoid discussion of sexual problems, it is of great importance for couples to receive adequate information about the reduction of sexual intercourse, decline of libido and desire and other possible effects commonly encountered during pregnancy and postpartum.

The literature on selected topics is, despite its abundance, limited to a longitudinal prospective methodological approach and validating assessment tools. It is critical in the future to establish high quality normative data on sexual functioning during childbearing. More research is also needed to evaluate male sexual function and the role of the partner in overall sexual health [21].

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References

- [1] World health organisation. Defining sexual health: Report of a technical consultation on sexual health http://www.who.int/reproductivehealth/publications/sexual_health/defining_sexual_health.pdf (accessed 21 July 2014).
- [2] Corbacioglu Esmer A, Akca A, Akbayir O, Goksedef BP, Bakir VL. Female sexual function and associated factors during pregnancy. *Journal of Obstetrics and Gynaecology Research* 2013; 39(6):1165-72.
- [3] Jones C, Chan C, Farine D. Sex in pregnancy. *Canadian Medical Association Journal* 2011; 183(7):815-8.
- [4] Foumane P, Mboudou ET, Sama JD, Baba S, Enama Mbatsogo BA, Ngwana L. Sexual activity during pregnancy and prognosis of labor in Cameroonian women: a cohort study. *The Journal of Maternal-Fetal and Neonatal Medicine* 2014; 27(13):1305-8

- [5] Schaffir J. Sexual intercourse at term and onset of labor. *Obstetrics & Gynecology* 2006; 107(6):1310-4.
- [6] Hipp LE, Low K, van Anders, SM. Exploring women's postpartum sexuality: social, psychological, relational, and birth-related contextual factors. *Journal of Sexual Medicine* 2012; 9: 2330-2341.
- [7] von Sydow. Sexuality in Pregnancy and the Postpartum Period. In: Reece EA, Hobbins JC. (3 ed) *Clinical Obstetrics: The Fetus & Mother*. Oxford: Blackwell Publishing Ltd; 2007. p1016-1021.
- [8] Pauleta JR, Pereira NM, Graca LM. Sexuality during Pregnancy. *Australian and New Zealand Journal of Obstetrics and Gynaecology* 2010;18(2): 114-117.
- [9] Tosun Güleröglü F, Gördeles Beşer N. Evaluation of sexual functions of the pregnant women. *The Journal of Sexual Medicine* 2014;11(1):146-53.
- [10] Chang SR, Chang TC, Chen KH, Lin HH. Developing and validating a Taiwan version of the female sexual Function index for pregnant women. *The Journal of Sexual Medicine* 2009; 6(6):1609-1616.
- [11] Naim M, Bhutto E. Sexuality during pregnancy in Pakistani women. *Journal of the Pakistan Medical Association* 2000;50(1):38-44.
- [12] Adinma JI. Sexuality in Nigerian pregnant women: perceptions and practice. *Australian and New Zealand Journal of Obstetrics and Gynaecology* 1995;35(3):290-3.
- [13] Shoja M. Changes in Sexual and Behavioral Relationships among Couples during Pregnancy. *Qom University of Medical Sciences Journal* 2011;5(3):23-35.
- [14] Jamali S, Mosalanejad L. Sexual dysfunction in Iranian pregnant women. *Iranian Journal of reproductive medicine* 2013;11(6):479-86.
- [15] Fok WY, Chan LY, Yuen PM. Sexual behavior and activity in Chinese pregnant women. *Acta Obstetrica et Gynecologica Scandinavica* 2005;84(10):934-8.
- [16] Liu H, Hsu P, Chen K. Sexual activity during pregnancy in Taiwan: A Qualitative study. *Sexual Medicine* 2013;1:54-61.
- [17] Malarewicz A, Szymkiewicz J, Rogala J. Sexuality of pregnant women. *Ginekologia Polska* 2006; 77(9):733-9.
- [18] Isajeva J, Šilkūnas M, Drąsutienė GS, Bartkevičienė D. Features of the sexual life during pregnancy. *Acta medica lituanica* 2012;19(2): 67-74
- [19] Kohsaka T, Min G, Lukas G, Trupin S, Campbell ET; Sherwood OD, Identification of specific relaxin binding cells in the human female. *Biology of Reproduction* 1998; 59:991-999.
- [20] Johnson CE. Sexual health during pregnancy and the postpartum. *The Journal of Sexual Medicine* 2011; 8(5):1267-84.

- [21] Warnock JK, Clayton A, Croft H, Segraves R, Biggs FC. Comparison of androgens in women with hypoactive sexual desire disorder: those on combined oral contraceptives (COCs) vs. those not on COCs. *The Journal of Sexual Medicine* 2006;3(5):878-82.
- [22] Pessina MA, Hoyt RF Jr, Goldstein I, Traish AM. Differential regulation of the expression of estrogen, progesterone, and androgen receptors by sex steroid hormones in the vagina: immunohistochemical studies. *The Journal of Sexual Medicine* 2006;3(5):804-14.
- [23] Stuckey BG. Female sexual function and dysfunction in the reproductive years: the influence of endogenous and exogenous sex hormones. *The Journal of Sexual Medicine* 2008;5(10):2282-90.
- [24] Erol B, Sanli O, Korkmaz D, Seyhan A, Akman T, Kadioglu A. A cross-sectional study of female sexual function and dysfunction during pregnancy. *The Journal of Sexual Medicine* 2007;4:1381-1387.
- [25] Thorne C, Stuckey B. Pelvic congestion syndrome presenting as persistent genital arousal: A case report *journal of sexual medicine*; 5(2):504-508.
- [26] Lewis JA, Black JJ. Sexuality in Women of Childbearing Age. *The journal of perinatal education*; 15(2): 29-35.
- [27] Kitzinger S. *Women's experience of sex*. (1st ed). New York: Putnam;1983. p 54-56.
- [28] Masters WH, Johnson VE. *Human Sexual Response*. (1st ed). Toronto: New York: Bantam Books, 1966 p 24-26.
- [29] Guana-Trujillo B, Higgins PG. Sexual intercourse and pregnancy. *Health Care for Women International* 1987;8(5-6):339-348.
- [30] Glowacka M, Rosen N, Chorney J, Snelgrove Clarke E, George RB. Prevalence and Predictors of Genito-Pelvic Pain in Pregnancy and Postpartum: The Prospective Impact of Fear Avoidance. *The Journal of Sexual Medicine* 2014; doi: 10.1111/jsm.12675.
- [31] Chang SR, Chen KH, Lin HH, Lin MI, Chang TC, Lin WA. Association of mode of delivery with urinary incontinence and changes in urinary incontinence over the first year postpartum. *Obstetrics & Gynecology* 2014;123(3):568-77.
- [32] Radoš SN, Vraneš HS, Šunjić M. Limited role of body satisfaction and body image self-consciousness in sexual frequency and satisfaction in pregnant women. *The Journal of Sexual Medicine* 2014;51(5):532-41.
- [33] Cunningham FG, Wenstrom K, Hauth J, Leveno K, Gilstrap L. *Williams Obstetrics*. (21st ed). NY: McGraw-Hill Companies; 2001.
- [34] Jones C, Chan C, Farine D. Sex in pregnancy. *Canadian Medical Association Journal* 2011; 183(7): 815-818.

- [35] Timor-Tritsch IE, Yunis RA. Confirming the safety of transvaginal sonography in patients suspected of placenta previa. *Journal of Obstetrics and Gynaecology* 1993 ;81(5 (Pt 1)):742-4.
- [36] Blanchard AC, Pastorek JG 2nd, Weeks T. Pelvic inflammatory disease during pregnancy. *Southern medical journal* 1987;80(11):1363-5.
- [37] Yip L, Sweeny PJ, Bock BF. Acute suppurative salpingitis with concomitant intrauterine pregnancy. *The journal of reproductive medicine* 2002;47(11):959-61.
- [38] Lara-Torre E, Pinkerton JS. Viable intrauterine pregnancy with acute salpingitis progressing to septic abortion. A case report. *Archives of Gynecology and Obstetrics* 2004;269(3):219-20.
- [39] Phupong V, Rungruksirivorn T, Tantbirojn P, Triratanachat S, Vasuratna A. Infected endometrioma in pregnancy masquerading as acute appendicitis *Archives of Gynecology and Obstetrics* 2004;269(3):219-20.
- [40] Taylor BD, Darville T, Haggerty CL. Does bacterial vaginosis cause pelvic inflammatory disease? *Sexually Transmitted Disease* 2013 ;40(2):117-22.
- [41] Neilson JP, Mutambira M. Coitus, twin pregnancy, and preterm labor. *American Journal of Obstetrics and Gynecology* 1989;160(2):416-8.
- [42] Stammler-Safar M, Ott J, Weber S, Krampfl E. Sexual behaviour of women with twin pregnancies. *Twin Research and Human Genetic* 2010;13(4):383-8.
- [43] Serati M, Salvatore S, Siesto G, Cattoni E, Zanirato M, Khullar V, Cromi A, Ghezzi F, Bolis P. Female sexual function during pregnancy and after childbirth. *The Journal of Sexual Medicine* 2010;7(8):2782-90.
- [44] Polomeno V. Sex and Pregnancy: A Perinatal Educator's Guide. *The Journal of Perinatal Education* 2000;9(4):15-27.
- [45] Belimac JG: Department of Health:Guidelines on the Management of Sexually-Transmitted Infections (STI) In Pregnancy http://www.doh.gov.ph/sites/default/files/STI_guidelines_1.pdf (accessed 21 July 2014).
- [46] Foux R. Sex education in pregnancy: does it exist? A literature review. *Sexual and Relationship Therapy* 2008;23(3) 271-7.
- [47] Sheryl Kingsberg Just ask! Talking to patients about sexual function. *Sexuality, Reproduction and Menopause* 2004;2(4): 199–203.
- [48] King TL, Brucker MC, Kriebs JM, Fahey J, Gegor CL, Varney H. *Varney's Midwifery*. (4th ed)Burlington: Jones & Bartlett Learning; 2003.
- [49] Gaskin IM. *Birth Matters: A Midwife's Manifesta*. (1st ed). NY: A seventh stories press;2011.
- [50] Gaskin IM. *Ina May's Guide to Childbirth*. (1st ed). NY: Bantam book;2003.

- [51] Gaskin IM. *Spiritual Midwifery*. (4th ed).Summertown:Book publishing company; 2002.
- [52] Fraser DM, Cooper MA. *Myles textbook for midwives*. (14th ed) Edinburgh: Churchill Livingstone; 2003.
- [53] Toth M, Rehnström J, Fuchs AR. Prostaglandins E and F in cervical mucus of pregnant women. *American journal of perinatology* 1989 ;6(2):142-4.
- [54] O'Brien WF. The role of prostaglandins in labor and delivery. *Clinics in perinatology* 1995;22(4):973-84.
- [55] Wein AJ, Kavoussi LR, Novick AC, Partin AW, Peters CA. *Campbell-Walsh Urology* (10th ed). NY:Elsevier;2012.
- [56] Brustman LE, Raptoulis M, Langer O, Anyaegbunam A, Merkatz IR. Changes in the pattern of uterine contractility in relationship to coitus during pregnancies at low and high risk for preterm labor. *Journal of Obstetrics and Gynaecology* 1989;73(2): 166-8.
- [57] Chayen B, Tejani N, Verma UL, Gordon G. Fetal heart rate changes and uterine activity during coitus. *Acta Obstetrica et Gynecologica Scandinavica*1986;65(8):853-5.
- [58] Mills JL, Harlap S, Harley EE. Should coitus late in pregnancy be discouraged? *Lancet* 1981;2(8238):136-8.
- [59] Tan PC, Andi A, Azmi N, Noraihan MN. Effect of coitus at term on length of gestation, induction of labor, and mode of delivery. *Obstetrics and Gynaecology* 2006;108(1):134-40.
- [60] Tan PC, Yow CM, Omar SZ. Effect of coital activity on onset of labor in women scheduled for labor induction: a randomized controlled trial. *Obstetrics and Gynaecology* 2007;110(4):820-6.
- [61] Tan PC, Yow CM, Omar SZ. Coitus and orgasm at term: effect on spontaneous labour and pregnancy outcome. *Singapore Medical Journal* 2009;50(11):1062-7.
- [62] Ekwo EE, Gosselink CA, Woolson R, Moawad A, Long CR. Coitus late in pregnancy: risk of preterm rupture of amniotic sac membranes. 1993 ;168(1 Pt 1):22-31.
- [63] Oboro VO, Tabowei TO, Bosah JO. Sexual activities in pregnancy and prelabour rupture of membranes. <http://www.sexualhealthmatters.com/v3iss3/article2.html> (accessed 21 july 2014).
- [64] Salmon YM, Kee WH, Tan SL, Jen SW. Cervical ripening by breast stimulation. *Obstetrics & Gynecology* 1986;67:21-4.
- [65] Elliott MD, Flaherty JF. The use of breast stimulation to prevent postdate pregnancy. *American Journal of Obstetrics and Gynecology* 1984;149:628-32.

- [66] O'Malley D., Smith V. Altered sexual health after childbirth: part 1. *The Practising Midwife* 2013;16(1) 30-32.
- [67] Connolly A., Thorp J., Pahel L. Effects of pregnancy and childbirth on postpartum sexual function: a longitudinal prospective study. *International Urogynecology Journal and Pelvic Floor Dysfunction* 2005;16(4) 263-267.
- [68] Lurie S., Aizenberg M., Sulema V., Boaz M., Kovo M., Golan A., Sadan O. Sexual function after childbirth by the mode of delivery: a prospective study. *Archives of Gynecology and Obstetrics* 2013;288(4) 785-792.
- [69] Leeman L., Rogers R. Sex After Childbirth. *Obstetrics & Gynecology* 2012;119(3) 647-655.
- [70] Ridley CM. Vulvodynia. Theory and management. *Dermatologic Clinics* 1998;16(4) 775-8, xiii.
- [71] De Judicibus M., McCabe M. Psychological Factors and the Sexuality of Pregnant and Postpartum Women. *Journal of Sex Research* 2002;39(2) 94-103.
- [72] O'Malley D., Smith V. Altered sexual health after childbirth: part 2. *The Practising Midwife* 2013;16(2) 27-29. Dabiri F., Yabandeh AP., Shahi A., Kamjoo A., Teshnizi SH. The effect of mode of delivery on postpartum sexual functioning in primiparous women. *Oman Medical Journal* 2014;29(4) 276-9.
- [73] Laganà AS., Burgio MA., Ciancimino L., Sicilia A., Pizzo A., Magno C., Butticiè S., Triolo O. Evaluation of recovery and quality of sexual activity in women during postpartum in relation to the different mode of delivery: a retrospective analysis. *Minerva Ginecologica* 2014;66(3)
- [74] Ejegård H., Ryding EL., Sjogren B. Sexuality after delivery with episiotomy: a long-term follow-up. *Gynecologic and Obstetric Investigation* 2008;66(1) 1-7.
- [75] Woranitat W., Taneepanichskul S. Sexual function during the postpartum period. *Journal of the Medical Association of Thailand* 2007;90(9) 1744-8.
- [76] Yıldız H. The Relation Between Prepregnancy Sexuality and Sexual Function During Pregnancy and the Postpartum Period: A Prospective Study. *Journal of Sex & Marital Therapy*. 2013 Oct 28. [Epub ahead of print]
- [77] Rathfisch G., Dikencik BK., Kizilkaya Beji N., Comert N., Tekirdag Al., Kadioglu A. Effects of perineal trauma on postpartum sexual function. *Journal of Advanced Nursing* 2010;66(12) 2640-9.
- [78] Leeman LM., Rogers RG., Greulich B., Albers LL. Do unsutured second-degree perineal lacerations affect postpartum functional outcomes? *Journal of American Board of Family Medicine* 2007;20(5) 451-7.
- [79] Rodgers CS., Lang AJ., Twamley EW., Stein MB. Sexual trauma and pregnancy: a conceptual framework. *Journal of Women's Health* 2003;12(10) 961-70.

- [80] Fehniger JE., Brown JS., Creasman JM., Van Den Eeden SK., Thom DH., Subak LL., Huang AJ. Childbirth and female sexual function later in life. *Obstetrics & Gynecology* 2013;122(5) 988-97.
- [81] Buhling KJ., Schmidt S., Robinson JN., Klapp C., Siebert G., Dudenhausen JW. Rate of dyspareunia after delivery in primiparae according to mode of delivery. *European Journal of Obstetrics & Gynecology and Reproductive Biology* 2006;124(1) 42-6.
- [82] Liebling RE., Swingler R., Patel RR., Verity L., Soothill PW., Murphy DJ. Pelvic floor morbidity up to one year after difficult instrumental delivery and cesarean section in the second stage of labor: a cohort study. *American Journal of Obstetrics & Gynecology* 2004;191(1) 4-10.
- [83] Fallat ME., Weaver JM., Hertweck SP., Miller FB. Late follow-up and functional outcome after traumatic reproductive tract injuries in women. *The American Journal of Surgery* 1998;64(9) 858-61.
- [84] McDonald EA., Brown SJ. Does method of birth make a difference to when women resume sex after childbirth? *An International Journal of Obstetrics and Gynaecology* 2013;120(7) 823-30.
- [85] Woranit W., Taneepanichskul S. Sexual function during the postpartum period. *Journal of the Medical Association of Thailand* 2007;90(9) 1744-8.
- [86] Laganà AS, Burgio MA, Ciancimino L, Sicilia A, Pizzo A, Magno C, Butticiè S, Triolo O. Evaluation of recovery and quality of sexual activity in women during postpartum in relation to the different mode of delivery: a retrospective analysis. *Minerva Ginecol.* 2014 [Epub ahead of print].
- [87] Fauconnier A., Goltzene A., Issartel F., Janse-Marec J., Blondel B., Fritel X. Late postpartum dyspareunia: does delivery play a role? *Progrès en Urologie* 2012;22(4) 225-32.
- [88] da Silva FM, de Oliveira SM, Bick D, Osava RH, Tuesta EF, Riesco ML. 89 Risk factors for birth-related perineal trauma: a cross-sectional study in a birth centre. *Journal of Clinical Nursing* 2012;21(15-16) 2209-18.
- [89] Chaliha C. Postpartum pelvic floor trauma. *Current Opinion in Obstetrics and Gynecology* 2009;21(6) 474-9.
- [90] Hicks TL., Goodall SF., Quattrone EM., Lydon-Rochelle MT. Postpartum sexual functioning and method of delivery: summary of the evidence. *Journal of Midwifery & Women's Health* 2004;49(5) 430-6.
- [91] Safarinejad MR., Kolahi AA., Hosseini L. The effect of the mode of delivery on the quality of life, sexual function, and sexual satisfaction in primiparous women and their husbands. *The Journal of Sexual Medicine* 2009;6(6) 1645-67.
- [92] Hannah ME, Whyte H, Hannah WJ, Hewson S, Amankwah K, Cheng M, Gafni A, Guselle P, Helewa M, Hodnett ED, Hutton E, Kung R, McKay D, Ross S, Saigal S,

Willan A; Term Breech Trial Collaborative Group. Maternal outcomes at 2 years after planned cesarean section versus planned vaginal birth for breech presentation at term: the international randomized Term Breech Trial.

- [93] American Journal of Obstetrics & Gynecology 2004;191(3) 917-27.
- [94] Dean N, Wilson D, Herbison P, Glazener C, Aung T, Macarthur C. Sexual function, delivery mode history, pelvic floor muscle exercises and incontinence: a cross-sectional study six years post-partum. Australian and New Zealand Journal of Obstetrics and Gynaecology 2008;48(3) 302-11.
- [95] Yeniel AO, Petri E. Pregnancy, childbirth, and sexual function: perceptions and facts. International Urogynecology Journal 2014;25(1) 5-14.
- [96] Signorello LB, Harlow BL, Chekos AK, Repke JT. Postpartum sexual functioning and its relationship to perineal trauma: a retrospective cohort study of primiparous women. American Journal of Obstetrics & Gynecology 2001;184(5) 881-8.
- [97] Baksu B, Davas I, Agar E, Akyol A, Varolan A. The effect of mode of delivery on postpartum sexual functioning in primiparous women. International Urogynecology Journal and Pelvic Floor Dysfunction 2007;18(4) 401-6.
- [98] Gyhagen M, Bullarbo M, Nielsen TF, Milsom I. Faecal incontinence 20 years after one birth: a comparison between vaginal delivery and caesarean section. International Urogynecology Journal 2014;25(10) 1411-8.
- [99] Li WY, Liabsuetrakul T, Stray-Pedersen B. Effect of mode of delivery on perceived risks of maternal health outcomes among expectant parents: a cohort study in Beijing, China. BMC Pregnancy and Childbirth 2014;14(1) 12.
- [100] Connolly A, Thorp J, Pahel L. Effects of pregnancy and childbirth on postpartum sexual function: a longitudinal prospective study. International Urogynecology Journal and Pelvic Floor Dysfunction 2005;16(4) 263-7.
- [101] van Anders SM, Hipp LE, Kane Low L. Exploring co-parent experiences of sexuality in the first 3 months after birth. The Journal of Sexual Medicine 2013;10(8) 1988-99.
- [102] Abdool Z, Thakar R, Sultan AH. Postpartum female sexual function. European Journal of Obstetrics & Gynecology and Reproductive Biology 2009;145(2) 133-7.
- [103] Avery MD, Duckett L, Frantzich CR. The Experience of Sexuality During Breastfeeding among Primiparous Women. Journal of Midwifery and Women's Health 2006;45(3) 227-237.
- [104] Barrett G, Peacock J, Victor CR, Manyonda I. Cesarean section and postnatal sexual health. Birth 2005;32(4) 306-11.
- [105] Fischman SH, Rankin EA, Soeken KL, Lenz ER. Changes in sexual relationships in postpartum couples. Journal of Obstetric, Gynecologic, & Neonatal Nursing 1986;15(1) 58-63.

- [106] Ahlborg T, Strandmark M, Dahlof LG. First-time parents' sexual relationships. *Scandinavian Journal of Sexology* 2000;3 127-39.
- [107] Ahlborg T, Dahlof L, Hallberg LR. Quality of intimate and sexual relationship in first-time parents six months after delivery. *Journal of Sex Research* 2005;42(2) 167-74
- [108] Byrd JE, Hyde JS, Delamater JD, Plant EA. Sexuality during pregnancy and the year postpartum. *The journal of family practice* 1998; 47 (4): 305-308.
- [109] Morof D, Barrett G, Peacock J, Victor CR, Manyonda I. Postnatal depression and sexual health after childbirth. *Obstetrics and Gynecology* 2003;102(6) 1318-1325.
- [110] Anwar E, Stanistreet D. 'It has not ruined my life; it has made my life better': a qualitative investigation of the experiences and future aspirations of young mothers from the North West of England. *Journal of Public Health: Oxford Journals* 2014 Jul 6. pii: fdu045.
- [111] Hoffenaar PJ, van Balen F, Hermanns J. The Impact of Having a Baby on the Level and Content of Women's Well-Being. *Social Indicators Research* 2010;97(2) 279-295.
- [112] Pertot S. Postpartum loss of sexual desire and enjoyment. *Australian Journal of Psychology* 1981;33(1) 11-18.
- [113] Olsson A, Lundqvist M, Faxelid E, Nissen E. Women's thoughts about sexual life after childbirth: focus group discussions with women after childbirth. *Scandinavian Journal of Caring Sciences* 2005;19(4) 381-7.
- [114] Leeman L, Fullilove AM, Borders N, Manocchio R, Albers LL, Rogers RG. Postpartum perineal pain in a low episiotomy setting: association with severity of genital trauma, labor care, and birth variables. *Birth* 2009;36(4) 283-8.

