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MISSED CHILDREN

A descriptive literature review on the effects of involuntary childlessness on a heterosexual couple's relationship and sexuality

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Abstract

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Abstract

Involuntary childlessness is a sensitive and delicate matter. It is still considered as a taboo in our culture and society, yet the number of involuntary childlessness couples is increasing. Involuntary childlessness is defined as not being able to conceive after a year of trying as contraceptive has been discontinued. For couples and individuals experiencing involuntary childlessness multidimensional effects are seen.

The thesis was conducted as a descriptive literature review aiming to find the effects of involuntary childlessness on a heterosexual couple's relationship and sexuality. Further on, the purpose of the thesis was to increase the knowledge of the aforementioned among nursing students and nurses as well as among other professionals working in the field of health care. The thesis questions were based on the aim of the thesis. An inductive content analysis was performed with the nine articles retrieved as a result of data search and collection.

The findings made, based on the inductive content analysis, answered conclusively the thesis questions set. It was found that the effects of involuntary childlessness on a heterosexual couple's relationship were both positive and negative, and positive effects being more permanent and long-term than negative ones. Effects on sexuality were found to be negative as only one mention of positive effects was found and it was improved sexual life.

It is recommended by the author to have more research done in regards to men's experience of involuntary childlessness. In addition to it, it is advised to further on educate nurses and other health care professionals on how couples can be supported in their relationship and what kinds of methods they wish to be implemented by them. Further research on the subject in Finland is also recommended since most of the articles were conducted in foreign countries. Interest should also be pointed to how these couples experience parenthood should they have children, and the emotions the experience brings along.

Keywords

Childlessness, effect, infertility, involuntary childlessness, relationship, sexuality

Tiivistelmä

Tekijä	Julkaisun laji	Valmistumisaika
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Työn nimi

KAIVATUT LAPSET

Kuvaileva kirjallisuuskatsaus tahattoman lapsettomuuden vaikutuksista heteroseksuaalisen pariskunnan parisuhteeseen ja seksuaalisuuteen

Tutkinto

Hoitotyön koulutusohjelma

Tiivistelmä

Tahaton lapsettomuus on herkkä ja koskettava aihe. Tahattomasti lapsettomien pariskuntien määrä lisääntyy koko ajan, mutta silti aihetta pidetään tabuna kulttuurissamme ja yhteiskunnassamme. Määritelmältään tahattomasti lapsettomaksi luetaan, mikäli raskautta ei ole tapahtunut vuoden kuluttua, kun sitä on alettu yrittämään ehkäisyn lopettamisen jälkeen. Tahattoman lapsettomuuden vaikutukset pariskuntiin ja yksilöihin ovat moniulotteisia.

Opinnäytetyö toteutettiin kuvailevana kirjallisuuskatsauksena, tavoitteena löytää tahattoman lapsettomuuden vaikutukset heteroseksuaalisen pariskunnan parisuhteeseen ja seksuaalisuuteen. Edellä mainittujen vaikutusten tietoisuuden lisääminen terveysalalla toimiville sairaanhoitajille ja muille ammattilaisille toimi opinnäytetyön tarkoituksena. Opinnäytetyökysymykset muotoiltiin perustumaan opinnäytetyön tavoitteeseen. Analyysimenetelmänä käytettiin induktiivista sisällönanalyysia, joka tehtiin tiedon haun ja keräämisen jälkeen löytyneelle yhdeksälle artikkelille.

Tulokset, jotka saatiin induktiivisen sisällönanalyysin tuloksena, vastasivat ennalta määrättyihin opinnäytetyökysymyksiin. Tulosten perusteella tahattoman lapsettomuuden vaikutukset heteroseksuaalisen pariskunnan parisuhteeseen ovat positiivisia ja negatiivisia, mutta positiiviset vaikutukset ovat pysyvämpiä ja pitkäaikaisempia kuin negatiiviset. Vaikutukset seksuaalisuuteen ovat negatiiviset tulosten valossa, sillä positiivisista vaikutuksista ei löytynyt kuin yksi maininta kaikista artikkeleista, joka oli parantunut seksielämä.

Opinnäytetyön tekijä suosittelee jatkotutkimuksia miesten kokemuksille tahattoman lapsettomuuden suhteen. Sen lisäksi olisi suositeltavaa kouluttaa sairaanhoitajia ja muita terveydenalan ammattilaisia lisää siinä, miten tukea pariskuntien parisuhdetta ja mitä menetelmiä he tahtovat käytettävän tukemisessa. Lisätutkimusta olisi myös suositeltavaa tehdä Suomessa, sillä suurin osa artikkeleista oli ulkomaalaisia. Mielenkiintoa tulisi myös osoittaa siihen, kuinka nämä pariskunnat kokevat vanhemmuuden, mikäli he lapsia saavat, sekä vanhemmuuden tuomien tunteiden tutkimiseen.

Asiasanat

Hedelmättömyys, lapsettomuus, parisuhde, seksuaalisuus, tahaton lapsettomuus, vaikutus

CONTENTS

1 INTRODUCTION

Recently there has been lots of discussion on the decrease seen in birthrates in Finland (Rotkirch, Tammisalo, Miettinen & Berg 2017, 11-17). The total fertility rate (TFR) in Finland has been steadily decreasing since 2010. In 2010 TFR was 1,87 and in 2018 1,40 being the lowest ever measured. No increase at any point during these years has been detected and it has been predicted to further decrease. (Rotkirch & Helamaa 2019.) The same trend is also seen in the other Nordic countries, even though Finland is leading the statistics. Multiple reasons contributing to the decrease have been found, the increase in the age of primiparas and couples becoming parents being in the centre. Other contributing factors include, for example, social and employment status, the development of equality as well as the expenses children bring with them. (Rotkirch et al. 2017, 11-24.) As people are starting up their families later and later in their lives, it is inevitable for involuntary childlessness to increase since conception rate decreases as people, women in particular, age (Söderström-Anttila 2018, 897). Despite this, involuntary childlessness is still a very delicate matter and considered somewhat a taboo in our culture and society.

One of the reasons for involuntary childlessness has been identified to be the age of women giving birth for the first time. It has been noted that people are starting up families later on in their lives than before, therefore the age for giving birth has increased. (Lastenhankinta ja raskauden alkaminen 2018.) For the past 20 years, the age of primiparas has steadily risen in Finland (Terveyden ja hyvinvoinnin laitos 2018). From all the couples, it has been estimated that 15 % suffer from involuntary childlessness at some point in their lives and this number has been predicted to grow increasingly year after year (Tiitinen 2018a; Repo 2019).

A relationship is a changing part of life for everyone. For most people, one romantic relationship in a lifetime is a rare thing. Commitment to a relationship is seen as not giving up in the hardest moments and living trough the good and bad. The feeling of being close to the other in physical and psychological way is important. Having a balance between these is important, but it is also inevitable either one of them being more emphasised. The emphasis will vary throughout the lifespan of the relationship and will not be constant, still being identified as a normal change. (Heiskanen, Markova, Salmi & Vaaranen 2017, 9-16.)

Sexuality is seen as multidimensional, being part of the relationship as it is a part of both individuals in the relationship. It goes along with us the whole life, only changing its form. Sexuality does not die at some point of our lives, it exists from birth to death. (Cacciatore & Ingman-Friberg 2018.) In a relationship, intimacy and sex are responsibilities of both

parties. It is needed for both to see effort in these areas of the relationship for it to work and be satisfying. (Parisuhteen seksuaalisuus on molempien vastuulla 2019.)

Caring for the involuntary childless couple includes many things. It is important for them to have the medical treatment. However, often the support and caring of the couple otherwise is lacking as there is not enough knowledge of the whole experience and the extensive nature of it. Involving both individuals of the couple in their treatment is important, as the treatment is often performed to the women. As this happens, men are easily overlooked and might feel as they are invisible. It is important they feel the nurse is there for the couple and both individuals in everyway. Emotional support is needed as well as understandable explanation. Having a good relationship between the nurse and the couple is vital for holistic care to take place. (Dancet, Van Empel, Rober, Nelen, Kremer & D'Hooghe 2011, 829-831.)

The thesis focuses on involuntary childlessness and its effects on a heterosexual couple's relationship and sexuality. In the author's opinion the subject needs to have more attention to be recognized better in the health care field, even thought the recognition has been going upwards. It is needed to gather more information on the subject to increase the knowledge of future nursing students and nurses working in the health care field of these matters. By doing this, nurses are able to provide and ensure holistic care and approach while caring and advising patients and their partners. The aim of the thesis is to find out what are the effects of involuntary childlessness on a heterosexual couple's relationship as well as on their sexuality. The reason for including only heterosexual couples is due to homosexual couples not being able to conceive together, even though childlessness can be experienced by them as well. As the term relationship is used in the thesis, the romantic relationship between a man and woman is meant, and by childlessness, involuntary childlessness is meant if not otherwise described.

2 CHILDLESSNESS AND THE CAUSES

2.1 Voluntary childlessness

Some people make a carefully considered decision of not wanting to have children. In those cases, the definition of childlessness is considered to be voluntary. It is not dependent on any exterior factor, but rather based on the feeling of fulfilled life without offspring. (Blackstone & Stewart 2012, 3.) When discussing childlessness, it is needed to make a difference between voluntary and involuntary childlessness as they both exist.

Nowadays, the number of people being voluntary childlessness has risen. In different age groups the percentage varies, the gender of the person having an impact as well. In total the number of people being voluntary childlessness is approximately 13 %. (Vapaaehtoinen lapsettomuus yleistyy Suomessa 2016.) The reason behind it might not be only due to its increasing, but in fact the openness around the subject growing. People being voluntary childlessness can speak about it more freely nowadays, not having to be afraid of getting judged. However, the openness itself has not risen the number of voluntary childless people, even though it does have an effect on it, meaning there still is an increase seen in the number of people not wanting to have children. (Miettinen & Rotkirch 2008, 71.)

It has been noted that the living conditions of the voluntary childlessness people have an effect on their decision. The ones living in a city are more likely to choose voluntary childlessness than people in the countryside. (Vapaaehtoinen lapsettomuus yleistyy Suomessa 2016.) Also, the type of the family one has had in the childhood was noted to have an impact on the decision made by an individual. Having one's parents divorced or being the only child in the family were noted to have a positive emphasis on the decision of voluntary childlessness. (Miettinen 2010, 15.) The wellbeing in life, both for the individual and the couple having chosen voluntary childlessness, is not significantly lower compared to others. They are satisfied with their situation and are living fulfilled life. (Vapaaehtoinen lapsettomuus yleistyy Suomessa 2016.)

An observation of educational background contributing to the choice of voluntary childlessness has also been made (Avison & Furnham 2015, 47). People with educational background limited only to primary school are most likely to make the choice of voluntary childlessness. The percentage of this group is as high as 18,5. The ones having a degree from a university or university of applied sciences follow with 14 %. Having a degree from a high school or vocational school, the percentage drops to 11,5. (Vapaaehtoinen lapsettomuus yleistyy Suomessa 2016).

All in all, the choice of voluntary childlessness is mostly linked to the view of life by the individual, the perception of one as a parent or personal factors. Economic status, educational background or work have not as big of an impact as the aforementioned factors. All factors contribute to one another and a single one of them does not determine the choice. (Vapaaehtoinen lapsettomuus yleistyy Suomessa 2016.)

2.2 Involuntary childlessness

Whereas voluntary childlessness is a decision made by an individual or a couple, involuntary childlessness has nothing to do with a decision of not wanting to have children. In these cases, there is always a factor or multiple factors contributing to childlessness. The reason can be based on either of the individuals or both of them and is determined by multiple different examinations. (Tiitinen & Savolainen-Peltonen 2019b.)

Involuntary childlessness is defined by not being able to conceive after a year of trying to conceive. During the year there must have been regular and unprotected intercourses which have not concluded into pregnancy. (Miettinen et al. 2008, 17.) From all the couples, it has been estimated that 15 % suffer from involuntary childlessness at some point in their lives and the number has been predicted to grow increasingly year after year (Tiitinen 2018a; Repo 2019). There is a detectible increase in the percentage as women age. The younger the woman is, the easier it is to get pregnant. For example, in a case of a 20 to 25 years old woman, the percentage of involuntary childlessness is approximately 6 %, whereas in a case of a 30 to 35 years old it is 16 % and in a case of a 40-45 years old it is already 40 %. (Tiitinen et al. 2019b.) Despite these percentages, the number of people conceiving following the year a contraceptive has been discontinued is 80-85 % of all couples. However, the percentage only includes those couples in which the woman is not older than 38 years. (Tiitinen 2018b.)

Involuntary childlessness divides into two, primary and secondary. If involuntary childlessness is primary, it means there has never been a pregnancy. (Tiitinen et al. 2019b.) In the case of secondary, there has been a pregnancy or pregnancies, but since the previous pregnancy one has not been able to get pregnant again (Miettinen et al. 2008). There is also a concept of subfertility, being defined as weakened fecundity, and sterility, which is defined as complete inability to conceive (Miettinen et al. 2008; Tiitinen et al. 2019b). Subfertility is relatively common, whereas sterility is rarely the case (Tiitinen 2018b).

2.3 Risks of involuntary childlessness

What comes to the risk factors influencing fertility, both in men and women, there are multiple known factors. An individual can make a conscious decision and act to increase fertility by having those in order. Risk factors include everyday things and lifestyle habits, thus being easy to have in order. If these are in order, the chances of conceiving are better. (Tiitinen 2018b.)

Weight can have a negative impact on fertility in both. Especially if a woman has significant over or under weight, the fertility is compromised, and the risk of a miscarriage increases. Smoking and excessive drinking are also risk factors. For men, excessive drinking can cause disturbance in sperm production, and smoking can decrease the sperm quality. For women, smoking decreases the function of ovaries and excessive drinking has a negative effect on fertility. (Rossi, Abusief & Missmer 2016, 223-225.)

If one has a chronic illness or multiple ones, it is important to have the treatment in balance. Compromised treatment balance is one of the risk factors and might contribute to infertility of either gender. (Tiitinen 2018b.) Having safe sex with an unknown or new partner is important due to existing sexually transmitted diseases. For example, chlamydia is known to cause infertility if left untreated. It is advised to seek medical attention if unprotected intercourse has occurred with an unknown or new partner. It is also advisable to have oneself regularly tested for sexually transmitted diseases if one is not in a steady relationship. (Deyhoul, Mohamaddoost & Hosseini 2017, 25.) Furthermore, age is a significant risk factor for infertility, mostly effecting women. Due to older women being more likely to have fertility issues, it is advisable for women to take their age in consideration when thinking of an offspring. (Söderström-Anttila 2018, 897.)

2.4 Causes of male factor childlessness

The reasons behind involuntary childlessness are broad and can be divided into causes for female and male childlessness. Despite this, in some cases, the reason for involuntary childlessness might never be known. In fact, 25 % of the cases of involuntary childlessness are characterized as unexplained, while 25 % is caused by female, 25 % caused by male and the rest 25 % caused by both individuals (figure 1). (Tiitinen 2018b.)

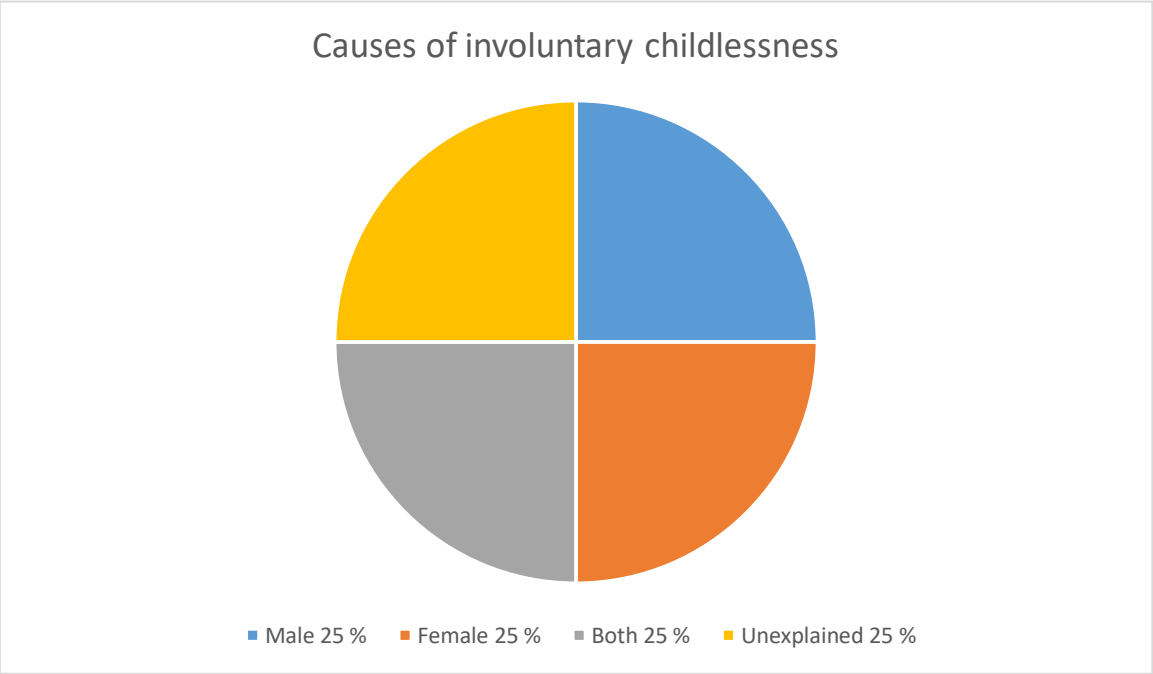

Figure 1. Causes of involuntary childlessness (Tiitinen 2018b).

The most common diagnosed reason for childlessness in men, and overall, is decreased quality in sperm (Tiitinen 2018b). It is the most common diagnosis in male factor childlessness, covering 30-50 % of the cases of involuntary childlessness (Tiitinen 2018d). The other and not as common reasons behind childlessness in men are undescended testicles, post-inflammatory condition of orchitis, varicocele, hormonal imbalances, chromosome defects, blockages in epididymides or vasa deferentia, antibodies attacking sperm cells, structural defect of sperm and difficulties in intercourses. (Tiitinen 2018b.)

As testicles develop during pregnancy, the development happens in the posterior abdomen of the foetus. From the abdomen, the testicles will descend into the two sides of scrotum through inguinal canals before the due date. (Virtanen & Toppari 2014.) In a case of undescended testicles, the testicles have not descended from the abdomen. The testicle(s) either remains in the abdomen or in the inguinal canal. The condition is not common and only 5 % of boys will have either one or both testicles undescended. Usually the undescended testicle is defined as a retractile testicle. In these cases, the testicle can be milked to the scrotum, but it might bounce back. It can also descend itself in a warm environment, such as sauna. A retractile testicle does not normally need surgery since testicles will descend into the scrotum before puberty by themselves. However, if this is not the case, the treatment needs to be performed surgically. (Jalanko 2017.) If the surgery has not been performed prior to 4 years of age, by placing the testicles into the scrotum

surgically, it most often results in weakened sperm production and infertility (Tiitinen & Savolainen-Peltonen 2019a).

In case of a genital region inflammation in a male, the inflammation rarely is restricted to a specific region. Instead of focusing on one genital organ, the effects of the inflammation can often be seen in multiple places. Whether the inflammation is a chronic or an acute one, it is not a significant factor, it can still make substantial damage as it is in such a sensitive area. Depending on the inflammation and its target, the consequences vary. The main consequences are seen in semen by having a decreased quality of sperm or having little to none of sperm cells in semen. (Schuppe, Pilatz, Hossain, Diemer, Wagenlehner & Weidner 2017, 339-342.) Swelling of the veins draining testicles is called varicocele (Naser & Alhabbash 2016, 184). Despite it mostly affecting the left testicle, and being one sided, it causes disturbances in blood circulation in both testicles (Tiitinen et al. 2019a). As a result of this, the development of semen is negatively affected. Since the development of the semen is compromised, it might be a cause of infertility. (Naser et al. 2016, 184.)

Hormonal imbalances are a rare cause of involuntary childlessness in men. Those are further on divided into endocrine disturbances and mutations in hormone receptors, including inactive hormones. If the reason is an endocrine disturbance, it can either be hypothyroidism, hyperprolactinemia or hypogonadotropic hypogonadism, or there can be disturbances in hormone receptors in this area. In case of a hormone receptor mutation, the mutation can be in follicle stimulating hormone (FSH), in luteinizing hormone (LH) or in androgen receptor. Chromosome defects in men are roughly divided into three, including Klinefelter syndrome, XX male syndrome and deletions in Y chromosome. (Tiitinen et al. 2019a.) Klinefelter syndrome is the most common one and usually diagnosed as infertility is being investigated. In Klinefelter syndrome, instead of having X and Y chromosomes a man is supposed to have, the individual has two X chromosomes and one Y. Klinefelter syndrome causes infertility in such a way as semen not having sperm cells none or very few. (O'Flynn O'Brien, Varghese & Agarwal 2010, 2.) Deletions in the Y chromosome are next in line and the rarest chromosome defect is the XX male syndrome, both which causes decreased or missing sperm production (O'Flynn O'Brien et al. 2010, 2; Tiitinen et al. 2019a).

When looking into a man having fertility issues, the cause can be found to be a blockage in epididymides or vasa deferentia. In both cases, the condition results as having no sperm cells in the semen. (Ammar, Sidhu & Wilkins 2012, S63-S64.) If the reason is diagnosed to be antibodies attacking sperm cells, it can be caused due to a trauma, an

inflammation or encountering cells in charge of immune defense, resulting sperm cells barely moving or clumping together, therefore causing infertility (Tiitinen 2018d; Tiitinen et al. 2019a). Furthermore, the reason can be structural defects of sperm cells. Reasons resulting in these types of structural defects are not well-known. (Tiitinen 2018d.)

Problems with sexual intercourse can also be a cause in male factor infertility. If a man is unable to perform sexual intercourses due to an ejaculation issues or erectile disfunction, those factors can contribute to infertility as they are needed in order for the conception to happen. These can be a result of a number of different reasons, including a spinal damage or self-esteem issues. (Tiitinen 2018b.)

2.5 Causes of female factor childlessness

From all the causes of involuntary childlessness 25 % are due to women and the majority are diagnosed in women. The most common reasons are ovulatory disfunctions, also known as disturbance in developing ovarian follicle. (Tiitinen 2018b.) These types of disfunctions are diagnosed in 30-40 % of the cases involving involuntary childlessness (Tiitinen 2018f). After ovulatory disfunctions follow damage(s) to fallopian tube(s) and endometriosis, both with the percentage of 10-20, and only a microscopic part of all reasons involves the uterus or sexual dysfunctions (Tiitinen 2018b; Tiitinen 2018f).

Multiple different reasons behind ovulatory dysfunctions exist, from which the most common reasons behind ovulatory dysfunctions are functional factors, including for example excessive stress in any way and eating disorders. Other common reasons are polycystic ovary syndrome (PCOS), hyperprolactinemia and hypothyroidism. (Tiitinen 2018f.) PCOS can cause irregular menstruation or even no menstruation, also known as amenorrhea, and in some cases prolonged bleeding. Since PCOS can cause amenorrhea, a woman might not ovulate, hence contributing to childlessness. In addition to PCOS causing irregular menstruation or amenorrhea, hyperprolactinemia or hypothyroidism can also be a cause in those conditions (Brassard, AinMelk & Baillargeon 2008, 1169-1179).

What comes to less common reasons behind ovulatory dysfunctions, these are primary ovarian failure (POF) and hypopituitarism (Tiitinen 2018f). As POF progresses, it can begin with shortened menstruation cycles followed by minimal bleeding or no bleeding. After that, the excretion of estrogen decreases resulting in permanent anovulation, meaning no ovulations occur. Since a woman does not ovulate, conceiving cannot occur, leading to childlessness. (Nelson 2009, 607-608.) In hypopituitarism, there is inadequate excretion of one or more hormones, including the hormones affecting childlessness, FSH and LH. If

there is insufficient excretion of both or either of these hormones, concludes the insufficiency to menstrual disturbances and further on to childlessness. (Mustajoki 2018.)

In cases of damages to fallopian tubes, they can either be damaged, or partially or totally blocked, resulting in disturbances in the movement of sperm cells as well as egg cell, fertilization and the implantation of the embryo (Tiitinen 2018e; Tiitinen et al. 2019a). The most common reason for the damages is post-inflammatory condition of pelvic inflammatory disease (PID) (Brassard et al. 2008, 1164). Other reasons can be post-condition of ectopic pregnancy, salpingitis isthmica nodosa, burst appendix, peritonitis or endometriosis (Tiitinen 2018b; Tiitinen et al. 2019a). PID itself is not a reason for the damages to fallopian tubes, but if left untreated, it can result in damages. It might also cause an ectopic pregnancy. (Laitinen 2018b.) In case of an ectopic pregnancy, the pregnancy itself as well as the post-conditions of it might result in damages to fallopian tubes. An ectopic pregnancy means the embryo has implanted itself somewhere else than uterus, most often into a fallopian tube, in 95-97 % of the cases. Implantation to other places, such as cervix, are therefore rare. (Laitinen 2018a.) Salpingitis isthmica nodosa can be a result of PID. In these cases, the isthmus of the fallopian tube is fully or partially blocked. If a burst appendix, peritonitis or endometriosis is a cause of the blockage or damages in fallopian tubes, these usually result in adhesions in abdomen cavity between intestinal and internal genitalia. (Tiitinen et al. 2019a.)

Endometriosis is a condition in which there are cells of endometrium, the layer of tissue covering the inside of uterus, located outside the uterus, causing a chronic inflammation. These cells can be located in peritoneum, gut, ovaries and bladder as well as between the vagina and rectum. (Härkki 2018.) There are many symptoms of endometriosis from which the condition can be diagnosed. However, the diagnosis is not considered to be confirmed unless there has been a surgery performed to be sure of the diagnosis. Due to the adhesions and anatomical changes endometriosis causes, it is likely to cause childlessness. If the endometriosis is mild, spontaneous pregnancy might occur. Other than mild ones, it is likely endometriosis needs to be treated before a pregnancy can begin. (Perheentupa & Härkki 2019.)

Uterine based causes of childlessness in women are not common. Structural defects of uterus, uterine myomas, endometrial polyps and Asherman’s syndrome are uterine based causes. (Brassard et al. 2008, 1165-1166.) Uterine myomas and endometrial polyps, also known as uterine polyps, are both usually benign tumors of the uterus. Both contribute negatively to the implantation of the fertilized egg, but are a rare cause of childlessness, often being present throughout the pregnancy. However, if a woman has either of these, a

risk of a miscarriage is higher than without. (Heinonen 2018.) Asherman's syndrome is a condition in which there are adhesions present in the uterus. The adhesions are due to trauma of the endometrium caused by curettage. Depending on the severity of the syndrome, it can cause anything between menstrual disturbances to childlessness. (Heinonen 2010.) What comes to the uterine defects and malformations, those are rare. The uterine might have a partial or full septum inside, therefore dividing the uterus in two. It might also be partially or fully doubled. (Abrao, Muzii & Marana 2013, S21.) Adenomyosis is also a uterine based cause, a condition in which the cells of endometrium break through the myometrium, the muscle wall of the uterus, causing the uterus to largen. They develop functioning masses of cells within the myometrium, disturbing the implantation of the fertilized egg. (Steinkeler, Woodfield, Lazarus & Hillstrom 2009, 1360.)

Sexual dysfunctions and disturbances are also a rare cause of childlessness in women. There are only two known factors to this category, vaginismus and sexual intercourse less frequently than once in a week. The lack of intercourses contributes to childlessness since without sperm cells being present to fertilize the egg, a pregnancy cannot occur. (Tiitinen 2018b.) Vaginismus as a condition is caused due to a traumatic sexual experience, such as a rape or childhood abuse. One having experienced something as terrifying as stated, might response to touch of the genital area as a fight-or-flight. Due to the reaction, sexual intercourse is unable to occur ultimately resulting in childlessness. (Kero & Väisälä 2019.)

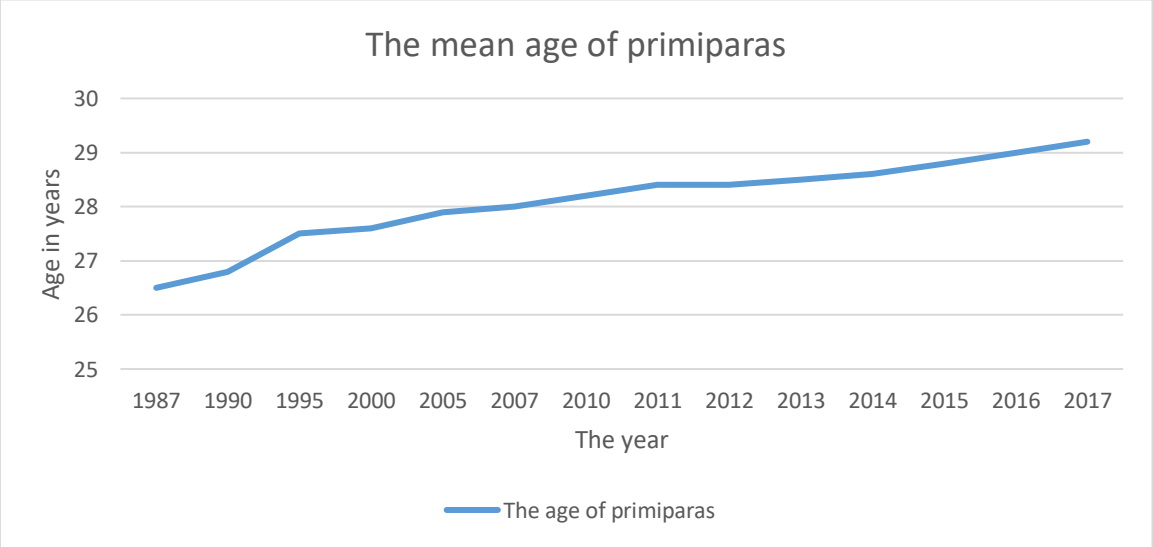

Figure 2. The mean age of primiparas in Finland (Terveyden ja hyvinvoinnin laitos 2018).

Besides the abovementioned reasons, another reason behind childlessness has been identified to be the age of women giving birth for the first time. It has been noted that people are starting up families later in their lives than before, therefore the age for giving birth for the first time has risen. (Lastenhankinta ja raskauden alkaminen 2018.) For the past 20 years, the age of primiparas has steadily risen higher in Finland (figure 2) (Terveyden ja hyvinvoinnin laitos 2018). As a woman ages, the fertility rate goes downwards, being at its best at the age of 25. After reaching the age of 30 and higher, the fertility rate has already significantly decreased and continues to decrease. (Paananen, Pietiläinen, Raussi-Lehto & Äimälä 2015, 371.) Even though high primiparas is not straightly a female cause, it is a cause of childlessness and can be viewed as being a cause to which both genders contribute.

3 EXAMINATIONS AND TREATMENTS OF INVOLUNTARY CHILDLESSNESS

3.1 Examinations performed in a municipal health care centre

To be able to begin the examinations of involuntary childlessness, there needs to be a year of conceiving effort behind. If there is an underlying condition possibly contributing to infertility, the examinations can begin earlier. (Miettinen 2011, 20.) During the examinations, both individuals will be examined thoroughly to be able to find the possible cause(s) of childlessness. It is needed to note a cause found does not exclude other causes, since there can be multiple causes for childlessness, hence making thorough examinations important. As the examinations begin, they are firstly done in a municipal health care centre. However, if the couple is interested in their fertility and want to take a look into it prior a year of trying to conceive and there is no known underlying condition(s), a private health care clinic can be used. (Tiitinen 2018b.)

The first step towards finding the cause is to gather information, meaning the medical history, also known as anamnesis, from the couple both as a couple and individuals. Anamneses need to include the length of attempted pregnancy, sexual and reproductive history, nutrition state, underlying illnesses and medications, prior surgeries possibly affecting fertility, mental health status and psychosocial status, as well as smoking status, alcohol and drug consumption. General clinical examinations and more specific ones are performed, therefore gathering physical information. (Tiitinen & Savolainen-Peltonen 2019d.) In the general clinical examination blood pressure, height and weight will be taken from both of the individuals. Different kinds of blood tests are also done, to ensure there are no abnormalities in hormone or other levels. (Tiitinen 2018b.)

Gynaecological examination is performed to the woman, during which a Pap test is taken and samples for chlamydia are collected during the examination (Tiitinen 2018b). In a Pap test, there are cells scraped from the opening of the cervix (Nieminen & Timonen 2014, 2392). Both of these are especially important if there are prior infections or findings known to possessed by the woman. In addition to the regular blood tests performed, if there is a case of irregular menstruation, prolactin levels are investigated. The goal of the examinations of the woman is to find out whether the uterus is healthy, whether ovulation occurs and whether there are any blockages in the fallopian tubes, hence contributing to fertility issues. (Tiitinen 2018b.)

The man needs to provide a sperm sample which will be examined. This provides the base of the examination of the man, setting the goal in this stage to find out whether the sperm quality is adequate. (Klami & Perheentupa 2015, 1969.) Besides the sperm sample

and general clinical examination, there can be an examination of the male genitalia performed which is done in a case of abnormal findings in the sperm analysis or symptoms occurring in the genitalia region (Klami et al. 2015, 1971; Tiitinen 2018b).

3.2 Examinations performed in a specialized ward in a hospital

After the examinations performed in the municipal health care centre, if seen necessary, the doctor refers the couple to a specialized ward in a hospital, in which more specific examinations are completed to have a better understanding of the cause(s). As stated earlier, the base of the examination of the man is the sperm analysis. In case this has not been performed in the municipal health care centre, it is performed in the specialized ward at a hospital. If the sample was given and there were no abnormalities in the analysis, there is no reason to further on investigate the man. (Tiitinen 2018b.) However, if the man has provided the sample earlier but the findings have been abnormal, there needs to be a new sample provided and analyzed. The results found can change, but in some cases the results are consistently abnormal. In these cases, there are further examinations performed, including more precise clinical examination, blood tests and possibly a testicular ultrasound. (Klami et al. 2015, 1971.)

In the clinical examination of a man, the testicles are examined. It is needed to see if the shape and size are normal and whether the surface is even. Further on, the testicles are searched for varicocele. (Marshburn 2015, 7.) The testicles can also be imaged by an ultrasound, providing information of possible structural defects and tumors (Ammar et al. 2012, S69). Imaging is performed if the sperm analysis comes back as no sperm cells found in the semen or if there is otherwise difficult malfunction in sperm production affecting the quality of sperm (Klami et al. 2015, 1971). Prostate gland is also palpated through the rectum to be able to determine the size, and whether there is any tenderness present (Kamel 2010, 5; Tiitinen 2018d).

More specific blood testing is performed in case of abnormal findings in the analysis of the sperm. All the cases are individually assessed and not all the blood tests are carried out in every individual. There are a number of factors which are possible to check from a blood sample, including chromosomal assessment and microdeletion of Y chromosome as well as levels of testosterone, LH, prolactin, FSH and different hormones of thyroid gland. (Klami et al. 2015, 1971.) In addition, there can be a biopsy taken from a testicle if there are no sperm cells present in the sperm sample and all the aforementioned blood test results are normal (Kamel 2010, 5; Tiitinen 2018d).

For the woman, there are also a number of examinations and tests that can be carried out. A transvaginal ultrasound, an ultrasound imaging through vagina, is performed to examine the structure and function of the uterus, fallopian tubes, ovaries, cervix and vagina. In case of unclear results gotten by the transvaginal ultrasound, the option of a hysterosonography (HSG) should be taken into consideration. In an HSG sterile saline is injected through a catheter into the uterus which will result the uterus to enlarge the uterine cavity. This provides a more detailed and clearer picture of the uterine cavity. Since HSG does not provide any knowledge of the fallopian tubes, there is a technique called hysterosalpingosonography (HSSG). It is similar to HSG, but in a HSSG there is a mixture of sterile saline and air injected into the uterus via catheter. By using this technique, it can be seen whether there are any blockages in fallopian tubes. In both procedures there is a transvaginal ultrasound performed simultaneously. In addition to HSG and HSSG, there is laparoscopy, which is performed only if there are abnormal findings in HSSG, or there is a suspicion of endometriosis or post-inflammation condition. (Tiitinen et al. 2019d.)

The occurrence of ovulation is also needed to be verified. No difference is made whether the menstruation is regular or not. However, if the menstruation is abnormal in some way, there need to be further examinations performed. (Tiitinen 2018f.) To verify ovulation, progesterone level is tested from blood approximately a week prior to menstruation. More detailed blood tests are performed in case of abnormal menstruation. The levels of prolactin, LH and FSH are measured in the beginning of the menstruation cycle, between the days 3-5. In addition to blood tests, the occurrence of ovulation can be verified by ultrasound imaging. (Kamel 2010, 5.) The imaging is usually performed few days prior to the expected ovulation. If certain criteria are met, an estimate of occurring ovulation can be done. (Tiitinen et al. 2019d.) Anti-Müllerian hormone level, hormone indicating the remaining undeveloped ovarian follicles, can also be tested (Marshburn 2015, 4).

Progesterone level can also be measured to determine and get a comprehensive picture of the behaviour of corpus luteum (Tiitinen et al. 2019d). Corpus luteum is a mass of cells formed from the ruptured ovarian cell after an ovulation has occurred, and secrets progesterone and estrogen (Lääketieteen sanasto 2018). To determine the behaviour of corpus luteum, it is needed to take multiple blood samples over multiple days in the end of the menstruation cycle. Moreover, ultrasound imaging can help with clarifying the behaviour of corpus luteum. If corpus luteum behaves normally, the endometrium is seen getting thicker in the imaging. To ensure corpus luteum secreting the abovementioned hormones adequately, there can be a histological examination of the endometrium performed. However, nowadays it is performed only if there is a constant reoccurrence of spotting. (Tiitinen et al. 2019d.)

3.3 Treatments of involuntary childlessness

Depending on the results of the examination, there are multiple options of proceeding (Tiitinne 2018b). The first step is to take care of the factors decreasing fertility, most importantly smoking and weight issues, of the couple. Other risk factors need to be considered as well and none should be left without attention. (Rossi et al. 2016, 227.) Multiple treatment forms of involuntary childlessness exist and are divided into hormonal, surgical and intrauterine insemination (IUI) as well as in vitro fertilization (IVF) and intra cytoplasm sperm injection (ICSI). The couple needs to be fully informed of their choices and given a realistic view of the possibility to conceive. It is important to give all the information available for the couple for them to be able to make the best decision at hand. The treatment plan is always carefully designed based on the needs and wishes of the couple in question. In some cases, there might still be a good chance to conceive naturally without a treatment, and in those cases the treatment is post pounded, due to the best option of getting pregnant is always the natural way without outside intervention. However, sometimes the best option is abstention of treatments or adoption. (Tiitinen 2018b.)

Most of the hormonal treatments aim at ovulation induction. In some cases, the aim of a hormonal treatment is different, for example if treating the man. (Tiitinen & Savolainen-Peltonen 2019c.) The most common way to induce ovulation is to take letrozole, an aromatase inhibitor medication. To be able to begin the medication, it is important to assure all levels of hormones secreted by the pituitary gland are normal. In addition to letrozole, gynaecological ultrasound imaging is performed to affirm development of an ovarian follicle, or maximum of two. Adequate thickening of the endometrium is also checked during the imaging to ensure the implantation of the embryo has the best circumstances to happen. If aromatase inhibitor has no effect on ovulation induction or the cause is known to be inadequate levels of gonadotropins, the option is daily injections of gonadotropins. If needed, these treatments can be repeated multiple times. (Tiitinen 2018c.)

The only time a man has a hormonal treatment is when the cause has found to be inadequate secretion of hormones secreted in the pituitary gland contributing to inadequate development of sperm cells. In these cases, the treatment is also gonadotropins which most often helps. (Morin-Papunenen & Koivunen 2012b, 1570.) Otherwise, hormone treatments have proven to have no effect on men (Tiitinen et al. 2019c).

The main reasons behind surgical treatments are endometriosis, uterine myomas, endometrial polyps and damages to fallopian tubes. Uterine myomas and endometrial polyps can be surgically removed and this is performed in cases of large myomas or polyps, or if the location has a vital contribution to conceiving. If damages to fallopian tubes are mild, a

surgery can be a lucrative option. In severe damages, surgeries often hold no value as a treating method of childlessness. In some cases, surgery can be a preparative treatment method, including blocked fallopian tubes, increasing the success rate in IVF treatment. (Tiitinen 2018c.) Endometriosis is treated surgically only if the pain is severe or it is widely spread, hence decreasing chances of conceiving. It is needed to carefully assess the need for a surgery and not to perform surgeries too often. (Härkki, Heikkinen & Setälä 2011, 1842-1846.)

While women can often be treated after the cause has been found in them, in cases of causes found in men the options are usually non-existing. The reason for the lack of options is the cause most often being decreased sperm production and the reason behind it is unknown. In these cases, the method of treatment is often chosen to be IUI, IVF or ICSI, not excluding the cause found to be in a woman. (Tiitinen 2018b.) As methods IUI, IVF and ICSI differ from each other (Morin-Papunen & Koivunen 2012a, 1483-1484; Morin-Papunen et al. 2012b, 1572).

In IUI, washed and separated sperm cells are inserted into the uterus by using a catheter and it is important to perform while ovulation occurs. If ovulation problems exist, to improve chances of conception, ovulation induction should simultaneously be performed. (Morin-Papunen et al. 2012a, 1483-1484.) To be able to perform IVF, there are egg cells harvested from the follicles of the ovaries and a sperm sample is also needed. Prior harvesting, the woman undergoes hormonal treatment to ensure multiple egg cells developing at the same time, otherwise harvesting cannot occur. The next step is to place eggs and sperm cells onto a common cultivation dish and wait for the fertilization to happen. The whole process is carefully monitored. As there are multiple eggs in the cultivation dish, there can be multiple fertilizations. Once fertilization has occurred and an embryo has developed approximately 48 hours, it can be transferred into the uterus. Other possible embryos will be frozen and saved for later. ICSI also needs egg cell harvesting as well as a sperm sample. In ICSI, one sperm cell is injected into an egg cell by a thin glass needle. After the fertilization has occurred, the proceeding is the same to an IVF treatment. (Morin-Papunen et al. 2012b, 1572-1573.)

4 INVOLUNTARY CHILDLESSNESS AND ROMANTIC RELATIONSHIP

4.1 Relationship

A relationship is a changing part of life for everyone. For most people, one romantic relationship in a lifetime is a rare thing. (Heiskanen et al. 2017, 9-16.) However, there are expectations loaded into it, making it challenging as well as rewarding based on expectations met (Kuivalainen 2014, 20-22). For a relationship to work, good communication is needed. As communication works, negative things can be discussed without them growing out of proportion into a huge conflict. The importance is not only in situations of disagreements or conflicts, but also in sharing everyday life with the other. It is needed to remember by the individuals not to take for granted the other one, and to see the other one as a lover and vice versa. By being supportive of one another and giving positive feedback, happiness and intimacy of the relationship increases, further on increasing sexual activity and affection between partners. Both of the aforementioned are important in a relationship, making one feel loved and appreciated. Sexual intimacy is a big part of a relationship and can negatively affect the relationship if both parties are not satisfied. (Kontula 2009, 7-134.)

At its best, a relationship provides mutual understanding and deep erotic affection between the individuals. Individuals feel trusted, safe and can trust the other as well as are comfortable with creating and sharing new experiences with the other party. Being able to love and feeling loved is a unique feeling only a romantic relationship has to offer. All of these combines into a happy and healthy relationship. (Kallio 2014, 81-92.)

As a relationship is being formed, there can usually be seen three main phases, including falling in love, becoming independent and steady love. Commitment to a relationship is seen as not giving up in the hardest moments, living trough the good and bad. The feeling of being close to the other in physical and psychological way is important and having a balance between these is important. It is also inevitable either one of them being more emphasised. The emphasis will vary throughout the lifespan of the relationship and will not be steady, still being normal. (Heiskanen et al. 2017, 9-16.)

In the first phase, individuals have a strong feeling of togetherness. One might have troubles in sleeping and living without the other due to thinking of the other one around the clock. The other party is seen in a positive light, all the qualities being positive and the individual being the one from dreams. As the relationship evolves, begins the second phase, known as becoming independent. The meaning of this phase is to form a picture of oneself without the other and draw lines of self determination. The other and not as

positive qualities will appear and are seen as a part of the person during this phase. As a phase, this is important, since there is balance between closeness and independence sought and determined for the couple in question. The final phase brings the realization of the relationship as it is. It is not all shiny nor dark, but a balance between these two. Steady love goes from this point on, defining the relationship as formed. (Heiskanen et al. 2017, 9-16.)

4.2 Sexuality

Sexuality is seen as multidimensional, being part of the relationship as it is a part of both individuals in the relationship. It goes along with us the whole life, only changing its form. Sexuality does not die at some point of our lives, existing from birth to death. (Cacciatore et al. 2018.) It is a very sensitive area of one's life and needs to be dealt delicately with and appreciated. Individuals in a relationship can positively or negatively affect each other's sexuality. By addressing it with honor with each other, the relationship can deepen and get new dimensions. (Parisuhteen seksuaalisuus on molempien vastuulla 2019.)

The World Health Organization (WHO) defines sexuality as multidimensional and being a central aspect of being a human throughout life. Sexuality is often understood only as sex, eroticism, pleasure and intimacy, even though the definition includes them, it also includes much more. It includes gender identities and roles as well as sexual orientation and reproduction. All of them are part of sexuality. WHO also mentions sexuality being expressed and experienced in our thoughts, fantasies and beliefs as well as being part of our attitudes, values, behaviours, practices and roles. It combines relationship and sexuality together. Different factors contribute to sexuality and it is also influenced by them. It is needed to acknowledge biological, psychological, social and economical factors having their own influence on sexuality. Political, cultural, ethical, historical, religious and spiritual factors cannot be excluded from the list of influencing factors either. (Sexual health and its linkages to reproductive health: an operational approach 2017.)

It is inevitable for involuntary childlessness to have an impact on the sexuality of the couple, as a couple and individuals, since it is in the center of the matter. As sexuality is affected, femininity and masculinity are also questioned by the individuals. Sexual intimacy will remind the couple of childlessness as well as their bodies' inability to reproduce, and feelings of disappointment in their own bodies can be experienced. The association between involuntary childlessness and inability to conceive leads to decreased sexual satisfaction. Pleasure and intimacy felt by the individuals are affected and can cause tensions

within the relationship. Due to the pressure intercourse holds as it is vital in being able to conceive performance issues can raise. (Piva, Lo Monte, Graziano & Marci 2014, 232-234.)

In a relationship, intimacy and sex are responsibilities of both parties and due to their intimate nature easily affected by disturbances in the relationship. As stated earlier, sexuality changes over the course of life, therefore affecting the sex life of a couple. Situations surrounding the relationship and the individuals' lives can change as time passes, naturally effecting to the sex life. It is needed for both to see effort in this area of the relationship for it to work and be satisfying, emphasising good communication between the partners. Having a great and satisfying sex life further deepens the relationship and makes individuals feel loved as well as trusted. Intimacy needs to be addressed as well in the relationship. It should be seen in the everyday life of a couple as little affectionate things toward one another. A kiss or hug here and there, or the lack of one, can be relationship changing, and have a huge impact to one's sexuality. (Parisuhteen seksuaalisuus on molempien vastuulla 2019.)

4.3 Involuntary childlessness as a crisis

Involuntary childlessness has multiple effects on the lives of individuals in the relationship. It also has an impact on the mental and physical health of the individuals. (Repokari 2008, 14-16.) Depending on the importance of a child to the couple in question, the crisis is experienced differently. As the relationship is affected, it can either get stronger or crumble. (Lapsettomuus koskettaa aina 2019.) In some cases, the crisis can aggravate earlier problems of the relationship (Repokari 2008, 14-16). Since there are two individuals in a relationship, both will have their own pace and way to process the information of involuntary childlessness and everything it will bring along. People can lean on each other and understand what the other one is going through. (Lapsettomuus koskettaa aina 2019.) It also might happen as couple having such different methods of processing, they will not understand the other. However, it is common for it to bring the couple closer to each other as they have experienced something profound together. (Repo 2019.)

Nowadays, there is lots of information available concerning conceiving and infertility. However, there still are persistent attitudes and believes towards conceiving. Majority of people believe conceiving is easy and will instantly happen as they discontinue contraception. Despite the information available, people are surprised and disappointed as it does not happen as easily as they imagined. (Miettinen 2011, 19-20.) People often have not

thought of their motives as becoming parents. It seems it is something we are expected to become and feels as a normal step in life. Society gives pressure as to when and how to become parents, and if deviating from those expectations it is not seen as normal behaviour. (Kuivalainen 2014, 22-25.) Becoming a parent should always be a choice of one's own and not pressured for example by the society. However, it is inevitable for biological limitations to reach their end at some point, which might contribute to the decision of a parenthood even if one does not feel ready and mature enough. (Söderström-Anttila 2018, 897.)

If a pregnancy does not occur as planned, there are variety of feelings both, men and women experience. Negative feelings are strongly associated with infertility. Feelings of anxiety, depression and guilt are common. (Repo 2019.) Also, feelings of not being able to control one's own body and being afraid of not getting a family of one's own are common. Women are more prone to experience negative feelings than men, although men experience them as well. When the cause of involuntary childlessness has been found, the party of fault will most likely blame oneself. In a situation of self-blame, there is not much the other one can do except to be around, understand and comfort. (Repokari 2008, 14-16.)

Nowadays there are multiple different treatment options available, hence making conception a possibility. However, infertility examinations and treatments are rarely easy to get through and therefore take toll on the individuals and further on the couple's relationship. The invasive nature of them felt by the individuals affect an individual and further on a relationship level. To ease the stress of the experience, it is vital for the couple to communicate with each other. Most often it happens naturally as choices need to be considered and decisions made. (Repokari 2008, 9-15.)

4.4 Caring for involuntary childless couple

When taking care of patients experiencing involuntary childlessness, it is important to make them feel one is there for them. Women, in particular, wish there to be a professional throughout the experience of childlessness to share it with. (Landbloom 2016, 28.) Involving the couple in the treatment by giving them clear options of treatment and how to proceed is much appreciated by them. The continuum of the same professionals working with the couple is largely valued, hence making the couple feel professionals are up to date with their case. It also prevents from getting contradictory information as well as having to go through the negative feelings as the history needs to be reviewed again.

However, different professionals are wished to perform procedures for the relationship stay the same as treatments are felt to be humiliating and invasive. (Dancet et al. 2011, 829-831.)

To have a good patient-nurse relationship, communication is the key. Honest and understandable conversation is appreciated by these couples, and it builds trust between the couple and the professional. Communication with nurses is especially valued as they are seen being patient and offering their time to discuss the matter at hand. Further on having time to answer to questions and explaining the answers understandably are viewed to be strong suites of a nurse as comparing professionals. The translation of medical language is especially appreciated as it can be difficult to understand by the patients. (Dancet et al. 2011, 830.)

Couples express needing support from a professional knowing the impact the experience has on them. As the treatment is most often viewed to be invasive and even humiliating, it is vital for the nurse to understand the whole extent of the experience of involuntary childlessness. (Landbloom 2016, 28-35.) Support given by nurses is valued as the nurse is there to provide professional knowledge but is also providing emotional support for the couple (Dancet et al. 2011, 830). The nurse is also in a vital role in getting the couple connected with peer support, as it is seen positively helping to cope with the experience. Knowing others have gone through the same thing, helps the couple to cope with the worry and fear experienced. (Landbloom 2016, 28-31.)

5 THE AIM, PURPOSE AND THESIS QUESTIONS

The aim of the thesis is to find out the effects of involuntary childlessness on a heterosexual couple's relationship as well as their sexuality. Furthermore, the purpose of the thesis is to increase the knowledge of future nursing students and nurses working in the health care field of these matters, hence making the understanding of the whole infertility experience better. Encountering an involuntary childless couple is easier, as one understands the whole experience and the consequences of it. It helps in advising couples and providing up to date knowledge to them, as well as supporting them throughout their journey. It is advised by the author for nursing students, future nurses and nurses working in health care field to use the findings and exploit them in the working environment, to be able to provide and ensure holistic care and approach while caring and advising patients as well as their partners.

Based on the topic of the thesis, there were few choices for thesis questions. After working on with the questions, those were configurated as follows.

Thesis questions

- What are the effects of involuntary childlessness on a heterosexual couple's relationship?
- What are the effects of involuntary childlessness on a heterosexual couple's sexuality?

6 THESIS IMPLEMENTATION AND METHODOLOGY

6.1 Descriptive literature review as a research method

Depending on the source, there are many kinds of divisions for literature reviews. In a descriptive literature review, also known as a traditional literature review, the frames of the work itself are not strict, and materials used to produce such a review are broad. The work is valued and seen being able to offer new phenomena for a stricter type of a literature review, a systematic literature review, despite the broadness. Inside the traditional literature review, there is also a difference made between a narrative and an integrative literature review. (Salminen 2011, 6-9.)

When examining a narrative literature review as a literature review method, it can be viewed to be the lightest one to work with. It has been stated a narrative literature review is an overview of a topic, therefore helping to update the research information available. This makes the results not analytical but rather summing up the information available from different sources. The goal of a narrative literature review is to give a widened and clearer picture of the phenomenon in question. The information produced is also needed to be provided as easy to read and understand by the reader. As these terms are met, the reader is given a comprehensive overview of the topic. (Salminen 2011, 6-8.)

All kinds of literature reviews are important and needed in the field of nursing field. There is lots of information available on different phenomena, hence making it impossible for professionals to go through them all. Literature reviews enable professionals to seek information in the way of the information being summarized and therefore providing knowledge of the topic in question. However, some reviews might not be able to be conducted due to lack of research. This does not mean the literature review has been done in vain, but actually holding value by itself by showing there is a lack of research done in a specific area. (Aveyard 2014, 2-8.)

As stated earlier, narrative literature as a method has no clear frames, but it does not conclude it not always being done such a way of no repeatability. To be able to affirm the repeatability of the work, there needs to be documentation done throughout the process itself. It is vital to ensure all the documentation is carefully done, since this ensures the repeatability of the work, hence ensuring the reliability. This will furthermore ensure the validity of the work, since one can see how the process has been conducted and is able to do by oneself. The method chosen needs also to be suitable for the work and study being conducted. (Aveyard 2014, 2-7.)

Furthermore, inclusion and exclusion criteria are needed for a literature review to be able to narrow down the data and early on eliminate irrelevant data. Different kinds of criteria can be used, depending solely on the phenomenon. The criteria are also dependent on the author(s) conducting the literature review and the resources available at the moment. Skill sets of the author(s) are also vital in deciding the criteria. As inclusion and exclusion criteria are set, the transparency they create increases the validity and reliability of the review in question. (Aveyard 2014, 75-80.)

The thesis is conducted as a narrative literature review, being one of the existing literature review methods. The method was chosen as it was seen to be the best form of literature review by the author for the phenomenon at hand and due to the nature of it, and as the author conducts the literature review by herself, hence having limited resources available. Also, the author's lack of experience in conducting a literature review of any kind contributed to the chosen form as it is the simplest one to work with. As literature reviews are commonly used in the field of nursing, it also provides a good indication to use the method chosen.

6.2 Data search and collection

Several search engines, electronic databases and collections need to be used during the data collection of a narrative literature review, as this increases the reliability and validity (Kangasniemi, Pietilä, Utriainen, Jääskeläinen, Ahonen & Liikanen 2013, 295). In total, there were seven of these used as the data search and collection was conducted (figure 3). The data collection was fully based on these databases and no interviews were used as a part of data collection.

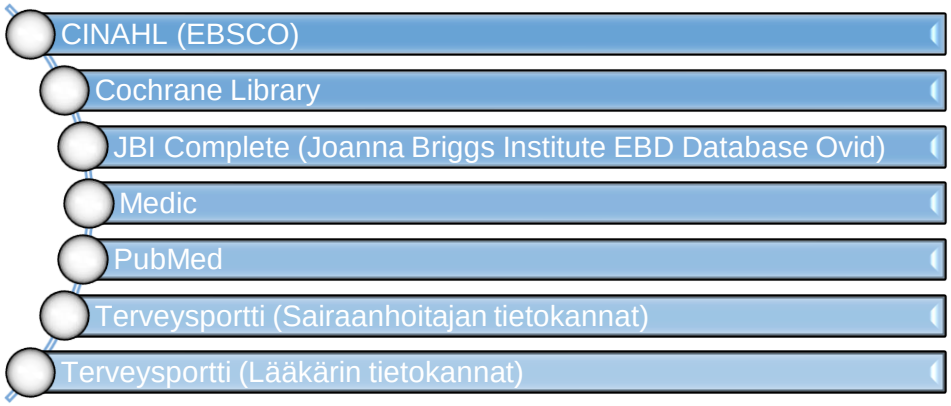

Figure 3. Search engines, electronic databases and collections used.

To narrow the amount of data being found there needs to be inclusion and exclusion criteria. Without inclusion and exclusion criteria, there would be a large amount of irrelevant data found on top of the relevant. The separation of the relevant and irrelevant would therefore require much more work as well as time. (Ferrari 2015, 232.) Prior the data search and collection begun, inclusion and exclusion criteria were carefully contemplated (table 1).

Table 1. Inclusion and exclusion criteria for data acceptance.

INCLUSION CRITERIA	EXCLUSION CRITERIA
Publication 2008-2018	Publication prior 2008
Language English or Finnish	Language other than English or Finnish
Western countries	Low-income or middle-income countries
Free full text available	Free full text not available
Outcomes of heterosexual couples under study	Outcomes of other than heterosexual couples under study
Relevant information in terms of thesis questions	Not relevant information in terms of thesis questions (e.g. homosexual couples under study, voluntary childlessness, etc.)

To find reliable and adequate information as well as it not being outdated, a timeframe needs to be set (Ferrari 2015, 232). For the thesis, the first timeframe set was 2013-2018. However, the timeframe together with other inclusion and exclusion criteria provided an inadequate amount of data, therefore it needed to be widened. The timeframe was then set to 2008-2018 proving to be adequate. The languages of inclusion were English and Finnish, excluding other languages due to limited language skills and resources. If other languages had been included, the understanding of the data would not have been sufficient enough to be able to perform analysis on them.

Relevant information in terms of thesis questions was included. This excluded irrelevant material, such as materials focusing on couples being voluntary childlessness. Free full text available was also one of the inclusion criteria, excluding texts requiring payment to be able to read them. This criterion was based on the lack of resources. Western countries were chosen in terms of limitation by location, since the findings of the thesis had to be able to apply to the working environment in Western countries. This excluded low and middle-income countries. While conducting the data search and collection, outcomes of

other than heterosexual couples under study were excluded due to the nature of the thesis. The thesis specifically focuses on the effects of involuntary childlessness on a heterosexual couple's relationship and sexuality, therefore there was no need for studies focusing on couples other than heterosexual.

In addition to inclusion and exclusion criteria, there needs to be keywords formed and used to be able to conduct the search and find adequate data (Ferrari 2015, 232). Due to the usage of two languages, the keywords needed to be in both languages (table 2). Keywords were based on the thesis questions set and mentioned earlier.

Table 2. Keywords used in data search and collection.

ENGLISH	FINNISH
childlessness	lapsettomuus
involuntary childlessness	tahaton lapsettomuus
infertility	hedelmättömyys
relationship	parisuhde
effect	vaikutus
sexuality	seksuaalisuus

The *- marking replaces all letter options after the body of the word, therefore having more options for the search. As "AND" occurs between the words, for example "childlessness AND sexuality", the results given by a search engine, electronic database or collection include both words. If the word "OR" occurs between words, the results include both or either of the words, and if the word "NOT" is used between words, the results exclude results including the word after "NOT". (Aveyard 2014, 84-86.)

Search terms (appendix 1) were created by using the keywords (table 2) and then used in the searches of different search engines, electronic databases and collections. Depending on the search engine, electronic database or collection being used, the language to be used was selected. In some cases, it meant the use of both languages. To be able to maximize the amount of data found after limitations (appendix 2), some of the words were not fully used, meaning for example parisuhde was used in a way of parisuh* to get more results. For the search pairs or groups forming search terms, the word "AND" was used. There would have been an option to use words "OR" and "NOT". However, only the word

“AND” was used while conducting the data search. The searches for both thesis questions were completed simultaneously.

Due to each search engine, electronic database or collection being different, the limitations (appendix 2) based on inclusion and exclusion criteria varied. After a search had been completed, screening of the data needed to be executed. Firstly, the data found had to be screened by title. After titles had been screened, abstracts of included texts were reviewed. If an abstract gave relevant information to thesis questions and met inclusion criteria, the full text was reviewed and analysed. If inclusion criteria were met, the data found was included and vice versa.

The first data search was conducted between December of 2018 and early January of 2019 (appendix 3) including publications between 2013 and 2018. The search was completed but due to inadequate data findings, the search needed to be widened to 2008 to 2018. The second data search was conducted during January of 2019 (table 3) including publications between 2008 and 2018. The second search was found to be adequate and therefore the timeframe was not needed to widen furthermore. A total amount of nine full texts (appendix 4) were included in the analysis. Multiple searches were completed for both of the timeframes and counted together for the table in question.

Table 3. Summary of database research.

Date of search	Database	Data found after limitations	Data included by title	Data included by abstract	Data included by full text	Data included after removing overlapping data	Data including after removing overlapping data from different databases
2.1.2019	CINAHL (EBSCO)	182	29	17	7	4	4
2.1.2019	JBI Complete	50	0	0	0	0	0
2.1.2019	Medic	88	24	17	17	2	1
2.1.2019	Terveysportti (Sairaanhoitajan tietokannat)	45	7	0	0	0	0
2.1.2019	Terveysportti (Lääkärin tietokannat)	279	26	13	8	1	1
3.1.2019	PubMed	1051	55	19	4	3	3
7.1.2019	Cochrane Library	514	34	3	0	0	0
Total		**2209**	**175**	**69**	**36**	**10**	**9**

6.3 Data analysis

A content analysis is a way of analysing data systematically as well as objectively and used to describe the phenomenon at hand. It is further on divided into two, consisting of inductive and deductive analysis. If content analysis is conducted inductively it is based on the found data. Deductive content analysis on the other hand is based on the underlying theory. (Kyngäs, Kääriäinen, Elo, Kanste & Pölkki, 2011, 138-140.) The method for data analysis process for the thesis was chosen to be content analysis and further on inductive content analysis. Content analysis was chosen as it is commonly used as analysis method in nursing studies. Inductive content analysis was chosen as the author did not have substantial enough knowledge on the subject, therefore being more adequate way of analysing.

An inductive content analysis can roughly be divided into three main phases. The first phase is to reduce the data by removing information not answering to thesis questions specifically. (Hiltunen 2009.) The meaning is to describe the phenomenon reliably and summarised. In summarising the original data, selected analysis units are used, for example sentences or words. (Kyngäs et al. 2011, 139-143.) Further on, the summarised data is coded (Vaismoradi, Turunen & Bondas 2013). The following phase is to group the simplified and summarised data to subcategories. In forming subcategories same sort of issues are grouped together and it is done by thoroughly screening the coded data. The last phase is to create theoretical terms by separating the relevant information in terms of thesis questions, also known as abstraction. Abstraction means combining different subcategories to generic categories and further on to main categories as far as possible, in regards of the data, to reach theoretical terms. (Elo & Kyngäs 2008, 109-111.) An example of the analysis process can be seen in the figure 4.

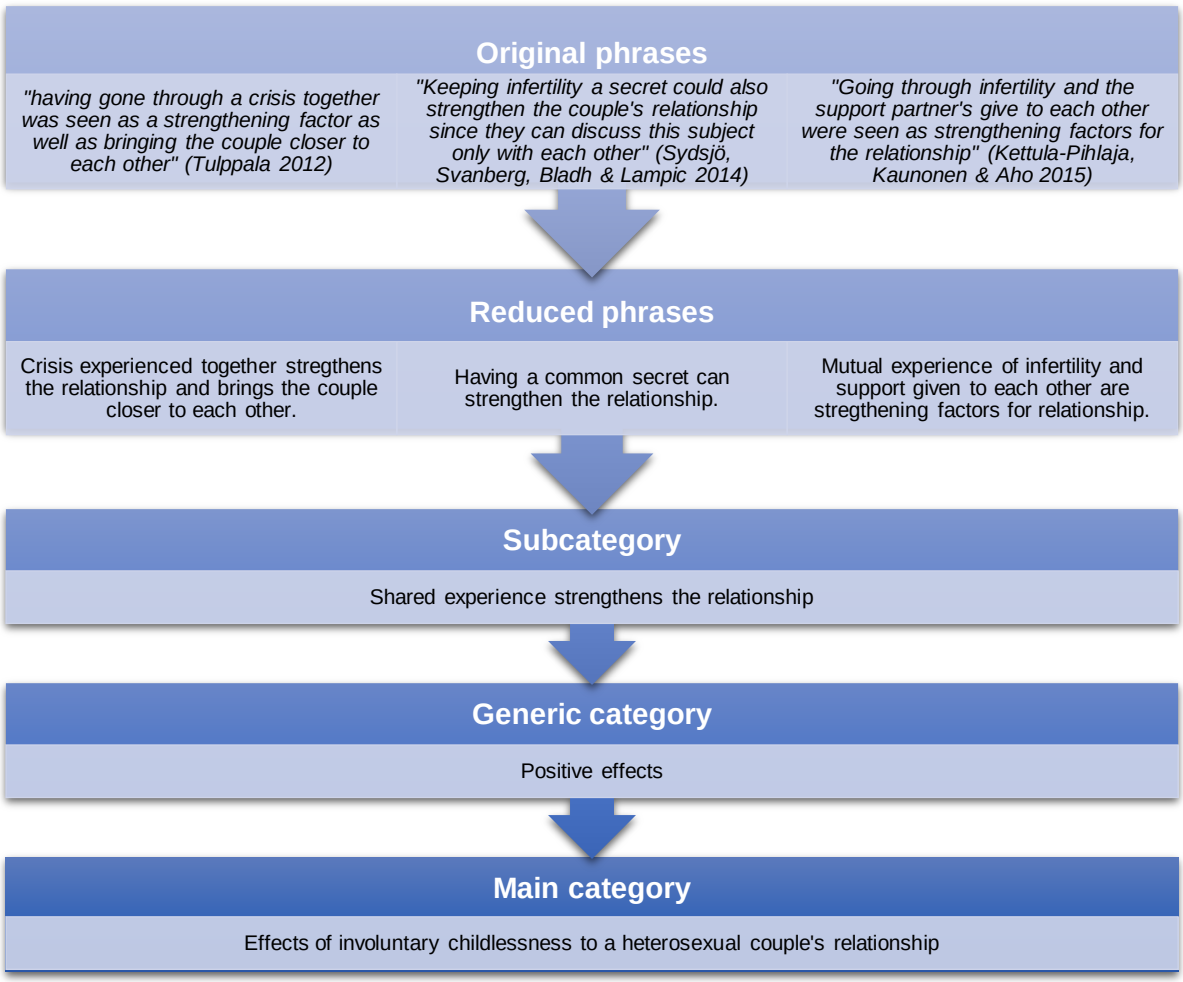

Figure 4. An example of the analysis process.

As inductive content analysis was started, all the articles were carefully read through several times. The selected analysis unit was set to be phrase. Carefully reading through each text again and keeping in mind the thesis questions, central phrases answering to those questions were highlighted. After highlighting all texts, they were thoroughly read again, and some phrases highlighted in addition to the previous ones. Highlighting was coded answering to the thesis questions, divided as green colour used for sexuality and blue for relationship. The following step was to write down all the highlighted phrases to pieces of paper simultaneously grouping them by colour. As this had been conducted, both piles of paper were read through.

Papers in each pile were then grouped based on the content, and due to this, there were many piles differing by content. Each pile was then gone through and given content describing name. After naming the groups, the phrases were moved to own tables. At this point, there was a significant amount of phrases. In order for the tables to be clear to read, some of the phrases needed to be removed. Phrases being removed were seen to be too similar to others, therefore holding no value on themselves. The maximum of phrases used in a group was set to be four, however there was an intention of keeping the amount in three as long as possible. Minimum was then set for one, if seen the content held too much of value to be removed, otherwise groups of one phrase were not used.

Selected original phrases were then reduced. Important in reducing is that the meaning and the content of the original phrase is not lost (Kyngäs et al. 2011, 138-140). Reducing was then followed by subcategorising them. The original phrase groups were already previously given a content describing name and those were used, with little alteration, in naming the subcategories. Subcategories were then further on categorised to two generic categories as negative and positive effects. The main categories surfacing were then the effects of involuntary childlessness to a heterosexual couple's relationship (appendix 5) and the effects of involuntary childlessness to a heterosexual couple's sexuality (appendix 6) therefore providing answers to both thesis questions.

The purpose of the inductive content analysis was to clarify data by connecting them, therefore giving a clearer picture and better understanding of the thesis subject. As the different categories had been formed, ultimately leading to the main categories, this had been accomplished. The process of inductive content analysis is described above and illustrated below in the table 4.

Table 4. Categories formed as a result of the inductive content analysis.

SUBCATEGORY	GENERIC CATEGORY	MAIN CATEGORY
Joint decision making	Positive effects	Effects of involuntary childlessness to a heterosexual couple's relationship
Shared experience strengthens the relationship		
Improved communication		
Growing closer to each other		
Supportive attitude		
Stronger feeling of being united		
Disagreements increase	Negative effects	
Creates tensions		
Communication issues		
Feelings of loss of control		
Negative feelings		
Use of different coping strategies		
Cause of stress		
Lack of understanding between partners		
Unequal treatment		
Side effects of treatments		
Energy consuming		
Increase of emotional stress		
Aggravation of old problems and cause of new ones		
Lack of support felt by individuals		
Improved sex life	Positive effect	Effects of involuntary childlessness to a heterosexual couple's sexuality
Physiological problems related to sexuality	Negative effects	
Lack of sexual desire		
Self-blame and dissatisfaction of own body		
Outsiders' intervention on an intimate matter		
Main focus in conception		
Lower sexual satisfaction		
Detailed information of reproductive health		
Sex acts as a reminder		
Negative feelings related t sexuality		
Worsened sex life		
Sex is scheduled		

7 RESULTS

7.1 Effects of involuntary childlessness on a heterosexual couple's relationship

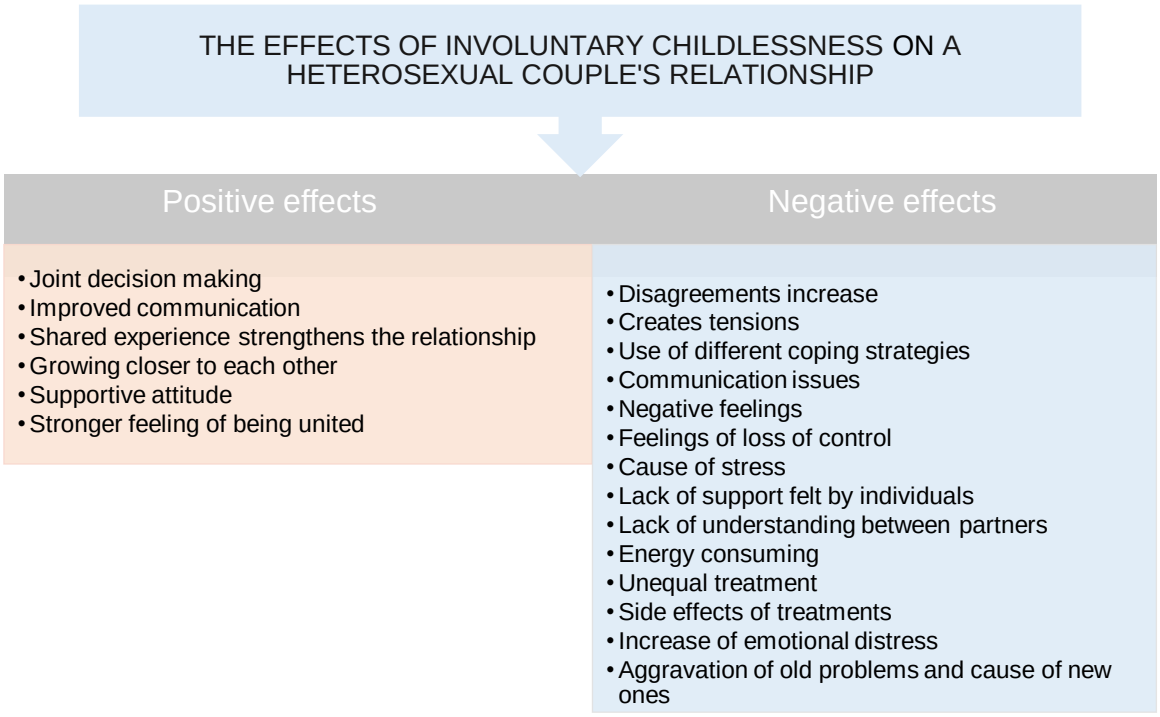

Figure 5. Effects of involuntary childlessness on a heterosexual couple's relationship.

The first main category, the effects of involuntary childlessness on a heterosexual couple's relationship, contains two generic categories, positive and negative effects (figure 5). These generic categories further on divide into several subcategories and are explained next. Each subcategory is bolded to emphasise them and clarify the results.

Positive effects were found to be multiple, in total divided into six subcategories (figure 5). While having multiple positive effects, the main positive effects surfacing found to be the strengthening of the relationship due to the shared experience and growing closer to the partner. **Joint decision making** was found to have a positive impact on individuals, therefore positively effecting to the relationship as an individual brings one's own experiences into the relationship. Sense of relief was felt by individuals as they had agreed on a decision with their partner. (Lindsey & Driskill 2013, 42-46.) Due to the nature of the subject and to be able to make decisions together, the couples needed to discuss them first, thus **improved communication** was reported by the couples. Difficult matters needed to be addressed and talked through. It also improved other types of discussion, rather than only

problem solving, between the individuals, therefore improving the overall communication. (Golver, McLellan & Weaver 2009, 415.)

Shared experience strengthens the relationship of a couple as individuals are aware of the experience of the infertility by the other (Sydsjö et al. 2014, 7; Kettula-Pihlaja et al. 2015)**.** Some couples also reported there to be a mutual secret of infertility between them as they viewed the subject to be too delicate to share with outsiders. By holding on to the secret and shared experience, couples had something no one else knew, further on emphasising the strengthening of the relationship. (Sydsjö et al. 2014, 7.) In addition, shared experience was felt to assist couples in **growing closer to each other** as they had gone through traumatic and intimate process of infertility (Tulppala 2012, 2083-2087). For example, the support received from one's partner was felt to assist in this, as was having a joint issue to work with (Lindsey et al. 2013, 46; Sydsjö et al. 2014, 7).

As previously mentioned, support received from one's partner helped in growing close, but moreover, **supportive attitude** by a partner helped in getting through hard times and with feelings of hopelessness (Smith, Walsh, Shindel, Turek, Wing, Pasch, Katz & The Infertility Outcomes Program Project Group 2009, 7; Lindsey et al. 2013, 46). Assuring one's partner or by just being there for one, made couples feel being supported by the other, therefore helping in dealing with the overall experience (Golver et al. 2009, 411-412). Reassurance, of oneself and the partner, of being stronger as a couple than before, was also seen, as well as the mentality of being able to get through anything (Golver et al. 2009, 408; Esmée & Gough 2017, 153). This **stronger feeling of being united** was also increased by the shared experience (Esmée et al. 2017, 153).

Negative effects were found to be numerous and in total more than positive effects, dividing the generic category into 14 different subcategories (figure 5). **Disagreements increase** due to number of different reasons, for example different ways of dealing the situation could cause disagreements in the relationship (Lindsey et al. 2013, 42). Some couples went as far as avoiding discussions related to childlessness in order to prevent disagreements (Golver et al. 2009, 411). Couples also reported that involuntary childlessness **creates tensions.** Different things contributed to tensions felt in the relationship and was rarely purely caused by a single factor. Communication issues and different coping strategies could be at fault. (Golver et al. 2009. 406-413.) Tensions could also be created such things as partners having differing opinions or lack of understanding felt by the other party (Miettinen & Rotkirch 2008, as cited in Tulppala 2012, 2081; Lindsey et al. 2013, 42).

As couples were dealing with an upsetting and difficult matter, they needed to use strategies to cope with it. However, everyone is an individual and heterosexual couple consists

of two genders, therefore **the use of different coping strategies** did not prove to be rare. Different coping strategies could therefore lead to further issues within the relationship, for example **communication issues.** Women tended to be the ones wishing for more communication, whereas men commonly felt as communicating was difficult. As communication could cause disagreements, some individuals, men in particular, viewed it to be easier not to talk to be able to avoid possible confrontations, therefore leading into issues in communication. (Golver et al. 2009, 406-411.)

Negative feelings are closely related to involuntary childlessness (Golver et al. 2009, 415-416). It can cause feelings including anxiety, sadness and depression, reflecting negatively to the relationship (Tulppala 2012, 2082; Moura-Ramos, Gameiro, Canavarro & Soares 2012, as cited in Bell 2013, 50). Negative feelings can also arise if gender differences are highlighted. In addition to these, frustration was strongly felt in all couples. Men in particular were frustrated since they did not have tools to help their partners to deal with side effects of treatments. Frustration in the treatments was also felt, as well as feelings of helplessness, which often associated with frustration. (Esmée et al. 2017, 152-154.) **Feelings of loss of control** most often related to disappointments after treatment cycles due to not being able to control the outcome of a cycle. In addition to loss of control felt due to failed treatment cycles, loss of control was experienced throughout the infertility process in many areas of life. (Bell 2013, 49-51.)

Involuntary childlessness is a major **cause of stress** to the couples with everything it brings along (Kettula-Pihlaja et al. 2015, 307). The continuous hope of a child and having to disappoint treatment cycle after another causes extreme stress (Golver et al. 2009, 409). **Lack of support felt by individuals** was also seen as a source of stress for the couples, as individuals, women in particular, felt there to be inadequate support from their significant others (Golver et al. 2009, 411; Kettu-Pihlaja et al. 2015, 305-307.) Communication was yet again proven to play a vital role since inadequate communication strongly went hand in hand with lack of support as women tend to need verbal support more than men (Golver et al. 2009, 411-415).

Lack of understanding between partners was usually felt by women as they experienced their partners not understanding them, for example their emotions (Lindsey et al. 2013, 42). Communication issues also contributed to the lack of understanding, as if communication did not work, understanding of one another was difficult (Golver et al. 2009, 411). Involuntary childlessness was felt to be **energy consuming** and seen consuming the relationship due to its all-time presence (Esmée et al. 2017, 153). The subject was in thoughts all the time, and life was described as being on hold (Golver et al. 2009, 409;

Lindsey et al 2013, 42). Treatments also seen as something to survive and get through, consuming the little energy left in the couple (Tulppala 2012, 2083).

Inequity felt by men in the context of involuntary childlessness can result from **unequal treatment** of partners by professionals. Men might feel as the woman is in the center of everything since infertility treatments are usually performed to the female as well as viewing the woman as knowing everything of fertility issues. Biology was also viewed to set inequal settings for the couple by men. The treatments can also cause multiple side effects. (Esmée et al. 2017, 152-156.) The **side effects of treatments** experienced by women were described to be awful, adding to the stress already experienced and causing marital strains (Bell 2013, 49; Esmée et al. 2017, 152). They were a cause of frustration, for men in particular, as they did not know how to help their partners to deal with the side effects of the treatment (Esmée et al. 2017, 152).

Increase of emotional distress was affected by and consisted of multiple factors. Different kinds of issues experienced in the relationship, such as difficulties in sexuality, as well as gender differences contributed to the increase. (Peterson, Boivin, Norré, Smith, Thorn & Wischmann 2012, 247.) As treatment cycles after another prove to be unsuccessful, increase in emotional distress was again seen (Golver et al. 2009). Emotional distress could also be caused by coping strategies. In particular, if one was to use avoidance strategies, there was a higher probability of increase in emotional distress. (Peterson, Pirritano, Christensen, Boivin, Block & Schmidt 2009, as cited in Peterson et al. 2012, 245.) **Aggravation of old problems and cause of new ones** was also something involuntary childlessness associated with. Aggravation of old problems in the relationship could happen, as the experience created stress. In addition to aggravation, other old issues could resurface. The possibility of new issues emerging was also found. (Tulppala 2012, 2083-2087.)

7.2 Effects of involuntary childlessness on a heterosexual couple's sexuality

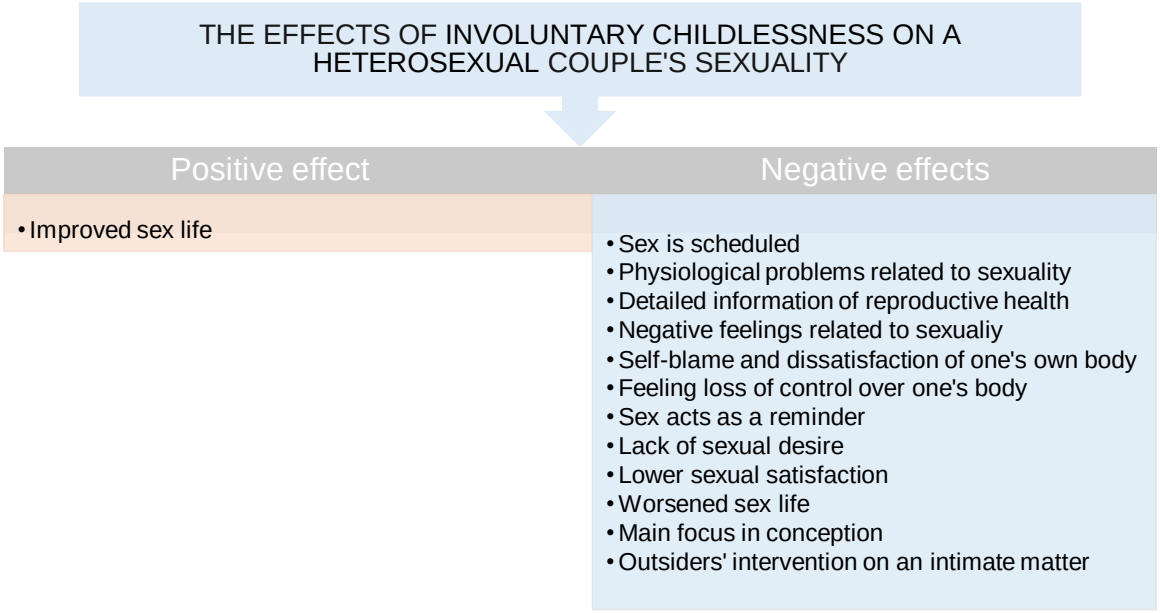

Figure 6. Effects of involuntary childlessness on a heterosexual couple's sexuality.

The second main category, the effects of involuntary childlessness on a heterosexual couple's sexuality, also contains two generic categories, positive and negative effects (figure 6). These generic categories further on divide into subcategories and are explained next. Each subcategory is bolded to emphasise them and clarify the results.

Positive effects of involuntary childlessness to a heterosexual couple's sexuality was shown to be almost non-existent. In all of the articles, only in one was a mention of a positive effect to sexuality, therefore resulting in only one subcategory. None of the others stated this nor any other positive effects.

Improved sex life was the only positive effect seen. Minority reported involuntary childlessness having a positive effect to a heterosexual couple's sexuality in one of the articles by improving their sex life. (Sundby 1992, as cited in Lindsey et al. 2013, 45.)

Mainly all effects were seen to be negative and a substantial amount of negative effects of involuntary childlessness to a heterosexual couple's relationship were found. This generic category ultimately divides into total of 12 subcategories (figure 6).

Sex is scheduled as the main focus is in conception. Sexual intercourses need to be carefully timed to be able to maximise the chances of conception, hence making couples view their sex life as unspontaneous. (Bell 2013, 51.) Scheduling of sexual intercourses

leads sex being a cause of stress instead of joy (Lindsey et al. 2013, 44-45). In addition of sex life being unspontaneous and intercourses causing stress, scheduled intercourses play role in physiological problems in sexuality (Tulppala 2012, 2083). **Physiological problems related to sexuality**, such as performance issues, decreased ability to control ejaculation, vaginismus and erectile dysfunctions, were reported due to the scheduling of sexual intercourses as it caused pressure to the act itself (Peterson et al. 2012, 245-246; Tulppala 2012, 2083).

Detailed information of reproductive health was viewed upsetting as it was traumatic to gain such detailed as the information gained rarely is seen as positive (Tulppala 2012, 2082). As an individual gains the information there is bound to be a reaction to the information received. Same thing happens for the partner in question. Seeing the significant other's reaction to the diagnosis can further on affect to the sexuality as it is such a vulnerable part of an individual. (Toa, Coates & Maycock 2011, as cited in Sydsjö et al. 2014, 7.) **Negative feelings related to sexuality** are not rare in either of the genders. Self-blame, dissatisfaction of one's own body and decreased self-esteem are common. (Lindsey et al. 2013, 43-44.) In addition, negative feelings may arise due to gained detailed information of their reproductive health as a result of the diagnosis (Tulppala 2012, 2082). **Self-blame and dissatisfaction of one's own body** are not related to the gender of the person and fairly common (Lindsey et al. 2013, 43-44). These are usually tied to the cause of infertility and can appear as women feeling guilty of not being able to conceive and men feeling sexually failed (Tulppala 2012, 2083; Ferland & Caron 2013, as cited in Lindsey et al 2013, 43). **Feeling loss of control over one's body** is also common for both sexes. Individuals feel as their bodies have failed them and can no longer trust in them. (Petok 2006 as cited in Peterson et al. 2012, 245.) As they feel no longer in control of their bodies, they also experience losing control over the fertility process (Smith et al. 2009, 6-7; Bell 2013, 51).

Sex acts as a reminder of involuntary childlessness to the couples as the intercourses are associated with childlessness for the couples and individuals (Tulppala 2012, 2083). It was also stated to remind of the inability to conceive. **Lack of sexual desire** was reported due to the association between sexual intercourse and involuntary childlessness (Lindsey et al. 2013, 42-45). The mandatory nature of intercourses also contributed to the lack of sexual desire as it was no longer spontaneous as it had previously been (Tulppala 2012, 2084)**.** The reminder sexual intercourse provided, led to **lower sexual satisfaction** and loss of enjoyment in sexual activity (Smith et al. 2009, 6; Bell 2013, 51). Men also reported feelings of sexual failure, which can be seen as reinforcing the lowered sexual satisfaction (Smith et al. 2009, 6).

Worsened sex life was also reported, as it felt meaningless and was not felt to be satisfying (Tulppala 2012, 2083; Sundby 1992, as cited in Lindsey et al. 2013, 45). Sexual activity was also negatively affected, further on contributing to the worsened sex life and enjoyment (Ferland & Caron 2013, as cited in Lindsey et al. 2013, 45). **Main focus in conception** made women feel as their orgasms were undermined. The ultimate goal was to get pregnant, hence making men's ejaculation necessary. Intimate affection related to sex as well as erotic feelings, such as lust, were seen decreased as conception was the goal, further on emphasising the worsened and unsatisfying sex life. (Tulppala 2012, 2083-2084.)

Needing professional help for conceiving was viewed as **outsiders' intervention on an intimate matter**, and couples commonly felt it to be invasive. The necessity of sharing intimate details with professionals, including frequency and timing of intercourses, is overwhelming by nature. (Bell 2013, 51). The need for the help of outsiders is also confusing to the couples as it is seen unnatural (Tulppala 2012, 2081-2082).

8 DISCUSSION

8.1 Findings

As a couple faces involuntary childlessness, a crisis in their relationship is met. Due to the nature of the subject, variety of feelings are experienced by the individuals and questions of the importance of parenthood, to the couple and individuals, raised. Relationship is affected in many ways by the crisis as well as the sexuality of the couple. As individuals learn intimate details of their reproductive health as a consequence of the diagnosis, negative feelings arise. Depending on the underlying state of the relationship, it can either get stronger or crumble.

There were multiple found effects of involuntary childlessness on a heterosexual couple's relationship. The negative effects outnumbered the positive ones, however, the positive effects were found to be more long-term and permanent than the negative ones. Negative ones were usually short-termed. Effects on sexuality were found to be mainly negative, as only one mention of a positive effect was found. The same principal of permanency as to relationship was found to apply on negative effects to sexuality.

Couples experiencing involuntary childlessness differ from each other, as do individuals. It is therefore expected to affect differently different people. However, all couples experience similar effects as the experiences roughly consist of same kinds of pieces. The findings indicate couples are growing closer and feeling more united due to sharing a difficult experience together. The journey of infertility can last for many years and different things can happen along the way. Treatments are most often very tiring and can be experienced to be even humiliating by nature. Being able to go through everything related to the experience, from diagnosis to treatments and possibly ultimately conceiving, is exhausting. Shared experience was found to strengthen the relationship due to this and as partners tend to support each other. Knowing what the other one has gone through increases the strengthening as the experience is shared. Also no one else knows the experience as closely and in detail as the partners do. Communication improves, since mutual decision making and talking about difficult matters are inevitable. Thinking of treatment options and talking through the diagnosis are inevitable. Talking about emotional experiences of the individuals is also important as they help partners understand the other one's feelings and emotional life.

Involuntary childlessness may also take toll on the relationship by causing tensions and disagreements. Differing opinions and the use of different coping strategies can prove to be frustrating. People react and cope each in their own way to the news. If those differ too

much, the chance of the other one not understanding increases. Communication issues may arise due to different coping strategies and lead to a lack of understanding and support felt by individuals. Having different opinions regarding treatments and how to proceed are not uncommon and might therefore cause friction between the individuals.

In addition, involuntary childlessness usually causes negative feelings which can contribute to the increase of stress and emotional distress. Negative feelings can grow out of proportion if the communication is not working between the individuals as well as between the couple and the nurse. The understanding between the individuals might be harder if negative emotions are not talked through. Inequity, mostly felt by men, was also found to be a cause of negative feelings, as men tend to feel women are being in centre of the experience. Women are usually the one the treatments are performed on, therefore emphasising the men's experience of not being seen even more. It was found that involuntary childlessness was energy consuming for couples as it is so comprehensive and therefore in thoughts all the time. The need to time the intercourses and keep track of multiple things is also consuming. The occurrence of new issues and aggravation of old ones were found to happen mostly relating to the overwhelming nature of the experience and stress experienced by individuals.

As sexuality is such a delicate area of one's life, it is easily affected. Changing sexuality is normal for people, but the extensive nature of infertility can have wide effects. Negative effects on the sexuality of a heterosexual couple were found plenty. Sex life was found to worsen as sexual intercourses reminded couples of their inability to conceive. Couples also reported meaningless sex life as sexual intercourses needed to be scheduled in order for the conception to happen. As the main focus was on the conception, the sex life was felt to be unspontaneous by the couples. Due to this, a decrease was found in sexual desire and satisfaction. Negative feelings associated with sexuality arise as dissatisfaction and loss of control over one's own body as well as self-blame. In addition, gaining detailed information of one's reproductive health could lead to negative feelings as well as physiological problems related to sexuality. Physiological problems could also be a result of increased stress levels and scheduled sexual intercourses which cause stress to the act itself. Outsiders' intervention on couple's intimate matter was also found to be a source of negative feelings. Positive effects were found to have only a mention in one of the articles stating improved sex life.

In the articles viewed, a need for further support from professionals was seen. Men in particular felt being unequally treated as they felt the emphasis was on the wellbeing of the woman as the treatments usually focus on the women. Nurses' role in including the men

in the treatment is vital, as involving the men in the treatment makes them feel seen and thus decreases their feeling of being invisible. By supporting individuals and the couples this way, the building of the patient-nurse relationship is improved.

Couples stated professionals' understanding of their situation and the understanding of the need for support was not being at the level they hoped and emphasised the importance of them gaining more knowledge in the aforementioned areas. By knowing and understanding the extensive nature of the infertility experience, nurses have more and better tools to face the couple and understand the experience. The continuum of the same professionals working with the couple further on improves the encountering as the history is known and the couple does not need to go through everything from the beginning. It also helps in building a good and trusted nurse-patient relationship which is needed and can be vital in gaining further knowledge needed in the treatment of a particular couple.

More support in regards to their relationship was also wanted and emphasised, again highlighting the importance of the good relationship between the patients and nurses. The journey is not easy, as needing support and help in such a delicate area of life can be felt invasive and even humiliating. Trust between the couple and the nurse is needed, as the nurse is in a key position to offer emotional and peer support. Connecting the couples to others with similar experiences helps the couples deal with their worries and anxiety. Providing knowledge to the couples and answering their questions in an understandable way, rather than in medical language, is valued by the patients, as doctors' appointments are usually overwhelming, and questions might not be answered in an understandable way. Also, questions might surface later on and the knowledge of the history of the couple helps in answering the questions and providing new information, rather than repeating the same things over and over again thus not providing any new information.

8.2 Ethical considerations

While conducting a scientific research it is important to carefully follow the guidelines commonly agreed in the science community in order for it to be ethically accepted and reliable. There are multiple factors to consider and those need to be applied the best suitable way for the work in question as it depends on the research if all are applicable. Prior beginning the research process, permits needed for the work to begin need to be acquired. (Varantola, Launis, Helin, Spoof & Jäppinen 2012, 4-6.) Careful consideration of subjectivity of the author(s) needs to take place. Bias for the phenomenon at hand may conclude to misrepresentation of results the research gives. (Kangasniemi et al. 2013, 297-298.) As the

information is being retrieved for the research, the method(s) used needs to be ethically sustainable and appropriate, therefore evaluation of the databases used needs to be done beforehand (Varantola et al. 2012, 6; Kangasniemi et al. 2013, 296).

It is important to understand the concepts of fabrication, falsification, plagiarism and misappropriation prior completing the research. By understanding them, they can be avoided, and the work will be ethically sustainable. In order to avoid plagiarism, correct citing and references need to be used. By citing and using references correctly, the achievements of other researchers is honored and the credit belonging to them given. As a result, plagiarism can be avoided. Misappropriation can also be avoided by correct citing and reference use, as it is defined as presenting someone else's work as one's own. Fabrication is defined as reporting falsified and invented observations of one's own. For example, if the author(s) of a research lies on the observations made. Falsification happens as one intentionally modifies the observations made, therefore leading the final results to be contorted. Also, by leaving relevant information out of the conclusion, one commits falsification. All of this contributes to the research being ethically sustainable as it is done in an honest way and followed by the aforementioned criteria. (Varantola et al. 2012, 4-9.)

All the ethical aspects were considered throughout the thesis process and all forms of ethical misconduct tried to be avoided. Author's honest interest in the topic and findings of descriptive literature review were considered in order to avoid any bias. All possible ways and actions of avoiding plagiarism were taken, and every detail along the way carefully considered. The use of references in the text as well as including them in the reference list at the end of thesis was performed therefore honoring the achievements of other researchers and giving them credit of their own work.

Prior data collection, each database was evaluated as to be appropriate and ethically sustainable. As the data collection proceeded, proper databases were used. Content analysis was carefully performed to avoid leaving out any relevant information. The whole process was documented in detail as it progressed, and documents attached to the final work as appendices. All findings were written and presented in a truthful manner, nothing was fabricated or mispresented and misappropriation was not performed. As the thesis was conducted as a literature review, no harm was caused to the involuntary childlessness couples along the way of the thesis process, and the respect for them and human dignity was met. Private and delicate information was not handled, further on increasing the privacy of the infertile couples. Also, no harm was caused to any professional working in the health care field and respect for them was displayed. The meaning of the thesis to the nursing

field has been considered throughout the process as the value it holds at a societal level. The importance of developing nursing field has also been an aspect considered.

8.3 Reliability and validity

Reliability and validity need to be assured throughout a literature review, and many aspects linked to it considered. Theoretical framework of the phenomenon needs to be widely presented, however, excessive information presentation needs to be avoided. (Kangasniemi et al. 2013, 294-297.) As the thesis process proceeded, reliability and validity were considered all the way through the work. Theoretical background was widely presented in order for the reader to understand the phenomenon in question. Presenting too wide theoretical background was avoided by reading through the written background and narrowing it, as the reader does not benefit from excessively wide theory.

While constructing thesis questions, it is important for them to be narrow enough to be able to comprehensively assess the thesis subject. It is also important for them to be linked to the theoretical framework. All of these increase the reliability of the work. (Kangasniemi et al. 2013, 294-297.) As the thesis questions were compiled, it was ensured for them to be linked to the theoretical background written. It was also kept in mind for the questions to be narrow enough to be able to comprehensively assess the thesis subject. In addition, it was thought for the questions not to be too narrow, as it would have affected to the comprehensive assessment of the subject.

As the choosing of the databases to use is performed, consideration of the reliability of them need to be addressed. The amount of them used correlates to the reliability and the validity of the work, as using one compared to several decreases the data found in the data collection phase. In addition to using databases, the use of a professional information technician should be considered as it is also a contributing factor. (Aveyard 2014, 82-88.) Prior beginning the data search and collection, the search engines, electronic databases and collections were assessed to be reliable. All of the chosen ones are widely used and accepted in the research field of nursing and therefore increase the reliability of the thesis as well. Several search engines, electronic databases and collections were used to ensure adequate amount of data being searched and retrieved in the context of descriptive literature review. The use of a professional information technician, such as a librarian, was not used and can be seen as a decreasing factor.

Prior data search and collection can begin, inclusion and exclusion criteria need to be developed. Pre-set criteria improve the reliability and the validity of the work. It also includes

relevant and excludes irrelevant data. As the review is being conducted, thorough documentation of the review process needs to be done. It provides transparency, hence improving the reliability of the work as it is easier to retrace the steps for anyone. (Aveyard 2014, 3-80.) Transparency is important throughout the process, and meticulousness and accuracy are also needed to be presented as the work proceeds, improving the transparency (Varantola et al. 2012, 4-9).

Before beginning the data search and collection, inclusion and exclusion criteria were meticulously thought and established. As data search and collection were carried out, inclusion and exclusion criteria were carefully followed and noted, and limitations regarding them applied in the best way possible in each search. Only free full texts were included to the thesis, thus decreasing the validity of the thesis. Ideal situation would have been to use payment requiring texts as well, but due to limited resources of the author it was not done. Some of the articles used were not original studies and can be seen as decreasing the validity and reliability of the thesis.

Language limitation can also be seen as decreasing the validity since only two languages were included as optimal would have been to use several. As the author's native language is Finnish, there were no difficulties in understanding the Finnish texts. Even though English is not the native language of the author, an adequate knowledge regarding the language can be pointed as it has been studied in school for many years, the whole nursing degree programme has been completed in the English language and the author has lived a year abroad in an English-speaking country. However, minor errors might have occurred in understanding the texts due to it not being the native language to the author. The timeframe used for searched data adds to validity and reliability of the thesis as up to date information has been used. Also, the predefinition of the timeframe can be seen as an adding factor of the validity. The extent of data in context of comprehensiveness cannot be known.

The whole processes of data search and collection were documented in detail and added to the thesis appendices to promote transparency. To be able to affirm the repeatability of the work, it was well documented throughout the process. It was done carefully and in detail to ensure the repeatability of the work, hence ensuring reliability and furthermore ensuring the validity of the work. The inclusion of the first completed data search and collection providing inadequate amount of data in to the appendices adds the reliability of the thesis.

Careful documentation is also needed during the content analysis, for it to be reliable. In addition, it is vital to follow the pre-set structure of the method. By using direct quotations

in the analysis phase further on increases the reliability. However, excessive use of them has the opposite effect. It is important to explain the results in an understandable way for the reader as the analysis process is reported. Further on, illustrating the analysis process in addition to verbally reporting it, the reliability of it is improved as the chain of thought is easier to understand. (Kyngäs et al. 2011, 139-140.) Careful documentation was also done throughout the content analysis process. The process was fully and in detail explained in the thesis as well as illustrations added to further help with the understanding. These provide evidence of the pre-set structure of the method being followed and adds to the reliability of the thesis. In the analysis, direct quotations were used, however the amount of them was considered not to decrease the reliability. As the results of the content analysis were reported, it was done in a clear way for the reader to understand them. By using figures in addition to the verbal explanation, the presentation can be seen as being distinct.

In addition to the aforementioned, there are other factors contributing to the reliability and validity of the review. Having an experienced author increases the validity and reliability of the review, furthermore having multiple authors has the same effect. The more resources the author(s) conducting a review have and are being used, the more validity and reliability of the work increases. (Averyard 2014, 160.) Prior thesis process, the knowledge the author had on the thesis, literature review processes and content analysis were strictly limited to the education given in Lahti University of Applied sciences, though, as the process proceeded, knowledge grew through information seeking and studying. However, the knowledge of the author cannot be viewed as of an experienced author neither can the experience in conducting such a review as there is no experience in completing a similar work prior to this. Therefore, both of these are decreasing factors. In addition, as the thesis was conducted by a single author and there was a time limitation, the reliability decreases. It also decreases as the resources were limited, as the author was working on her own and is currently a student having no outsider resources available to use.

9 CONCLUSION AND FURTHER RESEARCH RECOMMENDATIONS

The thesis found involuntary childlessness effects on a heterosexual couple's relationship and sexuality having positive and negative effects. Even though the negative effects outnumbering the positive ones, the permanency of positive effects was found to be long-term and more permanent in both cases. The positive effects were found to overpower and outlive the negative ones. As a huge positive effect of involuntary childlessness, couples view their relationship growing stronger and feeling more united with their partners. They also report improved communication as difficult matters need to be discussed and difficult decisions made. Having a mutual experience brings the couple closer to each other.

On the down side of the effects, tensions and disagreements can increase. As there are two individuals in the relationship, it is not common for them to have different approaches and coping strategies. For example, women often feel as not being understood and supported as there might be a lack of communication due to men being more likely to deal with the issue in their thoughts rather than talking through them as women would. Both parties are also likely to feel loss of control in many domains of life and be stressed.

Involuntary childlessness is most likely to have a negative effect on couple's sexuality. As the review found only a single mention of positive effects on a heterosexual couple's sexuality, the positive effects can be seen as minimal. Couples felt stressed by the main focus being in conception and the scheduling of the intercourses, contributing to a lack of sexual desire and even to physiological problems.

Even for nurses, it can be difficult to encounter involuntary childlessness couples since it is such a delicate matter. It is recommended by the author for the nursing students, future nurses and nurses working in the health care field to increase their knowledge on involuntary childlessness. It does not only include the medical side of it, treatments etc., but also the effects it has on the relationship and the sexuality of a heterosexual couple. The comprehensive nature of the subject is needed to be understood to be able to provide holistic care to the couples. It is also needed to understand the need of support by the couple throughout the experience and the individuals' need to be treated equally, as the treatments usually focus on women. Providing information to the couple of what is expected to happen and how involuntary childlessness affects their relationship and sexuality can help in dealing with the upcoming problems.

The support, for example emotional and knowledge, provided by nurses is important as they are experts in the field. Couples need continuum of the professionals working with

them, which is also a form of support. As the same nurses follow their journey, the need to go through the painful history with an unknown nurse is not needed and extra emotional distress can be avoided. Even though the couples need support through the experience, the need is not over after the treatments are. Nurses play a vital role in connecting the couples with others with similar experience and therefore offering them peer support. Peer support can help the couple understand their journey is something they can survive from and there is life afterwards. The importance of seeing the life continuing for the couples can be lifechanging as they often feel their life crumbling and ending as they are faced with involuntary childlessness. By continuously educating oneself and learning, nurses can meet the holistic needs of patients and their partners, individually and as a couple.

As the articles used in the thesis focused either on the couple or the women, and only in few of them on men, it is recommended by the author of the thesis to further on investigate the subject and pay special attention to the men's experience of the involuntary childlessness. It is needed to note men are involved in the experience as much as women, therefore it is worthwhile understanding their perspective as well. Also, it is advised to further on investigate the role of a nurse in the couple's experience in involuntary childlessness. It is needed to increase the knowledge on how couples can be supported and what kinds of methods they wish to be implemented by the health care professionals.

Research in Finland is also recommended by the author, as the articles used in the thesis were mainly from foreign countries. It would be also interesting to see how these couples experience parenthood, should they have children in the future and the emotions the experience brings with it, as there was not much information on this in the articles used.

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APPENDICES

Appendix 1. Search terms formed from keywords and databases search terms were used in.

	DATABASES	
	CINAHL (EBSCO), Cochrane Library, JBI Complete, Medic, PubMed	Medic, Terveysportti (Sairaanhoitajan tietokannat), Terveysportti (Lääkärin tietokannat)
SEARCH TERMS	childlessness childlessness AND effect* AND relationship* childlessness AND relationship* childlessness AND relationship AND sexuality childlessness AND sexuality infertility AND effect* AND relationship* infertility AND relationship* infertility AND relationship* AND sexuality infertility AND sexuality infertility in couples involuntary childlessness involuntary childlessness AND effect* AND relationship* involuntary childlessness AND relationship* involuntary childlessness AND relationship* AND sexuality involuntary childlessness AND sexuality	hedelmättömyys AND parisuh* hedelmättömyys AND parisuh* AND seksuaalisuus hedelmättömyys AND parisuh* AND vaikutu* hedelmättömyys AND seksuaalisuus lapsettomuus lapsettomuus AND parisuh* lapsettomuus AND parisuh* AND seksuaalisuus lapsettomuus AND parisuh* AND vaikutu* lapsettomuus AND seksuaalisuus pariskuntien lapsettomuus tahaton lapsettomuus tahaton lapsettomuus AND parisuh* tahaton lapsettomuus AND parisuh* AND seksuaalisuus tahaton lapsettomuus AND parisuh* AND vaikutu* tahaton lapsettomuus AND seksuaalisuus

Appendix 2. Search options and limitations used in data searches for different databases.

Database	Search options and limitations
CINAHL (EBSCO)	Advanced Search, search words in all fields Search Modes and Expanders: Boolean/Phrase Limit your results: Full Text, Abstract Available, English Language, Published Date: January 2008 – December 2018., Geographic Subset: Australia & New Zealand, Canada, Continental Europe, Europe, UK & Ireland, USA.
Cochrane Library	Advanced Search, Title Abstract Keyword Search limits: Content type: Cochrane Reviews, Cochrane Protocols, Trials, Clinical Answers, Editorials, Special collections., Cochrane Library publication date: All dates, Search word variations. Filter your results: Year first published: Custom Range: 2008-2018
JBI Complete (Joanna Briggs Institute EBD Database Ovid)	Multi-Field Search, All Fields Limits: Publication Year 2008-2018
Medic	Tekijä/otsikko/asiasana/tiivistelmä, Vuosiväli 2008-2018, Vain kokotekstit, Asiasanojen synonyymit käytössä, Suomi, Englanti, Kaikki julkaisutyypit.
PubMed	Advanced, All Fields

	Text availability: Abstract, Free full text Publication dates: 10 years Species: Humans Languages: English, Finnish
Terveysportti (Sairaanhoitajan tietokannat)	(None available)
Terveysportti (Lääkärin tietokannat)	(None available)

Appendix 3. Summary of database searches.

Date of search	Database	Data found after limitation	Data included by title	Data included by abstract	Data included by full text	Data included after removing overlapping data
12.12.2018	CINAHL (EBSCO)	130	15	4	2	2
16.12.2018	Cochrane Library	372	49	1	0	0
19.12.2018	JBI Complete	40	0	0	0	0
19.12.2018	Medic	30	4	1	0	0
21.12.2018	PubMed	617	30	6	0	0
2.1.2019	Terveysportti (Sairaanhoitajan tietokannat)	45	11	0	0	0
2.1.2019	Terveysportti (Lääkärin tietokannat)	279	26	7	0	0
Total		**1513**	**135**	**19**	**2**	**2**

Appendix 4. Articles included in the review in alphabetical order by author(s) including title of publication, purpose of the publication and central findings.

Author(s) Place of Publication Year of Publication	Title of Publication	Purpose of the Publication	Central Findings
Bell, K. United States of America 2013	Supporting Childbearing Families Through Infertility	To provide insight on how couples experiencing infertility experience infertility treatments, and everything related, as well as give ideas to professionals on how to work with them.	- Professionals need to have more information and understanding regarding on challenges and trials of assisted reproductive technology (ART) have on couples experiencing infertility to be able to meet the needs of them and be able to individualise those. - Couples experiencing infertility generally experience negative feelings related to infertility, pregnancy, childbirth and parenthood.
Esmée, H. & Gough, B United Kingdom 2017	Men's accounts of infertility within their intimate partner relationships: an analysis of online forum discussions	To present and deepen men's point of view of infertility and the meaning of it to their intimate relationship based on analysis conducted from online forum discussions.	- Men want to be viewed as equals to their partners in context of infertility. - Whereas women need support in infertility experiences, men do to.
Golver, L., McLellan, A. & Weaver S., M. United Kingdom 2009	What does having a fertility problem mean to couples?	To understand what infertility issues mean to couples and how individuals differ in their opinions regarding the severity.	- Coping strategies between genders vary, i.e. need for conversation and the expectations of treatment outcomes. - Feelings of life taken for granted emerged, leading couples to wonder the purpose of life and different commitments in life. - Variety of negative feelings concerning infertility surfaces. - United front presented by a couple and disagreements shown only in factual information.

Kettula-Pihlaja, T., Kaunonen, M. & Aho, A., L. Finland 2015	Haikaran ohilento – Lapsettomuudesta selviytyminen naisten kuvaamana	To describe how women cope with involuntary childlessness after failed fertility treatments.	- Different factors improving woman's coping with involuntary childlessness. - Different factors hindering woman's coping with involuntary childlessness. - Negative feelings associated with involuntary childlessness resurface as peers become grandparents.
Lindsey, B. & Driskill C. United States of America 2013	The Psychology of Infertility	To introduce literature regarding psychology of infertility and tell intimate stories of women with infertility battles.	- Infertility has not only biological effects but emotional, psychological and social as well, and it is needed to be considered holistically by professionals. - Different negative feelings rise during infertility journey. It also effects negatively to most people's sexuality. - Withholding opinions and advice if not asked. Everyone has their own path to parenthood, but it needs to be chosen by one.
Peterson, B., Boivin, J., Norré, J., Smith, C., Thorn, P. & Wischmann, T. United States of America 2012	An introduction to infertility counseling: a guide for mental health and medical professionals	To identify key issues professionals need to be aware of when treating couples experiencing infertility, as well as provide recommendations for them while working in mental health and medical settings.	- Patient-centered care is important in achieving the best treatment success. - Psychosocial counseling services should be available throughout the journey of childlessness and the use of infertility counselor should be considered as well as used if needed.

Smith, J., Walsh, T., Shindel, A., Turek, P., Wing, H., Pasch, L., Katz, P. & The Infertility Outcomes Program Project Group United States of America 2009	Sexual, Marital, and Social Impact of a Man's Perceived Infertility Diagnosis	To measure how a male factor infertility diagnosis among men in couples impact their lives on personal, social, sexual and marital levels.	- Lower sexual and personal quality in life is seen in men having isolated male factor infertility diagnosis. - Men not having a clear diagnosis for infertility are associated with increased social strain. - Infertility can cause strain in marital relationship. Having a diagnosis of male factor infertility itself does not increase the stress on marital relationship.
Sydsjö, G., Svanberg, A., Bladh, M. & Lampic, C. Sweden 2014	Relationships in couples treated with sperm donation – a national prospective follow-up study	To see if and how satisfaction with relationship changes as time passes on with couples receiving donated sperm and IVF couples. Also, the comparison within these two groups.	- Satisfaction with relationship remained stable and did not differ between couples receiving donated sperm and IVF couples. - Sexuality of individuals and the couple can be severely affected by infertility. - Coping mechanisms vary between genders.
Tulppala, M. Finland 2012	Lapsettomuus ja parisuhde	To give information on how involuntary childlessness effects on couples and their relationship	- Involuntary childlessness is a major crisis in a life to an individual and couple. - Involuntary childlessness can alienate or bring the couple closer to each other. - Involuntary childlessness causes variety of negative feelings for both individuals. - Sexuality is most often negatively affected due to the scheduling and the main focus being in conceiving.

Appendix 5. Inductive content analysis on effects of involuntary childlessness on a heterosexual couple's relationship.

Original phrases	Reduced phrases	Subcategory	Generic category	Main category
"My husband and I decided that fertility treatments were not the path in which we were destined to take" **(Lindsey et al. 2013)** *"The decision of using donated gametes requires of taking a moment as well as careful consideration and honesty"* **(Tulppala 2012)** *"I feel very blessed that my husband and I completely agreed on what our next step would be"* **(Lindsey et al. 2013)**	Agreed decision of not starting fertility treatments. The decision of using donated gametes requires careful consideration. Agreeing on a decision feels good.	JOINT DECISION MAKING	POSITIVE EFFECTS	EFFECTS OF INVOLUNTARY CHILDLESSNESS ON A HETEROSEXUAL COUPLE'S RELATIONSHIP
"having gone through a crisis together was seen as a strengthening factor as well as bringing the couple closer to each other" **(Tulppala 2012)** *"Keeping infertility a secret could also strengthen the couple's relationship since they can discuss this subject only with each other"* **(Sydsjö et al. 2014)** *"Going through infertility and the support partner's give to each other were seen as strengthening factors for the relationship"* **(Kettula-Pihlaja et al. 2015)**	Crisis experienced together strengthens the relationship and brings the couple closer to each other. Having a common secret can strengthen the relationship. Mutual experience of infertility and support given to each other are strengthening factors for relationship.	SHARED EXPERIENCE STRENGTHENS THE RELATIONSHIP		

"You need to make the effort to find out how you can communicate with your partner" **(Esmée et al. 2017)** ***"It was inevitable to learn to talk about difficult things with the partner"*** **(Tulppala 2012)** ***"talking with each other emerged as an important vehicle for working through feelings and clarifying their understanding of their situation"*** **(Golver et al. 2009)**	Making effort to see how to communicate with partner. Inevitable to talk about difficult things. Communicating with partner proved to be an important tool in working through feelings and understanding the situation.	IMPROVED COMMUNICATION	POSITIVE EFFECTS	EFFECTS OF INVOLUNTARY CHILDLESSNESS ON A HETEROSEXUAL COUPLE'S RELATIONSHIP
"they were closer to their partners since they had gone through infertility" (Lindsey et al. 2013) ***"The experience of infertility and the struggle on conceiving may bring the partners even closer together"*** **(Tulppala 2012)** ***"some women reported a greater closeness within their relationships"*** **(Lindsey et al. 2013)** ***"they developed stronger feelings of being part of a joint effort to seeking a solution for the infertility"*** **(Sydsjö et al. 2014)**	Being closer with one's partner. Infertility experience can bring partners closer together. Feeling closer to one's partner. Stronger feelings of being part of a joint effort to seeking a solution for the infertility.	GROWING CLOSER TO EACH OTHER		

"support that they receive from their spouse" **(Lindsey et al. 2013)** ***"he tries to reassure me and everything, and that helps me a lot"*** **(Golver et al. 2009)** ***"Spousal support has been shown to be very important in coping with the stresses of an infertility diagnosis"*** **(Smith et al. 2009)**	Support received from spouse. Man's reassuring helps. Spousal support is important in coping with stresses of infertility.	SUPPORTIVE ATTITUDE	POSITIVE EFFECTS	EFFECTS OF INVOLUNTARY CHILDLESSNESS ON A HETEROSEXUAL COUPLE'S RELATIONSHIP
"We're stronger, more sharing, more together than ever" **(Esmée et al. 2017)** ***"you know we've got each other, we can do anything because we've got each other, we can get through anything"*** **(Golver, et al. 2009)** ***"The most important thing is that our relationship was not base on having a child therefore we have still things in common"*** **(Kettula-Pihlaja et al. 2015)**	Stronger, more sharing and closer. Partners feel as they have each other they can get through anything. The relationship is not based on having a child but to other things.	STRONGER FEELING OF BEING UNITED		
"We won't talk about it, because I suspect if we we'd talk about it we would argue" **(Golver et al. 2009)** ***"the manner in which we dealt with the situation differed, which created many disagreements"*** **(Lindsey et al. 2013)**	Talking about infertility causes arguing. Different ways of dealing with infertility can create disagreements.	DISAGREEMENTS INCREASE	NEGATIVE EFFECTS	

"men in the study said they preferred less communication about fertility issues and left the initiation of such discussions to their female partners, which was a source of frustration for some of the women" **(Golver et al. 2009)** ***"when a woman experiences chronic infertility-related emotional pain and her partner uses instrumental coping strategies (e.g., problem solving) to attempt to protect her from pain. However, because men cannot ultimately fix their partner's emotional response, they leave these interactions feeling helpless and frustrated while women feel emotionally invalidated"*** **(Peterson et al. 2012)** ***"He's the opposite, he don't don't like to talk a lot in depth, it's a little bit of a problem with us"*** **(Golver et al. 2009)** ***"making the decision of beginning treatments is not always easy and opinions between partners might differ, even prevent from seeking help"*** **(Tulppala 2012)**	Men prefer less communication about fertility issues and leave the initiations for women causing them frustration. If a man uses instrumental coping strategies to help a woman with infertility-related emotional pain, the woman ultimately feels emotionally invalidated due to the man not being able to fix the woman's emotional response. Partners being the opposite of each other what comes to discussing. Differing opinions of treatments might even prevent the couple of seeking help.	CREATES TENSIONS	NEGATIVE EFFECTS	EFFECTS OF INVOLUNTARY CHILDLESSNESS ON A HETEROSEXUAL COUPLE'S RELATIONSHIP
"I wish we talked a bit more about it" **(Golver et al. 2009)** ***"Communicating with our spouses can be one of the most difficult things"*** **(Esmée et aL. 2017)** ***"more difficult for them to communicate with one another"*** **(Sydsjö et al. 2014)**	Not enough talking. Communication with spouse can be difficult. Communication is more difficult.	COMMUNICATION ISSUES		

"The infertility experience frequently represents a loss of control over many life aspects for the patient and her partner" **(Bell 2013)** ***"men who perceive themselves to be the sole contributor to the couple's infertility feel less in control of their lives"*** **(Smith et al. 2009)** ***"The sense of control I told myself I held had long since vanished"*** **(Bell 2013)** ***"Couples may experience a number of losses during the process of finding out about their fertility problems, having treatment and beyond"*** **(Golver et al. 2009)**	Infertility experience represents a loss of control over many life aspects to the couple experiencing it. Men feeling of being the one at fault in fertility problems feel less in control of their lives. Believing but feeling of not having control over one's life. Couple may experience number of losses during the infertility process.	FEELINGS OF LOSS OF CONTROL	NEGATIVE EFFECTS	EFFECTS OF INVOLUNTARY CHILDLESSNESS ON A HETEROSEXUAL COUPLE'S RELATIONSHIP
"fertility difficulties are commonly associated with negative emotional reactions" **(Golver et al. 2009)** ***"depression and anxiety during their infertility experience, describing these feelings often as 'nervousness or shakiness inside', and 'feeling no interest in things'"*** **(Bell 2013)** ***"negative feelings within their relationships with their partners"*** **(Lindsey et al. 2013)** ***"not being able to help my wife deal with it the extra hormones"*** **(Esmée et al. 2017)**	Infertility is associated with negative emotional reactions. During infertility experience, depression and anxiety is experienced. Negative feelings within relationships with partners. Unable to help one's partner.	NEGATIVE FEELINGS		

"A lack of congruence between infertile partners in terms of their coping styles has been shown to contribute to relationship distress" **(Golver et al. 2009)** ***"the use of avoidance coping strategies actually increases psychological distress"*** **(Peterson et al. 2012)** ***"Some of the men preferred to think things through in their own mind before entering into a discussion, whereas it seemed women used discussion to help them think"*** **(Golver et al. 2009)**	Using different coping styles contributes to relationship distress. Avoidance coping strategies increase psychological distress. Men are more likely to think things through before discussing of them, whereas women are the opposite.	USE OF DIFFERENT COPING STRATEGIES	NEGATIVE EFFECTS	EFFECTS OF INVOLUNTARY CHILDLESSNESS ON A HETEROSEXUAL COUPLE'S RELATIONSHIP
"We were both stressed, and the one aspect of a marriage that had in the past drawn us closer to one another was also a source of stress" **(Lindsey et al. 2013)** ***"Infertility stress and unsuccessful treatment can result in significant negative marital effects"*** **(Smith et al. 2009)** ***"Infertility and its treatment often cause stress"*** **(Kettula-Pihlaja et al. 2015)**	Wanting a child was once something bringing partners closer and it had turned into a source of stress. Infertility stress and unsuccessful treatment can have significant negative marital effects Infertility and its treatment often cause stress.	CAUSE OF STRESS		
"No one seemed to understand my feelings or emotions. Even my closest friend, my husband, was not seeing my extreme distress in the situation" **(Lindsey et al. 2013)** ***"he should listen to me and talk to me and try to understand me"*** **(Golver et al. 2009)**	Feelings of not being understood by the partner. Feelings of not being understood and listened to.	LACK OF UNDERSTANDING BETWEEN PARTNERS		

"I can't help sometimes feeling that is really all about the female" **(Esmée et al. 2017)** ***"Gender differences were highlighted in the meaning of infertility"*** **(Golver et al. 2009)** ***"the inequity that men sometimes felt within their partnerships as a result of women's greater perceived insight within their infertility journey"*** **(Esmée et al. 2017)**	Feeling of everything and everyone focusing on the female. Gender differences are highlighted in the meaning of infertility. Men sometimes feel inequal within their partnership due to the assumed insight women hold on infertility.	UNEQUAL TREATMENT	NEGATIVE EFFECTS	EFFECTS OF INVOLUNTARY CHILDLESSNESS ON A HETEROSEXUAL COUPLE'S RELATIONSHIP
"The side effects were unpleasant on my best days and insufferable on my worst. I felt fatigues and nauseated most days, and my appetite dwindled" **(Bell 2013)** ***"Thus for men even though they were often not dealing with the embodied experiences of medial assistance for reproduction, this process created emotional issues within their relationships"*** **(Esmée et al. 2017)** ***"you do think you're invincible though, going from one cycle straight into another one, without having a breather on between, because emotionally, it's just the worse thing I have ever done"*** **(Golver et al. 2009)** ***"another major source of stress related to the side effects of treatment (specifically hormones) for women"*** **(Esmée et al. 2017)**	The side effects of treatments are unpleasant and even insufferable. Men were having emotional issues within their relationships due to medical assistance of reproduction. Treatment cycles after another take a toll emotionally. Side effects of hormonal treatments are a major source of stress.	SIDE EFFECTS OF TREATMENTS		

"Many couples talked about their lives being on hold, as if they were in limbo when waiting for treatment" **(Golver et al. 2009)** ***"I became obsessed with becoming pregnant, as this consumed my thoughts at all times"*** **(Lindsey et al. 2013)** ***"The ones in treatments describe the time as "being in a treatment tube" time, in which the woman and man are trying to survive the treatment"*** **(Tulppala 2012)** ***"infertility could become a vortex which colonised their relationships"*** **(Esmée et al. 2017)**	Waiting for treatments, life is on hold, almost as being in limbo. Becoming pregnant is always in thoughts. The time in treatment is described as "being in a treatment tube" and seen something to survive from. Infertility was seen consuming the relationship.	ENERGY CONSUMING	NEGATIVE EFFECTS	EFFECTS OF INVOLUNTARY CHILDLESSNESS ON A HETEROSEXUAL COUPLE'S RELATIONSHIP
"the distress couples described in relation to the timing of treatment cycles" **(Golver et al. 2009)** ***"the more one avoids reminders of the infertility to protects one from psychological distress, the more distress is likely to be reported"*** **(Peterson et al. 2012)** ***"couples emotional distress arising from gender differences, difficulties in the marital or sexual relationship, and decisions regarding third-party reproduction"*** **(Peterson et al. 2012)**	Couples experience distress due to the timing of treatment cycles. Avoiding causes of psychological distress increases the amount of it experienced. Couples experience emotional distress due to gender differences, difficulties in the marital or sexual relationships as well as decisions of third-party reproduction.	INCREASE OF EMOTIONAL DISTRESS		

"involuntary childlessness may bring old problems to surface and cause new ones" **(Tulppala 2012)** ***"The underlying quality of marriage may influence or predispose men to personal, marital or sexual strains"*** **(Smith et al. 2009)** ***"bring up new problems or can lead to exacerbation of the old ones"*** **(Tulppala 2012)**	Involuntary childlessness can resurface old issues or be the cause of new ones. Underlying quality of marriage can influence or predispose men to personal, marital or sexual strains. Involuntary childlessness can cause new problems or aggravate old ones.	AGGRAVATION OF OLD PROBLEMS AND CAUSE OF NEW ONES	NEGATIVE EFFECTS	EFFECTS OF INVOLUNTARY CHILDLESSNESS ON A HETEROSEXUAL COUPLE'S RELATIONSHIP
"Stress increased due to lack of support from one's partner as well as communication issues" **(Kettula-Pihlaja et al. 2015)** ***"it tended to be the women who felt they needed more support"*** **(Golver et al. 2009)** ***"lack of social support appeared as lack of social support from social environment or one's partner"*** **(Kettula-Pihlaja et al. 2015)**	Stress increased due to lack of support from one's partner as well as communication issues. Women tend to need more support. Lack of social support from social environment and one's partner.	LACK OF SUPPORT FELT BY INDIVIDUALS		

Appendix 6. Inductive content analysis on effects of involuntary childlessness on a heterosexual couple's sexuality.

Original phrases	Reduced phrases	Subcategory	Generic category	Main category
"10% reported improved sex lives" **(Lindsey et al. 2013)**	10% reported improved sex lives.	IMPROVED SEX LIFE	POSITIVE EFFECT	EFFECTS OF INVOLUNTARY CHILDLESSNESS ON A HETEROSEXUAL COUPLE'S SEXUALITY
"It is clear that sexual dysfunctions are far more the consequence than the cause of an infertility diagnosis" **(Peterson et al. 2012)** ***"Scheduling of sexual intercourses can cause performance issues and erectile dysfunctions"*** **(Tulppala 2012)** ***"Men, on the other hand, can report a decreased ability to control ejaculation"*** **(Peterson et al. 2012)**	Sexual functions are rather consequences than causes of infertility. Timing of sex can cause performance issues and erectile dysfunctions. Men report a decreased ability to control ejaculation.	PHYYSIOLOGICAL PROBLEMS RELATED TO SEXUALITY	NEGATIVE EFFECTS	
"infertility had lessened their desire for sex" **(Lindsey et al. 2015)** ***"a decrease in sexual desire"*** **(Peterson et al. 2012)** ***"Involuntary childlessness was also shown as lack of sexual desire: sex had become obligatory instead of desired."*** **(Tulppala 2012)** ***"22% found sex to be without meaning when reproduction was found to be impossible"*** **(Lindsey et al. 2013)**	Sex is less desirable due to infertility. A decrease in sexual desire. Due to involuntary childlessness sex is felt as obligatory and not desired. 22% found sex meaningless due to impossibility of reproduction.	LACK OF SEXUAL DESIRE		

"sex life may become very frustrating and surrounded by negative emotions including blame and decreased self-esteem" **(Lindsey et al. 2015)** ***"women blamed themselves for not giving children to their husbands"*** **(Lindsey et al. 2015)** ***"men describe themselves as sexually failed"*** **(Tulppala 2012)**	Sex life can become very frustrating and surrounded by negative emotions including blame and decreased self-esteem. Women feel responsible for not being able to give children to their husbands. Men feel sexually failed.	SELF-BLAME AND DISSATISFACTION OF ONE'S OWN BODY	NEGATIVE EFFECTS	EFFECTS OF INVOLUNTARY CHILDLESSNESS ON A HETEROSEXUAL COUPLE'S SEXUALITY
"the details of frequency and timing are noted in the medical record." **(Bell 2013)** ***"couple needs to share intimate details with an outsider"*** **(Kettula-Pihlaja et al. 2015)** ***"outsiders are needed for help to share the most intimate area of couple's life"*** **(Tulppala 2012)**	Details of frequency and timing are noted in the medical record. Needing to share intimate information with an outsider. Outsiders are helping in the most intimate are of couple's life.	OUTSIDERS' INTERVENTION ON AN INTIMATE MATTER		
"Sexual feelings, lust and feelings of affection tend to decrease as the main focus of sexual intercourse is pregnancy." **(Tulppala 2012)** ***"Ejaculation of a man is necessary for conception but as an orgasm of a woman has nothing to do with it, it often played a secondary role."*** **(Tulppala 2012)**	Erotic feelings tend to decrease due to the focus being in conception. Man's ejaculation is necessary for conception, but woman's orgasm is irrelevant.	MAIN FOCUS IN CONCEPTION		

"I find I've lost my enjoyment of sex because of the fertility problem." **(Bell 2013)** ***"lower levels of sexual satisfaction"*** **(Peterson et al. 2012)** ***"group of men has lower sexual satisfaction, more feelings of sexual failure, and less enjoyment of sexual activity"*** **(Smith et al. 2009)**	Fertility problem takes joy out of sex. Lower levels of sexual satisfaction. Men have lower sexual satisfaction, more feelings of sexual failure and less enjoyment of sexual activity.	LOWER SEXUAL SATISFACTION	NEGATIVE EFFETCS	EFFECTS OF INVOLUNTARY CHILDLESSNESS ON A HETEROSEXUAL COUPLE'S SEXUALITY
"sexuality of infertile men and women might be influenced by their partner's reactions to the diagnosis of infertility" **(Sydsjö et al. 2014)** ***"traumatic information of reproductive health"*** **(Tulppala 2012)**	Sexuality of infertile men and women can be influenced by their partner's reactions to the diagnosis of infertility. Traumatic information of reproductive health.	DETAILED INFORMATION OF REPRODUCTIVE HEALTH		
"We had always had a great sex life, but sex became associated with our inability to procreate" **(Lindsey et al. 2013)** ***"Sex painfully reminds of involuntary childlessness and one's own inability to procreate"*** **(Tulppala 2012)**	Sex used to be great but now it is associated with infertility. Sex is a reminder of involuntary childlessness and inability to procreate.	SEX ACTS AS A REMINDER		
"male partners of infertile couples experience increased sexual stress related to infertility" **(Smith et al. 2009)**	Due to infertility, men experience increased sexual stress.	NEGATIVE FEELINGS RELATED TO SEXUALITY		

"She often feels as though she is not in control of her own body or sexual relations" **(Bell 2013)** ***"Men and women also experience loss of control and confidence in their own body as well as a sense of failure in themselves."*** **(Peterson et al. 2012)** ***"Couples often feel that they lose control of the fertility process and over their own bodies."*** **(Smith et al. 2009)**	Woman often feels as not being in control of her own body or sexuality. Men and women experience loss of control and confidence in their own body, as well as failure in themselves. Couples feel as losing control of the fertility process and their bodies.	FEELING LOSS OF CONTROL OVER ONE'S BODY	NEGATIVE EFFECTS	EFFECTS OF INVOLUNTARY CHILDLESSNESS ON A HETEROSEXUAL COUPLE'S SEXUALITY
"35% of couples does not think their sex life is satisfying" **(Tulppala 2012)** ***"infertility had negatively affected their sexual activity"*** **(Lindsey et al. 2013)** ***"Infertility had changed their sex lives for the worse"*** **(Lindsey et al. 2013)**	35% couples find their sex life dissatisfying. Infertility had negative effect on sexual activity. Infertility worsened sex lives.	WORSENED SEX LIFE		
"Sexual intercourse is no longer spontaneous" **(Bell 2013)** ***"perfectly time the processes of ovulation and conception"*** **(Bell 2013)** ***"First there is fun, the joy of trying to make something, Then there's the fear of making something you will lose. Then there's the stress of having to make something on a schedule"*** **(Lindsey et al. 2013)**	Sexual intercourse is no longer spontaneous. Ovulation and conception need to be perfectly timed. The fun of creating a life changes into fear of losing and further on to stress on conceiving in time.	SEX IS SCHEDULED		