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13. Reproductive health

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13 Reproductive health

13.1 Introduction

The reproductive anatomy and physiology of a women's body is more complex and has a greater overall impact on their physical and emotional wellbeing than seen in men. The female reproductive system is designed for a difficult task – that of enabling conception, carrying a child to birth, and then providing sustenance to the baby. This involves complex anatomy and physiology that has the greater potential for disorders and difficulties than that seen in the male. There is also a huge emotional aspect to reproductive health, with an important power and control aspect to procreation and the implications of pregnancy and becoming a mother.

And yet despite the widespread issues that are associated with women's reproductive health, this is still a stigmatising and taboo area, and the Chief Medical Officer for England and Wales recognises that this leaves many women suffering in silence with hidden conditions (Davies 2015). Since her report in 2014 there have been two other important reports from Public Health England (a consensus statement on 'Reproductive health is a public health issue' and 'What do women say?: Reproductive health is a public health issue') (PHE 2018b, c) that are drawing attention to the need for a more public debate on women's reproductive health issues. These reports question whether that the issues women face with the regard to their reproductive health should be considered public health issues (see also Sommer et al. 2015). Two quotes from the completed survey (PHE 2018c p10) are important in this regard:

“...I look back and I think how much of my life I've lost to my periods...It's only when you step back and think other women don't go through this every month...”

“...it's been an atrocious, ferocious and frightful experience (menopause)...”

They also highlight the high level of misunderstanding that exists across society with regard to reproductive health, with both women and men lacking knowledge and awareness of what is normal and abnormal. This can create delay in seeking help,

and a lack of compassion from others for those affected. In part this originates during schooling where periods and reproductive health are still not seen as a topic for boys, and girls are left unprepared for the challenges they are to face. The lack of education was seen as a particular problem, with some schools doing a good job, but there was a feeling that for many girls they are left frightened and bewildered by the whole process, with this lack of knowledge extending throughout their lives. This issue came up in the Women's Voices study (Thomas and Warwick-Booth 2018) where many commented on the challenges they face, both personally and also professionally through inflexible workplaces.

13.2 Premenstrual Syndrome (PMS)

The premenstrual syndrome (PMS – and also known as premenstrual tension) usually occurs usually in the 2 weeks prior to the monthly period and can cause bloating, backache, headaches, anaemia, nausea, vomiting, breast pain, mood swings, feeling irritable and loss of interest in sex (Sammon et al. 2016; Gunn et al. 2018; Maphalala 2018; Yonkers and Simoni 2018). Delayed gut motility can lead to constipation as a result of hormonal changes during the menstrual cycle (McCrea et al. 2009; El-Tawil 2011). PMS can be a severe form – premenstrual dysphoric disorder (PMDD) (NHS 2018f) - where the emotional disturbances and physical discomfort can be disabling.

Assuming periods start at about 11 years of age and the menopause at 51 years of age this accounts for 222,820 women in Leeds that may be experiencing some form of monthly PMS. With an estimated 3-8% of women experiencing PMDD on a monthly basis (Halbreich et al. 2003), this could mean that between 6,684 and 17,825 women in Leeds are severely affected over a period of 40 years. If the disability adjusted life years (DALYs) were calculated, then this would mean sufferers have a greater burden than for many major recognised disorders (Halbreich et al. 2003). The impact of PMS and PMDD has gone mostly unrecognised and greater attention needs to be given to the effect this can have on the lives of nearly the whole of the female population of Leeds.

PMS can be caused by a number of different factors, including hormonal changes, obesity, sedentary behavior, high stress levels, certain foods (high salt can increase bloating), alcohol, caffeine and a diet poor in vitamins and minerals (NHS 2018f; Yonkers and Simoni 2018).

PMS has been found to have a negative effect on smoking and alcohol cessation attempts (Becker et al. 2017; Pang et al. 2017), with some evidence that those women with PMDD have a higher alcohol intake, possibly as a way of relieving their symptoms (Fernández et al. 2018). Premenstrual women can also experience worsening asthma symptoms, which can be helped with increased medication in the lead up to menstruation (Raghavan and Jain 2016).

PMS and PMDD can cause disruption to schooling (which can impact on overall educational attainment) and work and be a major disruption to life on a monthly basis (Maphalala 2018). Relationships can be strained, with a fear of rejection or through the effect of monthly mood swings.

The management of PMS can include prescription medications, cognitive behavioural therapy (CBT), exercise and dietary changes, through to total abdominal hysterectomy and bilateral oophorectomy and Hormone replacement therapy (HRT) (Chin and Nambiar 2017).

Women with mild PMS can also be helped with

- Small frequent meals rich in complex carbohydrates.
- Regular exercise.
- Regular sleep.
- Stress, alcohol and smoking reduction or cessation (Chin and Nambiar 2017).

There is a need to ensure that there is a societal recognition of the impact this can have on the lives of women and greater sensitivity to those suffering, with a push to tackle the 'taboo' around menstruation (The Lancet 2018). There should also be more support and guidance for fathers (Girling et al. 2018) and mothers so that they

understand the challenges faced by adolescent daughters who are struggling with the effect of the menstrual cycle.

13.3 Dysmenorrhoea / Period Pains

Painful periods have been estimated to affect between 45 and 95% of menstruating women, with marked impact on pain sensitivity, mood, quality of life and sleep (Iacovides et al. 2015). It is most often found in women who have a heavy menstrual loss, premenstrual symptoms, irregular menstrual cycle and below the age of 30 years. It can be linked with endometriosis and is also more common in women who have suffered sexual abuse (Osayande and Mehulic 2014).

In a Belgium study 41.6% of 13 year old girls experienced painful menstruation, with girls who have their menarche at a younger age most affected (Hoppenbrouwers et al. 2016) – if this were the case locally then this would affect nearly 1,600 of 13 year old girls in Leeds.

13.4 Iron-deficiency / Anaemia

There is a high prevalence of iron deficiency in adolescent girls due to heavy bleeding, which can be associated with anaemia, but not always (Johnson et al. 2016b; Cooke et al. 2017). This can cause fatigue, poor cognitive function, irritability and inability to concentrate, which can have a negative effect on a girl's quality of life, her educational attainment, and willingness to engage in physical activity. Girls from South Asia and African American women have been found to be at a high risk (Bernardi et al. 2016).

In America anaemia has been estimated to affect between 9 and 16% of adolescent girls aged 16-19 years, which in Leeds could therefore impact on up to 3,351 girls.

13.5 Period poverty

Over 170,000 people in Leeds are estimated to be in relative poverty after housing costs. In 2015, 19.6 per cent of children under-16 in Leeds were estimated to live in poverty (28,000 children). Poverty is a gendered experience, with women having a higher incidence of experiencing poverty (Chant, 2006). The impact of poverty on women and children is something that is being increasingly recognised, and period poverty is one aspect of this.

Experiencing poverty can impact on all aspects of individual's life, and it is associated with stigma and societal exclusion (Ridge 2002). Social exclusion can be defined as the 'inability to participate effectively in economic, social, and cultural life and, in some characteristics, alienation and distance from mainstream society (Duffy 1995).

Period poverty is one area of poverty led social exclusion which has had raised national attention over the last two years. Period poverty refers to a lack of access to sanitary products due to financial constraints. Experiencing period poverty in school can cause severe embarrassment and distress, limiting social interaction and for some girls preventing them from engaging in their school work and in physical activities.

The National Union of Students have campaigned for University students to get free sanitary products and have launched a #FreePeriods Toolkit (NUS 2016). Aberdeen now supplies free tampons and sanitary towels to the most deprived areas of the city (Freeman 2017). Leeds are creating a city wide, sustainable approach that both tackles the stigma around periods and poverty and that provides sanitary products to all schools and community hubs. Working with internal and external partners, and led by young people, the Leeds scheme aims to normalise periods and eradicate period poverty.

13.6 Infertility

Infertility is 'a disease of the reproductive system defined by the failure to achieve a clinical pregnancy after 12 months or more of regular unprotected sexual intercourse' (Zegers-Hochschild et al. 2009). Across Britain it is estimated that one in eight women and one in ten men have experienced infertility, with prevalence higher in women aged 35-44 years (17.1%) and lower in younger women. Those women who were trying for their first child over the age of 35 years were more affected, as were those who were more highly educated and in managerial, professional and technical employment compared with those in routine occupations (Datta et al. 2016).

There are many reasons why a woman is not able to conceive a child. Smoking has been linked to a woman's infertility and risk of early menopause (Hyland et al. 2016), as has obesity (Broughton and Moley 2017) through its effect on female sex hormones. Women who are diabetic can also find it difficult to conceive (Basmatzou 2016). Sometimes it can be found to be a result of a specific cause, like pelvic inflammatory disease, endometriosis, or scarring after surgery for women, but for 25% of cases of infertility it is not possible to determine the cause (NHS Choices 2017). The impact of infertility can be profound, with higher rates of depression and dissatisfaction in their sex-life reported by affected women (Datta et al. 2016).

It is also important to note that total male sperm count has decreased by nearly 60% between 1973 and 2011 (Levine et al. 2017). In addition, older men have a decreased sperm count with a greater risk of damaged sperm, which can cause problems with conception, and for the longer term health of their offspring (Yatsenko and Turek 2018).

Approximately half of those affected by infertility actually seek medical help, and of those there is a marked socio-economic divide, with women from more deprived areas less likely to seek professional guidance (Datta et al. 2016).

13.7 Menopause

Despite every women going through the menopause, there is still a lot of uncertainty as to what it is and what it entails, with a general lack of coverage of the issues women face through what been referred to as ‘a window of vulnerability’ (Dennerstein and Soares 2008). The menopause was an area of long discussion in the Women’s Voices study (Thomas and Warwick-Booth 2018), indicating that this is an important issue for women across Leeds and warrants more consideration:

“So people who are coming in with menopausal symptoms or, whatever- you know, we get very misdiagnosed...thinking we’ve got depression or we’ve got this or it’s the time of your life but actually- it’s a real thing that happens to you and it’s nasty and it’s horrible and... people would rather have their periods back than go through the menopause and I’ve spoken to a lot of women about this.” (p13)

There is a difference between the effect of getting older per-se and the patho-physiological changes that occur as a result of the menopause. For some the menopause can occur earlier, either through surgical removal of the ovaries, though treatment for other conditions (such as for cancer), or spontaneously through premature ovarian insufficiency (NICE 2015b). Those women who are taking tamoxifen for breast cancer suppression can also experience an early and dramatic menopause (Moon et al. 2017), with effects going on past its completion. In the UK, the menopause usually occurs between the ages of 45 and 55 years, which in Leeds accounts for some 54,679 women in this age group.

Due to there being many different signs and symptoms that women can experience during the menopause, other conditions may be missed, leading to a delay in diagnosis and commencement of treatment (Smith et al. 2005; Macleod et al. 2009; Hope et al. 2017). This is especially the case in women with learning disabilities (Willis 2007a), who have particular challenges when going through the menopause.

Menopause symptoms over the transition (perimenopause or climacteric) can last around 4 years from the last period (NHS Choices 2015), but it can go on for longer and can include:

- hot flushes – short, sudden feelings of heat, usually in the face, neck and chest, making the skin red and sweaty
- night sweats – hot flushes that occur at night
- difficulty sleeping, resulting in feeling tired and irritable during the day
- a reduced sex drive (libido)
- problems with memory and concentration
- vaginal dryness and pain, itching or discomfort during sex
- headaches
- mood changes, such as low mood or anxiety
- palpitations – heartbeats that suddenly become more noticeable
- joint stiffness, aches and pains
- reduced muscle mass
- recurrent urinary tract infections, such as cystitis

These can have a marked effect on the quality of life and be a significant limitation on daily living for many women as they go through ‘the change’ (Greer 1992). The meaning of the menopause can vary across cultures, which may impact on the way the symptoms are perceived and the woman’s perception of the overall experience (Hall et al. 2007).

The menopause effects a woman’s risk of cardiovascular disease (CVD), including heart disease and stroke. Pre-menopause it is thought that women’s lower levels of CVD, as compared to men, are due to a protective effect of the sex hormones, reducing atherosclerosis and a better lipid profile and a reduced risk of hypertension (EUGenMed et al. 2016; Regitz-Zagrosek and Karaigas 2017). Following the menopause this protection is lost and rates of disease start to follow and then overtake those seen in men. Early menopause (before 45 years of age) greatly increases the chances of developing coronary heart disease and overall mortality as compared to those women who have a normal or late menopause (Muka et al. 2016; de Kat et al. 2017; Ley et al. 2017; Savonitto et al. 2018). These negative CVD effects are compounded when linked to being obese and having diabetes (type 1 and type 2).

In a study exploring the impact of weight on when the menopause started found that underweight women had over twice the likelihood of starting early and overweight/obese women had a 50% chance of a late menopause (Zhu et al. 2018b). This relationship between underweight and early menopause was also found in the Nurses' Health Study II (Szegda et al. 2017).

The Genitourinary Syndrome of Menopause (Portman et al. 2014; Farrell 2017) relates to a collection of symptoms that affect women as a result of the changing levels of sex-hormone as they go through the menopause and can affect more than 50% of women. These include vaginal dryness, dyspareunia, urinary urgency and frequency, urge urinary incontinence, and recurrent urinary tract infections. Although these problems are common, women seem reluctant to seek treatment or are not asked about the possibility of such problems at consultation (Farrell 2017; Hull and Fournace 2017).

Changes in the levels of sex hormones during the menopause are also thought to be behind the increase in asthma and respiratory symptoms that occur during the transitional period or post-menopause (Zemp et al. 2012; Triebner et al. 2016; Fuseini and Newcomb 2017). This includes an increase in new-onset asthma attacks and other respiratory symptoms (wheezing, tightness, attack of shortness of breath), irrespective of smoking habits. This is thought to be as a result of hormonal changes affecting the immune system within the lungs increasing inflammation of the airways (Triebner et al. 2016; Fuseini and Newcomb 2017). A rise in the risk of developing sleep apnoea has also been reported (Jordan et al. 2014), which could be due to the re-distribution of fat after the menopause.

There can be important changes in bone health following the menopause, with a steep increase in the number of women developing osteoporosis (Bjørnerem et al. 2018). Oral health is also affected over the menopause, with a number of conditions associated with the changing hormonal environment in the body, including xerostomia, viscous, saliva, increased caries, altered or unpleasant taste, ulcerations, burning mouth syndrome, trigeminal nerve pain, periodontal

disease, osteoporotic jaw, and loss of alveolar bone height (Rothmund et al. 2017; Prasanna et al. 2018) – many of which create oral pain and further adding to a general reduction in the quality of life.

Women who smoke tend to undergo the menopause about 2-3 years earlier than non-smokers (IARC 2012). After the menopause, although smokers are at reduced risk of breast cancer (Dossus et al. 2014) they much greater risk of a number of conditions, including COPD (Sansores and Ramírez-Venegas 2016). How women manage alcohol is also affected by the menopause, both physiologically and psychosocially (Milic et al. 2018a).

The menopause is associated with hormonal mood swings, which have been associated with an increased risk of migraines (Vetvik and MacGregor 2017) and can cause additional difficulties for those with existing mental health problems. Women going through the menopause have been found to have a 2-3 times higher risk of developing depression than those women who are pre-menopausal or post-menopausal. This perimenopausal depression (PMD), impacts on quality of life, their need for social support and increased complaints of disability (Wariso et al. 2017) and may be due to an interaction between metabolic and hormonal factors influencing emotion regulation (Berent-Spillson et al. 2017).

A study of women with bi-polar disease (Perich et al. 2017) found that women experienced their bi-polar symptoms more frequently and more intensely during the menopause, with the women having difficulty in determining how much was a result of life events or the actual menopause, which may suggest some women are missing out on possible support. Sex differences have also been noted with regard to schizophrenia (Falkenburg and Tracy 2014), with women being more protected against developing the condition in their early life, but following the menopause (with a presumed drop in oestrogen), there is an increased risk of late-onset schizophrenia.

Women with learning disabilities going through the menopause, which can occur earlier, require support to understand the changes they are experiencing (Willis 2007b).

Premature menopause can also have marked psychological effects due to a feeling of loss, relating to sexuality, youth and the possibility of motherhood. This was evident in a study on the experiences of women who went through the menopause as a result of cancer treatment (Parton et al. 2017). The three key themes that emerged: 'I don't feel like a whole woman': The incomplete woman; I often feel frumpy and depressed': The abject asexual woman; and 'I feel old before my time': Out of time and social isolation, which reflect an additional burden on women who are already experiencing the stress of the cancer diagnosis and treatment.

There is general advice that can be given to women to help manage the perimenopausal period, which include (NICE 2015b):

- hormonal, for example hormone replacement therapy (HRT).
- non-hormonal, for example clonidine.
- non-pharmaceutical, for example cognitive behavioural therapy (CBT).

Many women turn to alternative and complementary medicine to try and find relief from their symptoms (Tonob and Melby 2017), but NICE warns that many of these are untested and may have serious interactions with other medications (NICE 2015b).

Keeping physically active has been seen to reduce reporting of menopause symptoms, but this may be due to feeling psychologically better able to cope with them, rather than actually decreasing the problems (McAndrew et al. 2009).

Improving the education of women so they better understand the menopause and how the symptoms can be managed has been found to be beneficial, with a Swedish initiative using group sessions at the local primary health care clinic to good effect (Rindner et al. 2017). More women are also turning to the web and other social media as a way of understanding their menopausal experience (Im et al. 2017), with a number of different web-based interventions now evident, but their effectiveness is not yet proved.

There is now a dedicated Menopause Pathway being set up in Leeds to support women and health professionals to get an early diagnosis and appropriate support. In addition, the Leeds Centre for Women's Health¹ has a menopause clinic, which women can be referred to.

13.8 Other Gynaecological conditions

There are a number of important gynaecological health problems that women face that can have a marked effect on their physical and emotional health. Many of these can cause high levels of pain and discomfort as well as being significant causes of obstetric complications and can result in a very poor quality of life.

13.8.1 Fibroids

Fibroids (Uterine leiomyomas) are benign tumours that occur within the womb and are very common in women of reproductive age, with an estimate of over 70% of women affected by the time of the menopause (Stewart et al. 2017). Many women have fibroids without symptoms, but they have been described as a major public health concern due to the large numbers of women affected and their widespread negative effects (Al-Hendy et al. 2017). In America it has been thought that annual cost of fibroids (including medical costs, lost work-hours and obstetric outcomes) could be as high as \$5.9-34.4 billion annually (Cardozo et al. 2012).

There are many possible causes of fibroids, but they seem to be most strongly linked to oestrogen and are 2-3 times more common in women of African-Caribbean origin, those with a family history of fibroids, and in women who are overweight and had their menarche at an early age (Baird et al. 2003; Stewart et al. 2017; NHS 2018g).

Not all women develop symptoms, but those that do can be affected by a wide range of debilitating health problems, including abnormal bleeding with subsequent anaemia, fatigue, painful periods, painful intercourse, pelvic masses leading to bowel and bladder problems, pelvic pain, abdominal pain, fertility problems and obstetric

¹ <http://www.leedsth.nhs.uk/a-z-of-services/leeds-centre-for-womens-health/>

complications (Lisiecki et al. 2017; Stewart et al. 2017; NHS 2018g). Those women affected can have marked emotional and psycho-social health problems with a poor quality of life (Ghant et al. 2015). Having a higher number of children, oral contraceptives and smoking have all been found to reduce the risk of developing fibroids (Stewart et al. 2017).

13.8.2 Endometriosis

Endometriosis is a condition which occurs when the tissue (endothelium) that is normally found in the uterus grows in other parts of the body. This growth can occur on the peritoneum lining the pelvis, the fallopian tubes, or ovaries and can also be seen invading the bladder, bowel and ureter and, rarely, the eye and brain. This tissue goes through the same monthly cycle as found in the womb, including engorgement with blood and then bleeding, and can cause pain and discomfort and abnormal functioning of affected organs. It can have a physical, social, psychological and sexual impact, resulting in a reduction in quality of life and has been estimated to be a cost to the national economy of £8.2bn (Laganà et al. 2017; Morotti et al. 2017; NICE 2017b; Parazzini et al. 2017).

It is estimated that endometriosis affects between 5 and 10% of women aged 15-49 years, which in Leeds could account for between 11,190 and 22,380 women; of those affected, approximately 5 and 30% have a severe form of endometriosis. Despite this high prevalence and debilitating nature of the disease there are still many women suffering for years before a diagnosis is made and treatment commenced (Moen 2017; NICE 2017b).

Women with endometriosis can have difficulty conceiving (Saraswat et al. 2017) and those that do are at an increased risk of early pregnancy complications, miscarriage and ectopic pregnancy, haemorrhage and other serious risks to the mother and the offspring.

Endometriosis should be suspected in women (including young women aged 17 and under) presenting with 1 or more of the following symptoms or signs (NICE 2017b) :

- chronic pelvic pain.
- period-related pain (dysmenorrhoea) affecting daily activities and quality of life deep pain during or after sexual intercourse.
- period-related or cyclical gastrointestinal symptoms, in particular, painful bowel movements.
- period-related or cyclical urinary symptoms, in particular, blood in the urine or pain passing urine.
- infertility in association with 1 or more of the above.

Women with endometriosis may find their symptoms persist into the menopause (Gemmell et al. 2017), which can be difficult to manage and can turn into a malignant form, including endometrioid adenocarcinoma.

Despite the severity of the symptoms and the disruption to life there is an under – recognition of fibroids and endometriosis and their implications. The newly formed All Party Parliamentary Group on Women’s Health (APPG 2017) had endometriosis and fibroids as the subject of their first report which included a survey of 2,600 women and found:

- 42% of women said that they were not treated with **dignity and respect**.
- 62% of women were not satisfied with the **information** that they received about treatment options for endometriosis and fibroids.
- Nearly 50% of women with endometriosis and fibroids were not told about the short term or long term **complications** from the treatment options provided to them.

The APPG have made five recommendations:

1. Improved information resources.
2. The creation of an endorsed best practice pathway.
3. Education to include menstrual health at secondary schools along with wider awareness.
4. Multi-disciplinary teams and clinicians working together.
5. Where it exists, NICE Guidance should be followed.

In Leeds there appears to be clinical consensus that a specialist endometriosis pathway is not required, due to the volume of cases which would require surgery, but the Leeds Teaching Hospitals NHS Trust are developing a new complex pelvic pain pathway, which will include the care of women who suffer from moderate to severe endometriosis, with onward referral where necessary. In addition, there is third sector support for women, for instance the local Northern Endometriosis Sisters Support (NESS)² group and via national organisations: Endometriosis UK³ and MyEndometriosis⁴.

13.8.3 Pelvic inflammatory Disease

Pelvic inflammatory Disease (PID) is an inflammatory disease of the womb, fallopian tubes and ovaries caused by bacterial infection, such as through a sexually transmitted infection (i.e. chlamydia or gonorrhoea) (NHS 2018h). Symptoms include fever, vomiting, back pain, dyspareunia, and bilateral lower abdominal pain, as well as symptoms of lower genital tract infection such as abnormal vaginal odour, itching, bleeding, or discharge (Manoharan 2018). It is mostly found in younger women and is a leading cause of both tubal factor infertility and ectopic pregnancy.

In Leeds the prevalence rate in 2016/17 is 201.5 per 100,000, which is up from 139.2 per 100,000 in 2008/09 (Figure 1) but is better than the national average. The low rate is thought to be a result of the high chlamydia screening coverage resulting in more women being treated for the causative factors (Swift 2019).

² <https://www.facebook.com/NESS.ENDO/>

³ <https://www.endometriosis-uk.org/>

⁴ <https://www.myendometriosisteam.com>

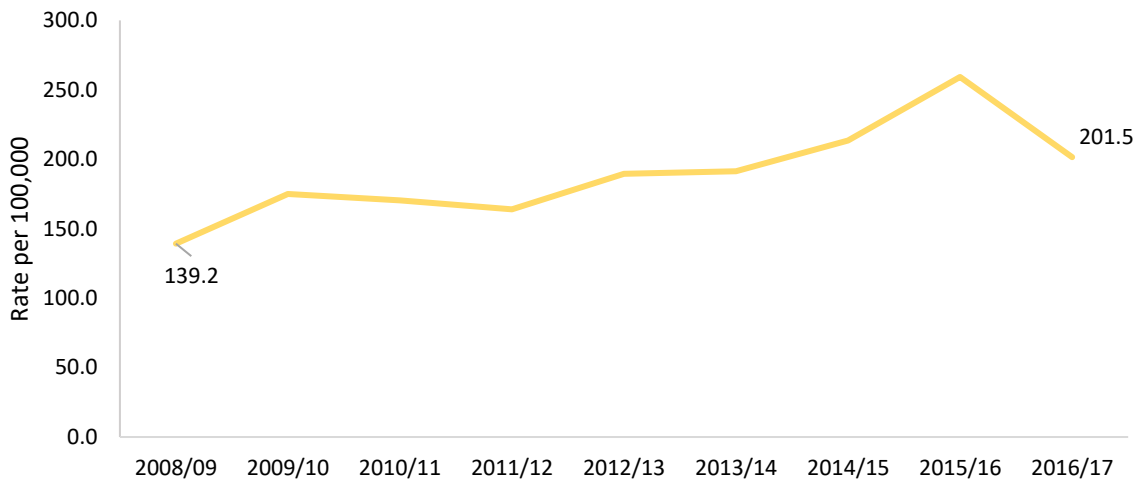


Figure 1 Trend in Pelvic inflammatory Disease, females 15-44 years, Leeds

13.8.4 Polycystic ovarian syndrome (PCOS)

Polycystic ovarian syndrome (PCOS) can lead to irregular periods, physical signs of high levels of male androgens (excess facial hair or body hair), weight gain, thinning hair, oily face/acne, and polycystic ovaries (NHS 2016e).

It is an under-recognised condition that can cause a number of physical and emotional difficulties for the women affected. The overall prevalence of PCOS is estimated to be about 2%, and higher in the 30-34 age group and in those from socially deprived areas (Ding et al. 2016). It is thought that there could be 50% of affected women not diagnosed and therefore not getting the support they need (Ding et al. 2016).

13.8.5 Chronic pelvic pain

Around 6 to 27% of women worldwide suffer a persistent, non-cyclic chronic pain in their pelvis, (Speer et al. 2016). It is mostly associated with endometriosis or chronic pelvic inflammatory disease, or can be a result of other gynaecological problems and other causes which included irritable bowel syndrome, and chronic urinary tract infections (NHS 2016f).

13.8.6 Vulvodynia and Vestibulitis

Vulvodynia and Vestibulitis cause chronic pain in the vulvar and on intercourse which are difficult to diagnose due to the often lack of specific external signs, but can have a significant impact on a woman's quality of life (Black et al. 2015; NHS 2016g).

13.8.7 Bacterial vaginosis and vulvo-vaginal candidiasis (Thrush)

Bacterial vaginosis (BV) is the most common form of microbiological syndromes in women of childbearing age (Verstraelen et al. 2010; Dirani et al. 2018). It is mostly caused by a disruption in the normal vaginal microbiota and though not seen as solely a sexually transmitted disease it is associated with sexual contact (Dirani et al. 2018). Lesbian and bisexual women are found to be at a greater risk, with estimates at 25-50% affected, most likely as a result of the sexual transfer of vaginal fluids (Marrazzo et al. 2005; Forcey et al. 2015; Vodstrcil et al. 2015; PHE 2018d).

Bacterial vaginosis has been found to increase the risk of adverse pregnancy outcome, pelvic inflammatory disease (PID) and to an increase the risk of acquiring sexually transmitted infections (Dirani et al. 2018).

Vulvo-vaginal candidiasis, which is more often referred to as Thrush, is a common yeast infection of the vulva and vagina. It can be caused by having sex but again isn't classified as a sexually transmitted disease as it is carried by the majority of the population and only becomes problematic if other bacterial changes occur (i.e. through pregnancy, the menopause, or diabetes) (Lopez 2015).

Recurrent vulvo-vaginal candidiasis (RVVC) is when there are 4 or more episodes of infection in a year, which can cause significant discomfort and has a negative effect on the quality of life (Adolfsson et al. 2017).

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