Sexual Function and Pelvic Floor Dysfunction

A Guide for Nurses and Allied Health Professionals

Angie Rantell
Editor

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Introduction

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Angie Rantell

Sexual health is defined by the World Health Organisation (2006) as the integration of somatic, emotional, intellectual and social aspects in ways that are positively enriching and that will enhance personality, communication and love (World Health Organisation 2006). According to Masters and Johnson (1966), sexual function (SF) is defined as how the body reacts in different stages of the sexual response cycle. Sexual activity (SA) is the manner in which we express our sexuality. Optimal female sexual health comprises physical, mental and emotional aspects, and there are several variables that influence SF including physiological and psychosocial factors (Tsai et al. 2011).

Early research looking at female sexuality was conducted by Kinsey in 1953 (Kinsey 1953). The sexual practices of American men and women were studied to try to dispel the misconception that women are not interested in sex. It has been suggested that research on female sexuality lags behind research into male sexual function as some cultures have difficulty accepting that female sexual problems are as disruptive to a women's health-related quality of life (HRQL) as they are to a man's (Kingsberg and Althof 2009).

Widely held beliefs and assumptions about the aetiology of male sexual difficulties changed dramatically with the approval of Viagra (Sildenafil) in 1998, the first oral therapy for erectile dysfunction. Alongside enhancing the sexual performance of millions of men, the medical research its launch produced was equally dramatic. Today there is widespread acknowledgement of the multifaceted nature of sexual difficulties. For women, there has been no revolutionary medical treatment but interest and research into female sexual response, and sexual difficulties have grown steadily over the past two decades.

Pelvic floor dysfunction (PFD) is a term applied to a wide variety of clinical conditions, including urinary incontinence (UI), sensory and emptying

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abnormalities of the lower urinary tract, pelvic organ prolapse (POP), defecatory dysfunction, anal incontinence and several chronic pain syndromes (Bump and Norton 1998). Women may experience only one symptom or a combination of symptoms. The prevalence of women reporting at least one symptom of PFD is reported between 23.7 and 49.7% (Nygaard et al. 2008). The most common conditions are UI and POP. Urinary incontinence is thought to affect up to 70% of women at some point in their life (Milsom and Gyhagen 2019), and 50% of women will develop a pelvic organ prolapse (POP) in their lifetime (Smith et al. 2010). The prevalence for both of these problems increases with age and represents a significant problem for healthcare as the population ages. All of these individual conditions can have significant negative effects on women's quality of life and in particular they can significantly affect a woman's SF.

The prevalence of sexual dysfunction is estimated to be around 30–50% in the general population, whereas in women with PFD, the reported incidence rises to 50–83% (Verbeek and Hayward 2019). For women seeking help for PFD, it is essential to include a discussion and if appropriate an assessment of SF as part of a holistic assessment and treatment plan.

Nurses and Allied Health Professionals (AHPs) are key members of the multidisciplinary team providing care for women with PFD and are often ideally placed to not only initiate discussions with women regarding SF but also to offer support and advice. However, a lack of undergraduate and postgraduate training regarding sexual health and SF is a common problem for all healthcare professionals (HCPs), and this can negatively impact on the service that we can provide for our patients.

This book has been developed for nurses and AHPs with an interest in the care of women with PFD, but is relevant to all HCPs working with women. It is acknowledged that there are many different clinical conditions associated with PFD, and these are often compounded by common general gynaecological conditions, e.g. endometriosis, fibroids, gynaecological cancers. However, this book will focus solely on the most common pelvic floor conditions covering UI/lower urinary tract symptoms (LUTS) (including urinary tract infections (UTI), POP and genitourinary syndrome of menopause). It will not cover the anorectal aspects of PFD.

The two main aims of this book are:

1. To provide an overview of the most common conditions, reviewing the assessment, diagnosis and management of those conditions and understanding the impact that each of those conditions can have on SF.
2. To develop/enhance knowledge and skills related to SF history taking/assessment and holistic treatments.

The book is split loosely into five sections. Chapters 2 and 3 provide a background to SF, reviewing the physiology of SF and models of SF along with looking at definitions, terminology, prevalence and causes of sexual dysfunction.

Chapters 4–7 introduce four specific pelvic floor conditions. They will outline the condition, prevalence, causes, diagnosis and management of the individual

conditions and provide a special focus on the impact of each individual condition on a woman's SF.

Chapters 8–10 aim to provide a guide on how to discuss SF with women, what a sexual assessment entails including history taking and physical examinations and finally will discuss the objective and subject measures available to enhance assessment and measure treatment success.

Chapters 11–14 will provide an overview of treatments available to holistically manage sexual dysfunction. The chapters will consider over the counter and home remedies, psychological therapies, physical therapies and pharmacological and surgical management options. For many, these chapters may provide a background to other therapies available and for some it may provide useful hints or guides to the evidence for particular therapies.

Finally, Chaps. 15 and 16 will consider the impact of partner issues on a woman's SF, and review help-seeking behaviours and signposting for specialist services that may be available for women to seek additional help.

It is hoped that by educating and demystifying the topic amongst HCPs, it will help to improve the recognition of problems in clinical practice and build HCP's confidence in initiating discussions regarding SF and providing ongoing care for women with PFD.

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Models of Sexual Response

2

Angie Rantell

2.1 Introduction

In order to understand sexual function in women, it is useful to consider the physiology of sexual function and the sexual response cycle. This chapter aims to discuss the sexual response models that have been developed over the years and consider the physiology of sexual response in women. It will also discuss how and why these have been refined over the years in line with advancing research, knowledge and understanding of female sexual function.

2.2 Early Sexual Response Models

The pioneering work of Dr. William Masters and Dr. Virginia Johnson in the 1960s expanded our knowledge and understanding of human sexual response. In laboratory conditions, they observed, monitored and assessed individuals and couples engaging in sexual activity and the research they produced formed the basis of a linear model of human sexual response that is still widely accepted today (Masters and Johnson 1966). This model identified four distinct phases and described the physiological changes that occurred in each phase. They believed that sexual problems occurred during breaks in this sexual response cycle and designed a treatment approach called 'sensate focus' therapy (Masters and Johnson 1970). In general, problems with sexual function were believed to be psychological or relational in origin. There were no variations considered for male and female response.

As shown in Fig. 2.1, the four phases described are excitement, plateau, orgasm and resolution. Sexual response will vary between different women and for an individual woman on different occasions. Women may not always reach the orgasmic

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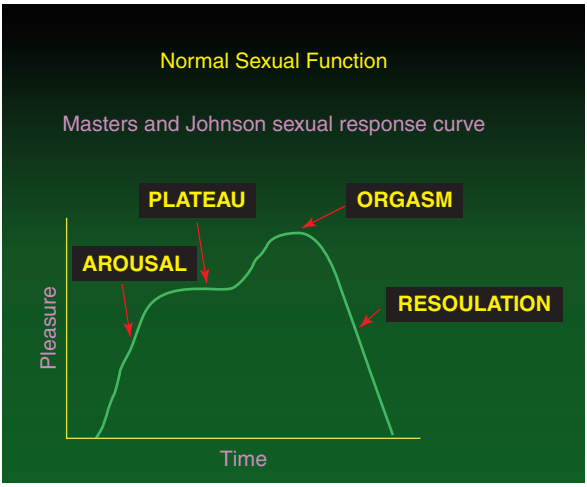

Fig. 2.1 The linear model proposed by Masters and Johnson. (Adapted from Masters WH, Johnson VE. Human Sexual Response. London: Churchill, 1966)

stage, and the resolution or refractory period is not always observed in women. If they do not experience a refractory period, women cannot respond to additional stimulation. However, in most cases women can respond to repeated stimulation and reach a second or third orgasm soon after the first (Chen et al. 2013).

Similar linear models by Kaplan (1979) and Leif (1977) were also introduced which added desire into the model; however, all these suggested that sexual response is invariant, the same for men and women, and that desire always precedes arousal.

2.3 Physiological Changes in the Sexual Response Cycle

The two basic physiological reactions that occur during sexual response are vasoconstriction of the genitalia and increased neuromuscular tension throughout the body (Masters and Johnson 1966). There are, however, a number of other physiological changes that happen to the female body as a result of sexual response, and these are described in Fig. 2.2 [adapted from Chen et al. 2013].

The desire phase is modulated by a balance of the dopamine-sensitive excitatory centre and the serotonin-sensitive inhibitory centre in the brain (Basson 2001). The activation of these centres initiates the downstream signals through the spinal cord and the related reflex centres producing a genital sexual response.

The parasympathetic nervous system mediates the engorgement of vascular and genital changes during the arousal phase. This includes the enlargement of the clitoris, dilation of perivaginal arterioles and expansion of the inner two-thirds of the vaginal canal (this is known as the tenting effect). At this point, transudation across the vaginal mucosa results in vaginal lubrication and this is regulated by oestrogen (Tsui et al. 2011).

The arousal phase is continued into the plateau phase. Plateau refers to the level of sexual excitement, which has been reached and is maintained for some time before reaching the orgasmic phase (Chen et al. 2013). This phase is associated with

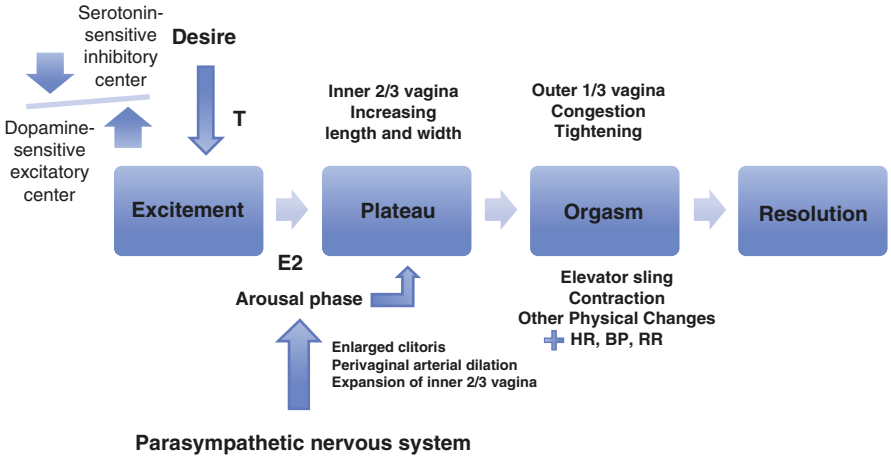

Fig. 2.2 Physiological changes in the current model of the female sexual response cycle (*BP* blood pressure, *HR* heart rate, *RR* respiratory rate). (With permission from Taiwanese Journal of Obstetrics and Gynecology)

expansion in the length and width of the inner two-thirds of the vagina, whilst the outer one-third of the vagina becomes congested with blood tightening the area. Masters and Johnson (1962) suggested that the congestion and tightening of the vagina was a feature of an orgasmic platform.

The orgasmic stage is not only associated with a series of contractions of the genital muscle groups (elevator sling/pelvic floor muscles) but also a general increase in neuromuscular tension throughout the body. This is also associated with an increase in heart rate, blood pressure and respiratory rate. Finally, during the refractory phase, the body returns to the unexcited state.

2.4 Further Development of Sexual Response Models

The early models described have been questioned over the years because they presume that men and women have similar sexual responses and do not take into account non-biological experiences such as pleasure and satisfaction or place sexuality in the context of a relationship (Whipple 2002; Whipple and Brash-McGregor 1997; Working Group on A New View of Women's Sexual Problems 2000). It is also noted that many women do not move progressively and sequentially through the phases as described. For example they may move from arousal to orgasm and satisfaction without experiencing sexual desire, or may experience desire, arousal and even satisfaction but not orgasm (Whipple 2002).

In 1997, Whipple and Brash-McGregor developed a circular sexual response model to address these issues (See Fig. 2.3 from Association of Reproductive Health Professionals (ARHP) 2008) (Whipple 2002; Working Group on A New View of Women's Sexual Problems 2000). This concept was built on four stages: seduction (encompassing desire), sensations (excitement and plateau), surrender (orgasm) and

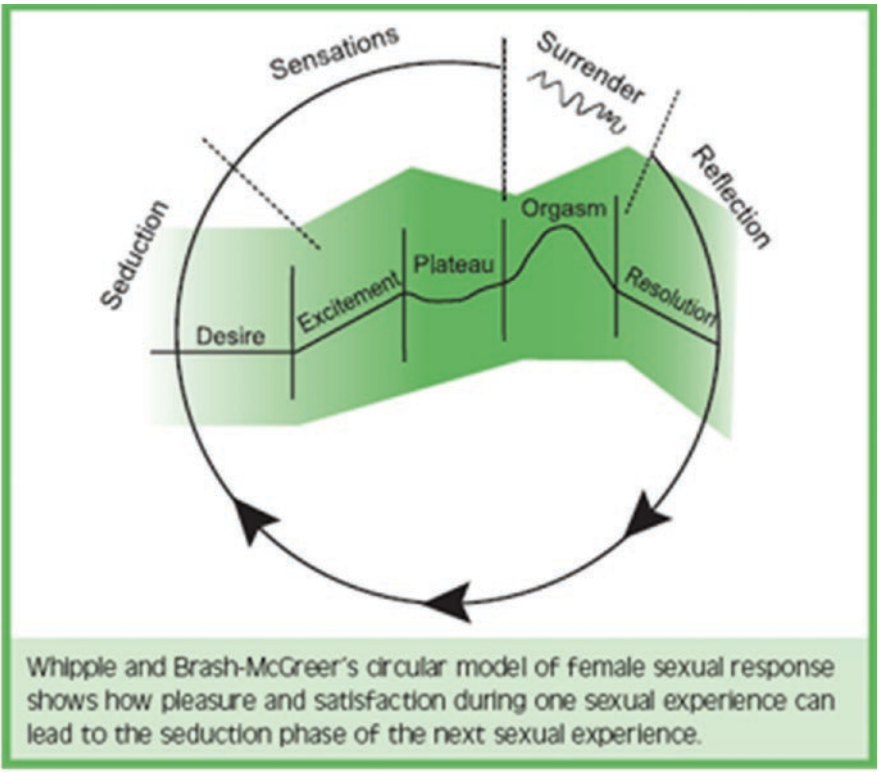

Fig. 2.3 Circular model of female sexual response (ARHP 2008). (Developed by Whipple and Brash-McGregor 1997)

reflection (resolution). By making the model circular, it demonstrated that pleasant and satisfying sexual experiences may have a reinforcing effect on a woman, leading in to the seduction phase of her next sexual experience.

In 2000, Rosemary Basson revisited Masters and Johnsons linear model of human sexual response and argued that it did not adequately reflect the range of women's sexual responses and experience which she described as more complex and better described as a circular model of response affected by biological, psychological and relationship factors (ARHP 2008).

The model was refined into a non-linear model of female sexual response that incorporates the importance of emotional intimacy, sexual stimuli and relationship satisfaction and acknowledges that female functioning is significantly affected by psychosocial issues, e.g. satisfaction with the relationship, self-image and previous negative sexual experiences (Fig. 2.4) (ARHP 2008). It suggests that women begin a sexual encounter from a point of sexual neutrality and the decision to be sexually active comes from a conscious wish for emotional

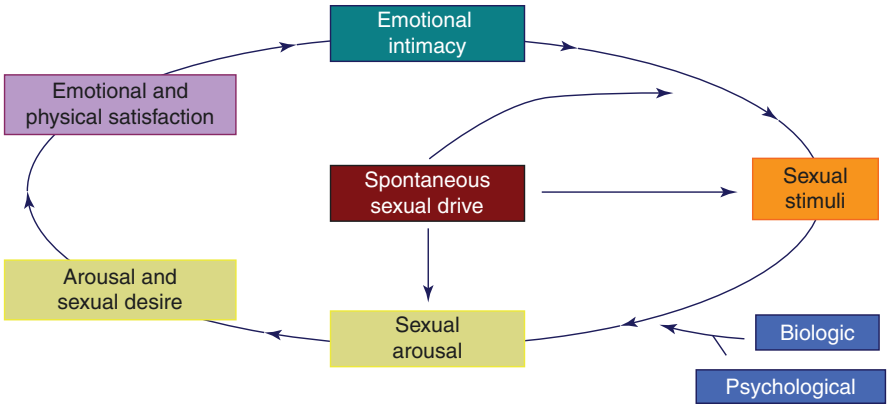

Fig. 2.4 Non-linear model of female sexual response (ARHP 2008)

closeness or as a result of seduction or suggestions from a partner (Kingsberg and Althof 2009). The empowering concept of this model is that of 'responsive desire' which suggests that the starting point for many women is one of neutrality or willingness to engage sexually as opposed to one of spontaneous desire. When a woman is open, responsive to touch and emotionally/physically connected to a partner, she begins to experience pleasure and 'responsive desire' (Metz et al. 2018). Ultimately, this model encompasses overlapping phases in a variable sequence and may be influenced by various psychological and physical factors during the process.

This remains the model most commonly used in current practice, and there are several key points that should be considered as noted below.

2.5 Key Points from Basson's Model

- 'Spontaneous sexual desire' is common in younger women and in the early months or years of a relationship but becomes more variable in the longer term.
- Women's subjective arousal is complex, often only minimally influenced by genital feedback and motivation to be sexual often stems from intimacy needs.
- Multiple biological factors can impact on a women's sexual response and inhibit sexual desire/interest and arousal.
- Desire/interest/arousal can be 'triggered' and is often contextual; resulting in the term 'responsive desire' commonly being used to help women understand that it is normal for some not to experience spontaneous sexual desire and help reframe the changes that can occur as a relationship progresses, as we age or in response to illness, medication or surgery.
- Desire/interest/arousal is often contextual, so how you experience sensation is context dependant and your perception can change depending on the context.

2.6 Sexual Desire/Motivation

Studies by Cain et al. (2003), Regan and Berscheid (1996) and Galyer et al. (1999) have revealed common motivations for women to agree to or initiate sex including a desire to: enjoy the emotional closeness that accompanies and follows sexual activity with a partner, increase their own sense of well-being and self-image and reduce guilt or anxiety about sexual infrequency. The importance of sex to a woman and man is also a considerable factor in female desire (DeLamater and Sill 2005).

2.7 Conclusions

Over the decades, it has been accepted that female sexual response is different to male sexual response, and models have been adapted to account for these differences. However, there are still many biological, psychological and contextual factors that can impact upon a woman's sexual function and many of these will be discussed later within this book. It is important to consider that many of these models may not be suitable or fit for all women, also how a woman moves through the models may vary for each woman throughout her life course.

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What Is Female Sexual Dysfunction?

3

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3.1 Definitions/Classifications of Female Sexual Dysfunction (FSD)

The American Diagnostic and Statistical Manual of Mental Disorders (DSM) is the most frequently used and widely adopted diagnostic criteria for sexual disorders. In the first two versions of the DSM in 1952 and 1968, the concept of FSD did not exist and only the terms frigidity and vaginismus were included in a list of supplementary terms (Graham 2016). As medicine was a very male dominated field at that time, it could be suggested that it was not considered important or that women had not felt able to raise their concerns due to societal/gender constraints. At this time, little had changed since the famous Imlach case of the nineteenth century, where the woman sued a gynaecologist for loss of sexual function after her ovaries were removed and the male dominated jury had to decide if the ovaries were important (Morantz-Sanchez 2000). It took a further 20–30 years to break down these barriers for FSD to be defined and classified, and many of these new classifications were led by women.

According to the WHO International Classifications of Diseases-10 (ICD-10), the definition of FSD includes 'the various ways in which an individual is unable to participate in a sexual relationship as she would wish' (World Health Organisation (ICD-10) 1992). FSD can afflict women of any age and its expression changes with the endocrinology of advancing years (Buster 2013).

In 1998, The Sexual Function Health Council of the American Foundation for Urological Disease (AFUD) compiled the first consensus-based definition and classification system for FSD. They listed five major categories of dysfunction: desire, aversion, arousal, orgasmic and sexual pain disorders (Basson et al. 2000). These are further defined in Table 3.1 (Aslan and Fynes 2008).

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Table 3.1 Categories of dysfunction

Sexual disorders	Definition
Hypoactive sexual desire disorder	The persistent or recurrent deficiency of sexual fantasies/thoughts and/or receptivity to sexual activity that causes personal distress
Sexual aversion disorder	The persistent or recurrent phobic aversion to and avoidance of sexual contact with a sexual partner that causes personal distress
Sexual arousal disorder	The persistent or recurrent inability to attain or maintain sufficient sexual excitement causing personal distress
Orgasmic disorder	The persistent or recurrent difficulty, delay in or absence of attaining orgasm after sufficient sexual stimulation and arousal which causes personal distress
Sexual pain disorders	Recurrent or persistent genital pain associated with sexual intercourse, including dyspareunia, vaginismus and non-coital pain disorders

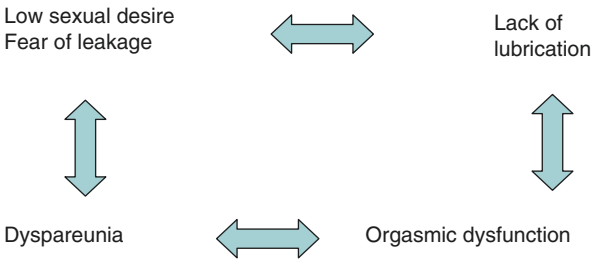

Fig. 3.1 The vicious cycle of FSD

These classifications, which may coexist, are subtyped as life-long versus acquired, generalised versus situational and organic versus psychogenic (Basson et al. 2000). FSD is not always a primary pathology but may be a symptom or a side effect of another, for example pelvic floor dysfunction (Basson et al. 2005). Mouritsen (2009) reported on the 'vicious cycle' of FSD and how all areas may be interlinked (see Fig. 3.1).

Following on from this, the DSM-IV defined FSD as 'disturbances in sexual desire and in the psychophysiological changes that characterise the sexual response cycle and cause marked distress and interpersonal difficulty' (American Psychiatric Association 2000).

The classification of FSD was further updated in 2004 at the Second International Consensus of Sexual Medicine, and guidelines were established to aid clinicians to evaluate the clinical significance of symptoms and further define the distress (Basson 2005).

However, throughout the literature, many comments have been made regarding difficulties defining FSD in practice and when a sexual problem should be classified as a sexual dysfunction (Bancroft et al. 2003; Chen et al. 2013; Latif and Diamond 2013). Bancroft and Graham (2011) suggest that the specific challenge is the recognition of the marked variability of women's sexual experiences and the

need to distinguish between transient problems in SF, e.g. due to adaptive responses to stressful circumstances and more persistent problems. Over a 10-year period, a task force and working group for the American Psychiatric Association (APA) updated diagnostic categories and criteria for FSD. The DSM-IV was revised and the DSM-V (2013) was adopted. Within this update, the definition of sexual dysfunctions was changed to 'a group of disorders that are typically characterised by a clinically significant disturbance in a person's ability to respond sexually or to experience sexual pleasure' (American Psychiatric Association 2013). Their symptoms should have been present for at least 6 months and been experienced in 75–100% of sexual encounters. The classification of female sexual desire disorder was removed, and female arousal disorder was re-named female interest/arousal disorder to cover a more varied expression of sexual desires in females. Sexual aversion disorder was also removed due to rare use and lack of supporting evidence. Changes to terminology were also introduced and dyspareunia was revised to genital pelvic pain, and the classification of vaginismus was replaced with the term penetration disorder (Chen et al. 2013; Derogatis et al. 2010). As with all terminology changes, they have been made to make terms more generalisable (e.g. genital pelvic pain), more specific (e.g. penetration disorder) or to come in line with new evidence. There are pros and cons to each of these in terms of broadening or narrowing diagnosis for patients; however, this can only make a difference if clinicians are educated about the new terminology and advised about how this may change outcomes for patients or the treatments offered to them. Yet, in current practice in the UK, these terms are not well known and not used in routine clinical practice.

3.2 Prevalence of FSD

Difficulties estimating the prevalence of FSD in women have been reported, and this is thought to be due to the fact that the parameters of FSD are not as clear as those of male sexual dysfunction (MSD) (Laumann et al. 1999) and because it is hard to determine the level of distress associated with sexual symptoms in a large-scale survey (Nappi et al. 2016). Methods of evaluating FSD and outcomes assessments have varied widely between studies (Hayes et al. 2006) and it has been suggested that many place an overemphasis on genital response rather than a subjective assessment of arousal and desire (Graham 2010) or even whether the event was sexually satisfying despite a limited genital response. Prevalence data suggest that the rates of FSD in clinical populations (i.e. women attending gynaecology clinics) are between 40 and 50% (Laumann et al. 1999; Geiss et al. 2003; Nazareth et al. 2003). However, there are very few studies looking at the prevalence of FSD in 'real world' populations, probably due to the difficulties accessing this population and the intimate nature of the subject being investigated. Ventegodt (Ventegodt 1998) performed an anonymised assessment of QoL amongst 2460 representative Danish

women, which included five SF questions (out of a total of 317 questions). They found that the QoL of individuals with sexual problems was between 1.2 and 19.1% lower than the population means (range of population mean QoL 61.5–75.9, range of women with sexual problems mean QoL 57.3–67.5). Lack of sexual desire and lack of a suitable partner were the two most commonly cited sexual problems for women; however, no data were provided relating the sexual problems to age of the respondent, relationship satisfaction and general health to be able to further comment or justify the reduced QOL.

The Global Study of Sexual Attitudes and Behaviour included 27,500 women over the age of 40 from 29 countries and considered the prevalence of FSD according to geographical location. It was reported that lack of interest in sex varied from 17% in Europe to 34% in Southeast Asia, lubrication problems ranged from 12% in Europe and the Middle East to 28% in Asia. Pain during intercourse ranged from 5% in Europe to 22% in Southeast Asia and the inability to reach orgasm varied from 10% in Europe to 34% in Southeast Asia (McCabe et al. 2016). This study suggests that women in Southeast Asia report the most sexual problems. This could potentially be for a variety of reasons, for example the respondents in these surveys may not have been representative of the population especially given the rural nature of this part of the world or possibly issues with how the questions were translated. Laumann et al. (2005) reported early ejaculation and erectile dysfunction to be more prevalent amongst men from Southeast Asia than other parts of the world and that 20% of men in Southeast Asia lacked interest in sex. This may also have a significant impact of the sexual health of the women in the region. It is also important to consider the cultural and socio-economic aspects that may contribute to these high figures as there is a significant prostitution/sex trafficking issue in that area that may also be impacting upon women's long-term sexual function.

Ponholzer et al. (2005) studied the prevalence and risk factors for FSD in a cohort of women undergoing a voluntary health assessment as part of a public health initiative. A total 703 women between the ages of 20 and 80 years completed a questionnaire on FSD; 22% reported desire disorders, 35% arousal disorders and 39% orgasmic problems, all of these issues increased significantly with age and 12.9% reported pain disorders but this was more common amongst the 20–39 age group. However, this study still relied on women volunteering to participate and disclose sensitive information and is unlikely to represent the population.

Wolpe et al. (2017) performed a systematic review to assess the prevalence of FSD in Brazil. They reported that the prevalence of FSD ranged from 13.3 to 79.3% of the population studied. When considering the specific aspects of FSD, they found that sexual desire concerns ranged from 11 to 75%, arousal from 8 to 68.2%, lubrication from 29.1 to 41.4%, orgasm from 18 to 55.4% and satisfaction from 3.3 to 42%. It was suggested that the range in prevalence occurred due to the differences in the populations studied, for example age, marital status, educational level, family income and associated comorbidities.

3.3 Causes of FSD

Gladu (2002) reported four causes of FSD: medical illnesses, psychological illnesses, hormonal deficiencies or the effects of medications. Examples of these causes can be found in Table 3.2. Sociocultural and relationship-related causes have also been linked with dissatisfaction or discontent with sexual experiences (Tiefer et al. 2002). It is likely that in many cases, no one single factor will be the cause but a combination of multiple factors.

Buster (2013) developed a table of all the medications associated with FSD which was adapted from the ARHP (2005). As demonstrated, many groups of drugs have the potential to impact upon SF, and Table 3.3 displays which drugs have the potential to cause desire, arousal or orgasmic disorders.

Mouritsen (2009) also suggested areas of pathophysiology that can cause FSD (Fig. 3.2).

Low oestrogen levels in the vagina, urethra, trigone epithelium and atrophy of the pelvic floor muscles have also been proposed as causes for FSD and lower urinary tract symptoms (LUTS) (Bligic and Beji 2010). Oral contraceptives have been shown to reduce arousal and sexual interest and increase genito-pelvic pain in women (Lee et al. 2017).

Several studies have reported increased FSD in women with higher body mass index (BMI) (Assimakopoulos et al. 2006; Esposito et al. 2007; Bond et al. 2009). A recent study by Mostafa et al. (2018) reported that in young, premenopausal population, obese women were more likely to have desire, arousal and lubrication problems compared to overweight women. However, the discussion did not consider whether this was due to hormonal/medical causes or psychological causes, e.g. reduced body image/low self-esteem or functional issues with sexual activity due to body habitus.

Nazarpour et al. (2016) performed a systematic review to identify factors affecting SF following menopause. Table 3.4 demonstrates some of the factors identified. Although, this study only assessed women during the menopause, it highlights the complexity of the physical, emotional, social and interpersonal and intrapersonal factors that can all impact upon FSD. These factors represent significant challenges in all research in SF as it is impossible to exclude all the compounding variables.

Table 3.2 Causes of FSD in women

Medical illnesses	Psychological illnesses	Hormonal deficiencies	Effects of medications
Hypertension Diabetes Thyroid dysfunction Neurological demyelinating conditions Previous pelvic surgery	Depression Anxiety Bipolar disorders Schizophrenia	Menopausal changes Female androgen deficiency syndrome	Selective serotonin reuptake inhibitors Antidepressants Antihypertensives Tamoxifen Phenothiazines