



# From the Manichean Dichotomy, Through the Biopsychosocial Model, to Systems Sexology, the Final Evolution of Sexual Medicine

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## Abstract

Over time, the conceptualisation of erectile dysfunction (ED) and the approaches to its treatment have changed considerably. However, there remains an important need to challenge the Manichean dichotomy of viewing ED as either *psychogenic* (arising from the mind) or *organic* (biological) in nature. This chapter provides an overview of the evolution of sexual medicine throughout the past centuries, highlighting key paradigm shifts in the understanding of sexual dysfunctions, including ED. Through an analysis of the praiseworthy but sometimes overused biopsychosocial model, the Manichean or dichotomous approach to diagnosis and the modern systems sexology (SS) perspective, we argue that the term psychogenic is not only redundant in modern practice but is also an affront to the progress made in sexual medicine, potentially harming patients, research, and the entire field. A SS approach is needed to integrate the effects of the systems of mind, body, experiences and society to understand how they produce sexual health or sexual dysfunctions, such as ED. Thanks to this innovative perspective, clinicians can fully understand how sexual health is a powerful and effective biomarker of overall health, just like the famous canary in the coalmine, which warns early that something is wrong and risks are developing. Thanks to SS, we can clearly understand the identity between sexual medicine (SM) and systems medicine (SM), the part of internal medicine dedicated to non-communicable chronic diseases. The two SMs recognize lifestyles, dramatically influenced by culture and subculture, society and the choices (or inchoate choices) of governments and economists, as a primary risk factor, with the

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E. A. Jannini (ed.), *The Canary in the Coalmine*, Trends in Andrology and Sexual Medicine, [https://doi.org/10.1007/978-3-031-98580-5\\_7](https://doi.org/10.1007/978-3-031-98580-5_7)

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same inflammatory mechanism, of sexual dysfunctions. Thus, SM+SM=SS is not a mere equation or a play on words, but an effective tool for increasing sexual health, an essential and indispensable part of the overall health of humanity.

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### Keywords

Manichean · Dualism · Biopsychosocial · Systems sexology · Systems medicine · Erectile dysfunction

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## 7.1 Evolving Treatment Paradigms in Relation to ED

Erectile dysfunction (ED) has been recognised as a health condition for millennia. Throughout history, there have been numerous attempts to understand the underlying causes of ED and understand optimal treatment approaches for this sexual symptom [1]. A brief history of the progress made in Western science in understanding erectile function, and dysfunction, is presented as a road map to the current evolution of the new, hectic field of sexual medicine.

In Ancient Greece and for centuries thereafter, it was believed that erectile function was driven by *pneuma* (meaning ‘breath’ or life force) entering the penis [2]. Hippocrates recognised the influence of *pneuma* flowing into the penis and advocated for a balance of the four humours in promoting adequate erectile function. Both Hippocrates and Aristotle held the view that the testes were a fulcrum of sorts, with a pulley system linked to erectile function [2]. Aristotle ascribed successful erection to three mechanisms: imagination; moisture (which increases subsequent to *pneuma* in the penis) and the fulcrum action of the testes.

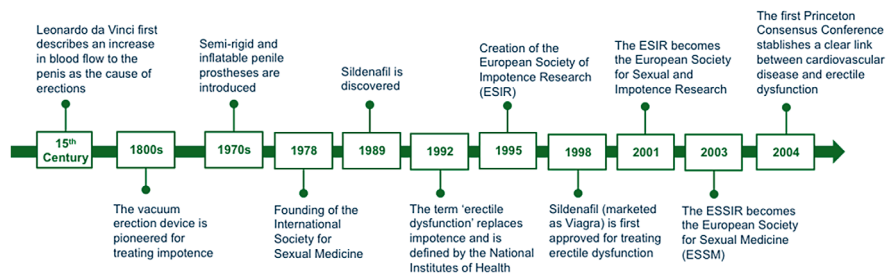
The view that air entry into the penis caused erections was not sufficiently questioned until the insights of Leonardo da Vinci. Da Vinci famously attended a public hanging and observed a dissection of the hanged man, in which the erect penis was filled with blood, which inspired his attempt to describe the anatomy and physiology of erection (Fig. 7.1).

However, such observations appear to have been overlooked in professional sciences until Ambroise Paré made similar assertions a century later [2, 5]. It was not until the seventeenth century that the mechanism of blood influx into the penis was demonstrated physiologically as a driver of erectile function. It took a further century to recognise the influence of the nervous system on penile blood flow and even longer to elucidate the mechanisms through which blood flow was controlled in tumescence and detumescence. Only in the late twentieth century were the mechanisms of arterial dilation under neurological, vascular and hormonal control understood to a significant degree [2].

In parallel to the anatomical and physiological advances in understanding erectile function, strategies to manage ED were proposed [6]. Many of these followed the evolving understanding of the mechanical control of penile function, including the use of vacuum erection devices, first developed in the 1800s, to encourage penile blood flow [7]. However, there was equally an emphasis on spiritual therapies, reflecting the ignorance of biological mechanisms linked to ED, including talisman use in Ancient Greece, the use of aphrodisiac compounds or food and the



**Fig. 7.1** *The Coition of a Hemisected Man and Woman* by Leonardo da Vinci. Probably in the same year that Columbus discovered the New World—in 1492—another Italian drew this unique picture. The depiction of sexual intercourse was drawn by Leonardo with some errors, such as the sperm originating in the spinal column, instead of the testicles, and travelling from there to the penis. It also incorrectly depicts two separate channels for urine and semen. The position of the testicles and breasts suggests that the intercourse described was not in a horizontal position, such as the missionary position, but in the standing one. Moreover, despite the exquisite interest in female beauty, the woman is only represented by her cavities—there is no face or head or torso [3]. The frequent drawing of anuses and penises found among his notes, and its celibacy are elements suggesting that da Vinci had a sexual interest in males. Indeed, in 1476, he was arrested by the *Office of the Night* (a kind of moral policing unit in Florence) under the accusation of sodomy [4]. (Image used with permission © Royal Collection Enterprises Limited 2025 | Royal Collection Trust)



**Fig. 7.2** Timeline of recent historical developments relating to sexual medicine and erectile dysfunction [8, 12–14]

consumption of animal penises or seminal fluid [6]. As an understanding of the role of hormones, particularly testosterone, emerged in science and medicine, attempts to increase androgen levels to remedy ED were also attempted. However, progress in the biological management of ED was slow despite some advances in scientific knowledge, limiting medical treatment options.

In contrast to the pursuit of therapies relating to the biomedical features of erectile function, psychological therapies emerged as a key treatment paradigm in the early twentieth century. The psychoanalytic approach of Freud, among others, established an approach to ED that ascribed sexual dysfunctions to the psyche of the individual patient and largely persisted throughout the century [8]. Psychoanalysis then gave way to cognitive behavioural strategies that aligned with a broader shift towards a greater appreciation of biological, social and psychological aspects of illness in the 1970s [9]. Finally, the development of sildenafil, the first phosphodiesterase type 5 inhibitor, led to a new paradigm where the pharmacological treatment of ED dominated, largely replacing psychoanalytical and cognitive behavioural approaches. This resulted in the substitution of the previous psychological *reductionism* ('it is all in your head') with the medical one ('it is all in a pill') [8]. The current perspective aims to integrate the strength of medical treatments with the power of counselling and, in selected cases, of psychotherapies [10].

The history of how ED has been conceptualised and managed is evidently circuitous, reflecting advances and missteps in scientific exploration and crossing the boundaries of physiological/anatomical, psychoanalytical and psychological treatments, up to the dominance of pharmacotherapy today. Figure 7.2 illustrates recent milestones in the history of sexual medicine and ED management that are of relevance to current practitioners. Importantly, treatment strategies evolve in line with changes in how the causes of ED are conceptualised in the context of broader changes in overarching health theory [11, 12]. As noted in the previous chapters of this book, there is a strong link between ED and the onset of non-communicable diseases (NCDs), with ED potentially serving as a marker (the *canary in the coal mine*) for these conditions. As our understanding of NCDs has evolved to appreciate the role of not only biological but also cultural, psychological, societal and environmental factors in their development, such understanding should be applied to ED. Consideration of the complexities underlying the development of ED through the prism of NCD diagnosis and treatment has the potential to inform more integrated treatment approaches.

In this chapter, we focus on three paradigms that have been applied to the diagnosis and management of ED—to represent all sexual dysfunctions: the **Manichean dichotomy**, the **biopsychosocial (BPS) model** and the emerging paradigm of the **systems sexology (SS)**, which we suggest as an evolution of our understanding of ED as a complex condition. We argue that the Manichean dichotomy approach is a redundant strategy when applied to the diagnosis and management of ED (as well as wider sexual dysfunctions). While the BPS model has benefits over the dichotomous model, this is also argued to have some limitations in the context of sexual medicine. Finally, we assert the thesis statement that the progression of sexual medicine from the simplistic Manichean dichotomy to the comprehensive SS approach has major advantages for both patients and clinicians.

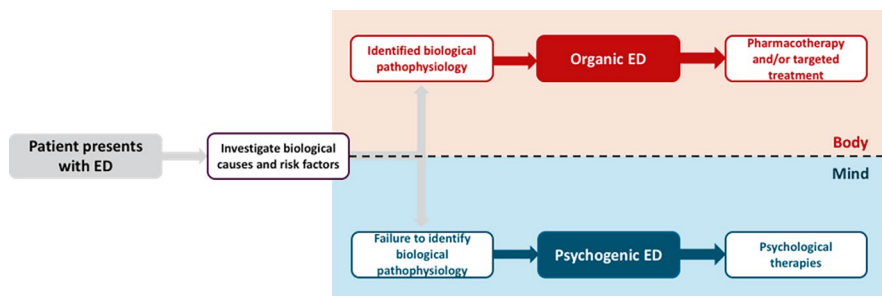
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## 7.2 The Manichean Dichotomy and the Exclusion Diagnosis in ED

The Manichean dichotomy reflects a fundamental emphasis on dualism when facing reality [15]. The term stems from the Manicheism religion, where there is a distinct emphasis on the duality of light/darkness and good/evil when viewing the world [16]. While that religion has now been consigned to history, the fundamental view of separate and contrasting entities serving as influences over life remains common across belief systems and even within the history of medicine. When applied to medical illness, the dualism of mind-body proposed by Descartes is a prime example of how Manichean dichotomies may influence scientific thought and even medical behaviours. Descartes proposed a separation of mind and body in the seventeenth century as a response to the dominant Christian view of mind-body connection and the impact this had on an understanding of illness and disease [17]. As the body and soul were viewed as one, illness was often ascribed to actions that went against moral values or wrongdoings on a social level. By promoting a dualism of the mind and body, the French philosopher opened the door for a positivistic natural science, where analytical methods could be applied to medicine [17]. By isolating the body as a physical, biological entity, this allowed for the expansion of the investigation of disease as a deviation from normal physiology and anatomy, without the need to integrate such assertions with the mind.

Over time, this avenue of scientific investigation bore substantial fruit and led to a biomedical model of illness, which remains embedded in modern biomedical sciences. One of the consequences of this development was that there was an over-correction and emphasis placed on biological factors, without consideration of the potential interaction or modulation of those factors through mental processes or experiences or the environment. Thus, the dualistic approach denied the mind's role in the experience of health, distorted an understanding of human beings through obsessive measurement and quantification and did not allow for the inclusion of psychosocial or spiritual aspects in human health experiences [18].

One of the main challenges to emerge from this approach was the delineation of disease as organic or psychogenic. *Organic* (from the Oxford Advanced American Dictionary: 'connected with the organs of the body') is used to individuate the physical, such as the molecular origin of health and diseases, in contrast to the term



**Fig. 7.3** Illustration of the Manichean dichotomy when applied to the diagnosis of erectile dysfunction [15, 20]

*psychogenic* (from Ancient Greek: ‘psyché’, mind plus ‘ghénos’ origin), which implies that a pathogenetic mechanism is (exclusively) generated by the mind. Unfortunately, the label psychogenic is still very frequently employed in conditions where no obvious organic cause could be found [19]. In fact, psychogenic became a term used to define a **diagnosis of exclusion** (*if I am unable to find an organic cause, the sexual symptom must be psychogenic*) and one that implied the lack of a clear, rational underlying cause for symptoms [20, 21]. The use of such a label has been noted in a range of apparently **idiopathic** conditions, including chronic pain, psychiatric conditions and pathologies affecting sexual function, such as ED (Fig. 7.3). Indeed, until recently, the term psychogenic has been employed in the diagnosis of ED where an overwhelming psychological component was believed to be present without a clear organic cause [15, 19, 22].

Although so dramatically popular that it produces >900 entries in PubMed and is considered the diagnostic standard of several guidelines produced in the Anglo-Saxon environment, [23, 24], the Manichean dichotomy is a problematic approach to ED for many reasons. Firstly, the dichotomy does not take into account the interactions of multiple factors driving the development and persistence of ED, which has been amply demonstrated in the wider literature and within the chapters of this book [15, 19]. Rather than providing a useful framework for separating ED into specific sub-types that can guide future treatment [24], the separation of psychogenic and organic ED is artificial in nature. This separation reflects (i) an attempt to oversimplify the complex nature of ED, (ii) the search for a unique aetiology for a symptom that typically recognises multiple risk factors, and (iii) a lack of integration of the multitude of factors influencing ED development and may have damaging effects on patients. A demonstration of the ability of a Manichean posture to generate monsters is provided by studies of nocturnal penile tumescence and rigidity, with and without the aid of a computerized recording device (Rigiscan), which have traditionally been placed at the top of various ED diagnostic flowcharts with the aim of distinguishing between psychogenic and organic etiologies [25]. The idea was very rudimentary, unsupported by robust scientific evidence, but at the same time it was highly successful, at least in surgical environments inappropriately trained to provide simple solutions to complex problems: if a patient has good erections for three consecutive nights while suffering from ED during sexual

intercourse, his problem cannot be physical in nature. Although Rigiscan can be a valuable aid in supporting the diagnosis (but still unable to identify any cause or risk factor for ED) and in verifying the presence and intensity of erections in particular research contexts [26], since several conditions can produce false positive and false negative results, its use as the sole tool in the diagnosis of ED is completely incongruous and even capable of producing dangerous diagnostic errors [27]. The consequence of this posture is to deny to those with a diagnosis of ‘psychogenic’ ED, but with biological risk factors, the opportunity to receive counselling on prevention and appropriate medical treatments. Moreover, it may also serve to dismiss ED as a manifestation of the patient’s mind (which in itself may perpetuate ED and drive negative psychological outcomes) [28]. On the other hand, very frequently, a patient diagnosed with a ‘purely’ organic ED is treated with drugs without any attempt to establish and manage the comorbid psychological aspects of its ED.

We argue that the Manichean dichotomy and the concept of mind-body dualism are obsolete in clinical practice and that the term psychogenic is redundant, abusive, stigmatizing, risky, and able to generate plenty of diagnostic and therapeutic mistakes (Table 7.1).

Arguments against a diagnosis of exclusion are numerous and underscore the importance of psychological factors in driving ED, which often co-occur with biological factors, as risk factors and/or consequences of the sexual dysfunction, including risk factors for cardiovascular disease [29]. There is a need for a deeper

**Table 7.1** Why the label psychogenic cannot be used in sexual medicine anymore

... because the term psychogenic is <i>redundant</i>	All sexual dysfunctions are impacting the mind. There is no need to specify that a given ED case is psychogenic. All sexual dysfunctions are “psychogenic”, and all sexual dysfunctions need a psychological assessment, at least during the irreplaceable phase of the counselling
... because the term psychogenic is <i>abusive</i>	The term psychogenic means ‘generated by the mind’. However, there are no instruments or psychometric tools that can demonstrate a doubtless causative role of the mind in a given case of ED
... because the term psychogenic is <i>stigmatising</i>	The patient can easily understand the label psychogenic as a psychiatric diagnosis or a hopeless need for never-ending psychotherapy
... because the term psychogenic is <i>risky</i>	Several flow charts, guidelines and doctors suggest psychotherapy for patients labelled as psychogenic, but without evidence of the possible outcomes and with the risk of increased anxiety and depressive comorbidities in the case of therapeutic failures
... because the term psychogenic cannot be the consequence of an <i>exclusion</i> diagnosis	The use of exclusion-based diagnosis in ED is nonsense. The idea that, at the present moment, medicine has all the possible diagnostic tools for excluding all possible causes of ED is, at best, rudimental and pre-scientific
... because the term psychogenic produces therapeutic monsters and tragic <i>mistakes</i>	The idea that “psychogenic” patients should be treated through psychotherapy and those with organic ED should be treated with drugs is far removed from evidence-based medicine. In fact, many patients with ED associated with psychorelational or social risk factors will benefit from pharmacological treatment; similarly, the majority of patients with an organic risk factor (e.g., diabetes) will certainly have better outcomes if medical or surgical therapy is combined with talk therapy

understanding of the complexity and wider factors that contribute to ED rather than a reductionist approach to ED classification and evaluation.

Another dramatic consequence of the use of the term psychogenic is the automatic referral of those patients to the ‘hell’ (as frequently perceived by the patient) of never-ending psychotherapy with unpredictable outcomes, while those with an organic ED may take advantage of physical treatment, such as that with the ‘paradisiac’ PDE5i [20, 30]. Evidence over the past half-century, drawn from a very large number of studies, has shown that patients with non-organic ED are very well treated with drugs and/or given physical treatments. The power of **sildenafil**, for example, in reducing anxiety and depression in ED patients is comparable in its efficacy to the best psychotherapies, though its effect is much faster, and, likely, more powerful [31, 32]. Interestingly, the anxiolytic and antidepressant power of sildenafil has also been found in pre-clinical models [33–35]. At the same time, it has been well demonstrated that the efficacy of all potentially successful medical treatments for ED is dramatically reduced when the patient is managed in a pill-only setting, without counselling and without any psycho-sexological support [36, 37]. Avoiding the Manichean perspective in sexual medicine means reducing the risk of both psychological and medical reductionism [38].

Finally, as largely discussed in many chapters of this book, in up to 90–95% of cases of the most common cardiovascular symptom—i.e. **hypertension**—it is not possible to find organic aetiologies, yet these patients are not labelled as affected by psychogenic hypertension. However, in the very large majority of hypertension cases, it is easy to recognise environmental, intra-psyche, relational and physical risk factors, ranging from genetics to depression, from anxiety to dyslipidaemia and from economic/job concerns to diabetes. Medicine labels all these cases of hypertension as *idiopathic* (having an unknown cause) but, at the same time, addresses psychological and physical risk factors without any Manichean need to establish if they are organic or not.

It is inexplicable, if not admitting an embarrassing inability to reasoning and an incapacity to renounce the inveterate **principle of authority**, i.e. to the grotesque and dogmatic *Iipse dixit* (Lat. for “he said it himself”) [39], why sexual medicine is still marking a number of patients with the infamous and illegal label of psychogenic instead of idiopathic, as is universally done for other more diffuse symptoms.

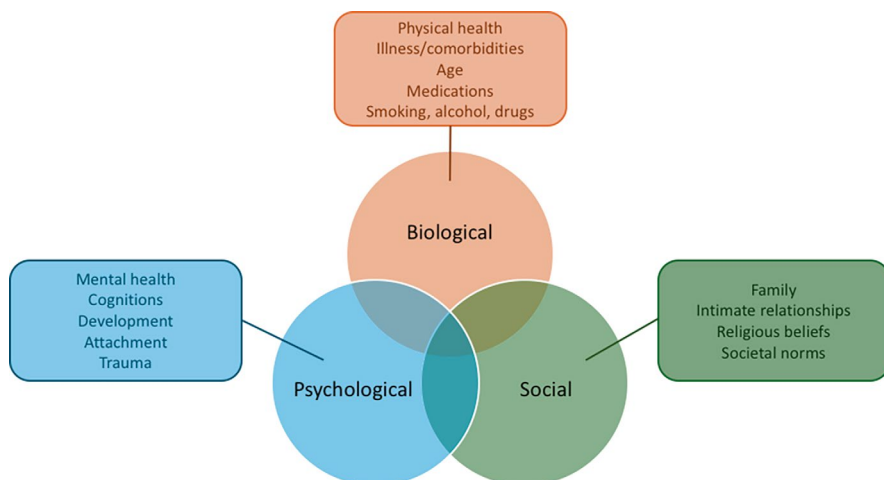
### 7.3 The Biopsychosocial Model in Relation to ED

The BPS model was proposed by George Engel in the late 1970s as an alternative to the prevailing biomedical model of care in medicine [40]. It arose from perceived limitations of the biomedical model, including a lack of appreciation of the person who has the illness, failure to take into account the person’s experience and attitude towards complaints, care of the patient as a person and the wider social factors that determine how a health condition may be conceptualised [40, 41]. This model represented a shift from perceiving health as the absence of illness to understanding both illness and patienthood in the context of health [40].

The BPS model incorporates three elements that have distinct features but also overlap when considering the health of a patient: *biological* (genetics, physiology and pathology), *psychological* (thoughts, emotions, experiences and behaviours) and *social* (relational, socio-economic, cultural and environmental) [40]. At the time of the development of this model, there was an increasing recognition of the importance of social factors and wider determinants of health that could influence a range of conditions. While the model initially emerged as a mechanism for improving psychiatric and psychological treatment, which was heavily centred on psychological theory and aetiological assumptions, its broader application to all medical conditions has been seen over time [42]. Hence, the adoption of the BPS model has aligned with prevailing changes in society that emphasise the interconnected nature of health.

The application of the BPS model to sexual dysfunction, including ED, has been strongly and correctly advocated [42, 43]. Importantly, this paradigm offers an opportunity to capture a diverse range of factors, social, intra-psychic, relational and biological, that can contribute to the development and persistence of ED. A position statement from the European Society of Sexual Medicine [44] asserts the importance of psychosocial variables in the evaluation and diagnosis of ED, promoting the use of the BPS model in complementing existing medically grounded knowledge on this condition. Indeed, there is a wealth of evidence suggesting that intra-psychic, relational and biological factors can exist within the same patient to drive the development of ED [45–47]. Although not always clear to some health care providers, researchers, and guidelines writers, the presence of psychopathological elements in a given case of ED could be caused by the erectile failure rather than causing the ED itself. Establishing the causal or causative relationships could be not always essential (or possible) in the diagnosis of ED, as in both cases intrapsychic and relational issues must be addressed and cured.

When assessing a patient with ED, their medical and sexual history is a key element in investigating the potential factors underlying ED that may influence treatment approaches [47]. Adopting the BPS in this context suggests the exploration of key factors related to biological health, mental/psychological health and social, cultural and relational factors. A summary of the BPS applied to ED assessment is presented in Fig. 7.4. The relevance of the BPS model is underscored by the important role of psychosocial assessment in ED, which should include an evaluation of sexual dysfunction; the perceptions of the patient (and their partner); sexual history and skills within the couple; the emotional impact of ED; communication patterns and barriers between the couple; preferences regarding sexual stimulation, including likes and dislikes; and beliefs about sexual performance [44]. These assessments not only consider the risk factors that contribute to ED but also incorporate elements of social/relational and psychological influences that may create conditions favouring the development and maintenance of ED. This also recognises that ED is not a condition that uniquely affects the patient in isolation but rather a socially positioned phenomenon. Recognising these factors at the diagnosis and assessment phase may have important implications for the management of ED, including the adoption of strategies such as psychoeducation, couple therapies and communication skill development, alongside medical therapy, as indicated [44].



**Fig. 7.4** The biopsychosocial model of health and key links to erectile dysfunction. This diagram illustrates the range of biological, psychological and social factors that influence erectile dysfunction [47, 48]

Importantly, the use of the BPS model entails a collaboration of multiple professionals during the assessment of ED to adequately evaluate and manage identified causative factors [44]. The benefits of the BPS approach in this context also align with the use of a patient-centred, holistic focus that can have positive effects on the experiences of the patient, as well as on future treatment outcomes. For instance, it has been shown that patient-centred approaches to sexual medicine led to increased satisfaction with healthcare services and the outcomes of consultations [49]. Patients are also more likely to collaborate with clinicians when care is patient centred, allowing individual needs, expectations and ideas to be explored and addressed [50]. Consequently, the BPS model has become a recommended approach to delivering holistic care and pursuing more diversity, inclusivity and integration when deciding on treatments and evaluating their outcomes [44].

While there are merits to the use of the BPS model as a conceptual framework for understanding ED and diagnosing and assessing this condition, there are also pitfalls when a conception of sexual health includes only biological, psychological and social factors. One of the main limitations of the BPS model in sexual medicine is the lack of real attention paid to the sociocultural factors involved in sexual expressions [43], despite the “declaration of interest” in the social aspects of sexuality. For instance, in the clinical research, the role of negative attitudes towards sexuality within societies and political regimens, the impact of healthcare systems and interactions and the influence of occupation/employment on sexuality and sexual function are not fully captured by the authors inspired by the BPS model. This reflects the dominant focus on factors that directly influence the individual rather than reflecting wider spheres of influence that may have shaped the development of sexual attitudes and behaviours. While the BPS perspective officially attempts to capture the importance of social interactions and cultural or relational factors to some extent, these are often considered superficially or in relation to specific

experiences rather than as forces that shape sexual function. Looking at the scientific production inspired by the BPS model, it is evident that psychologists mainly deal with psychological aspects and urologists focus on the physical failures, with a quite weak interest, or sufficient culture, knowledge and education, in the sociocultural, political, and economic aspects of sexuality. One might not be too far from the truth when stating that many interpreters of the BPS model are in reality granite-like dualistic in their mentality and clinical approach.

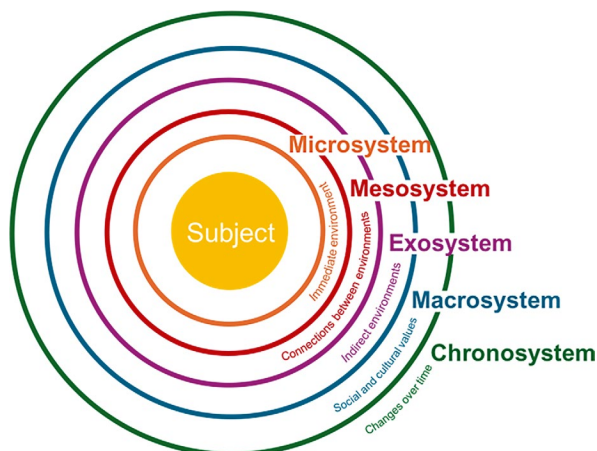
Another criticism of the BPS model when applied to sexual medicine is the limited attention paid to the desires, needs and values of the individual patient [43]. In addition, the appreciation of pleasures and the diversities within sexuality are not always included, which may limit the depth of evaluation in patients with ED. Indeed, the specific factors linked to sexual desire in men or the diversities within sexual desire may not be completely understood using the three elements of the BPS model, which ascribe desire to drive (biological), motivation (psychological) and wish (social/cultural) [51]. Consequently, while the BPS model may expand the avenues for exploring the underlying risk factors of ED compared with biomedical models, it may still have limitations around reflecting diversity in sexual desire and function [43, 51, 52].

In conclusion, the BPS model would be excellent but is too often used *uncritically* and as an **alibi** to mask a still rigidly binary approach: psychological or medical or, at best, psycho-medical, with very little attention to social, cultural, political and economic aspects that dramatically impact human sexual health. Often, in fact, the same supporters of the BPS model firmly believe that sexual dysfunctions have to be classified as psychogenic, organic or mixed. Often, the same supporters of the BPS model firmly believe that when a patient is *apparently* not presenting with physical aetiologies, his ED must be considered psychogenic. Often, the same supporters of the BPS model firmly believe that psychotherapy is the elective therapy for patients with psychological weakness (forgetting the powerful ‘psychotherapeutic’ effect of a well-conducted medical or surgical therapies) or that pills are the elective therapy for patients with organic risk factors (forgetting that all sexual dysfunctions impact the mind, relationships and the social posture of the individual, and deserve counselling if not psychotherapies). As discussed above, those are dramatic, but widespread, mistakes.

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## 7.4 Systems Sexology and Erectile Dysfunction

The focus of this section is on defining the SS model and how this may be applied to the diagnosis of ED. To appreciate this innovative perspective, it is necessary to recall the **bioecological systems theory** (BST) proposed by Bronfenbrenner [53]. The BST was a development of the ecological systems theory, which asserted that human development is the product of reciprocal interactions between multiple systems, including the microsystem, mesosystem, exosystem, macrosystem and chronosystem [54]. Within this model, the *microsystem* includes the closest relationships that an individual may have (e.g. family, friends and partners) as well as biological influences on the individual. When microsystems interact, this is captured within



**Fig. 7.5** Representation of the Bronfenbrenner's ecological theory. This theory highlights the hierarchical influence of different systems and their impact on the individual subject, including the immediate environment (microsystem), interactions between environments (mesosystem), indirect environments (exosystem), social and cultural values (macrosystem) and the changes that may occur over time (chronosystem). (Adapted from reference [53])

the *mesosystem*, a collection of interacting microsystems that may influence the life of an individual. The *exosystem* includes influences that may not be part of the immediate environment of the individual but result from institutions that may be influential, including schools, healthcare, media and the community. The *macrosystem* captures larger systems in society, such as religious, cultural and societal influences on health and well-being. Finally, the *chronosystem* represents changes over time, which may include changes in relationships or experiences. The expansion of this model to incorporate biological processes led to the development of the BST (Fig. 7.5) [53].

It is important to re-emphasise that sexual function in humans perfectly fits the idea of this ecological theory. Besides all the individual factors, sex is affected by continuous interactions within a multi-level system (for example, enjoying sex under religious perspectives, differences between Western vs. Eastern cultural contexts, etc.), and it is largely affected by historical factors, such as awareness of the possibility to be treated for ED, i.e. the *Viagra Revolution*; the diffusion of the Internet; and the emergence of the 'abilities' of so-called *Dr. Google* or artificial intelligence.

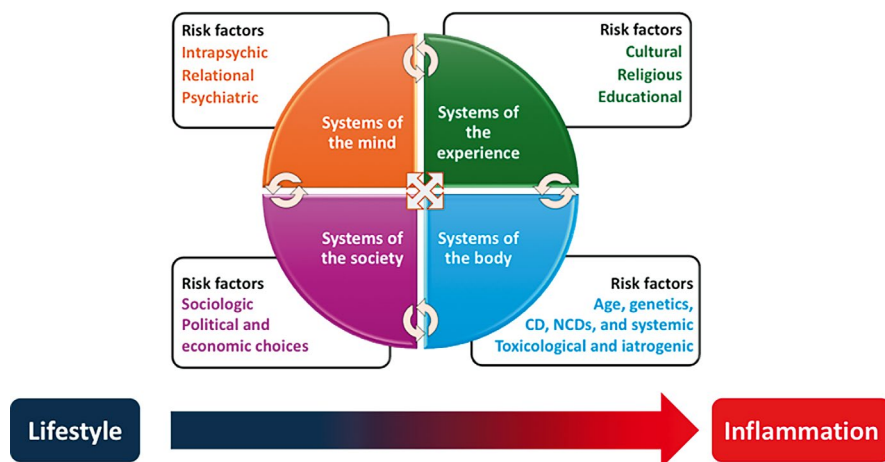
Why is it important to consider ED as a consequence of systems of influence rather than by adopting a discrete model such as the BPS approach? The importance of this system method lies in its ability to define a vast range of influences on the individual and, of course, the couple as a unit. We argue that the systems philosophy provides a more robust evaluation of the factors that influence health and disease in a given environmental context with respect to the half-century-old BPS model.

Given that a systems medicine approach has been applied to the current conceptualisation of NCDs, it may, therefore, also be applicable to ED [10, 55]. NCDs are recognised to be multi-factorial in origin and arise from a combination of risk factors that may be modifiable, intermediate or non-modifiable. While many NCDs may be strongly linked to modifiable risk factors, such as cigarette smoking and chronic obstructive pulmonary disease, their risk is typically influenced by other environmental factors, including urbanisation, migration, pollution and socio-economic factors [56]. Genetic factors are also recognised as playing a role in the development of NCDs, such as by increasing susceptibility to environmental risk factors and lifestyle risk factors. While NCDs are more common with advanced age, there is increasing evidence that risk may be linked to early perinatal or childhood experiences and exposures [56]. The age at which an NCD develops and the severity of the condition (as well as its impact on the individual) varies considerably from person to person [11]. Therefore, NCDs demonstrate the complexity of gene-environment interactions, socio-economic connections and comorbidities that determine the specific phenotypes experienced by an individual [11].

Hence, the systems approach applied to NCDs appreciates the interaction between the biochemical, behavioural, and environmental domains of health. NCDs may be considered a single expression of disease with different risk factors [56]. The influence of multiple systems on the development of NCDs necessitates an analysis of individual patient data as well as the integration of environmental, biological and clinical data [56]. Such complexity is also evident within sexual medicine, and the development of SS has been suggested as an integrative approach to this discipline [11, 57].

Fundamentally, the SS approach rejuvenates and increases the complexity of the BPS model and applies it to a sexual medicine context [57]. This includes the integration of the BPS model with a **sex-positive approach**, allowing for wider consideration of aspects of sexual desire, differences and variations [43]. Characteristics of the sex-positive approach in SS include respect for sexual and gender expressions, the importance of consent in sexual activity, the recognition of differences in sexual expressions and behaviours and an exquisite understanding of the validity of sexuality in healthcare and education [43]. Sexuality is not just seen in sexual behaviours but also reflects social, historical and wider environmental forces that shape gender identity, values and expressions [58]. Therefore, excluding a broader appreciation of the systems of influence on sexuality and sexual expression may limit the degree to which sexual dysfunctions, such as ED, can be adequately conceptualised.

SS incorporates the complexity of human sexuality, including social, political, cultural, historical, religious, biological, psychological and relational systems. This integrated approach may be applied to sexual dysfunctions, including ED, providing a basis for understanding the development of the condition and the assessment needs of patients [10]. Figure 7.6 illustrates the key elements of SS as applied to the



**Fig. 7.6** Diagram of systems sexology as applied to erectile dysfunction evaluation. *Pathogenesis of erectile dysfunction in the light of systems sexology.* Note that the four systems (mind, experience, society and body) deeply influence each other, having the wrong lifestyles as a pathogenetic mechanism and acute, sub-acute and chronic inflammation as a common mechanism of action. Abbreviations: *CD* communicable chronic disease, *CV* cardiovascular, *NCDs* non-communicable diseases

development of ED. This diagram emphasises the importance of lifestyle as a key factor in the development of ED but illustrates the complexity of factors that can influence the potential for lifestyle to drive inflammation as part of the pathogenesis of ED. Notably, there are interactions between all systems within this model, adding complexity to the simplistic idea that the presence of a lifestyle risk factor determines the risk of ED. Rather, lifestyle risk factors may be influenced by a range of systems to increase the risk of developing ED in specific individuals, given their unique circumstances and environment.

Application of the SS model to the diagnosis and assessment of ED should be implemented in the broad approach to patient evaluation and management. For instance, as seen with the BPS model, introducing clinical history and examination elements that explore sexual health and environmental factors linked to the risk of ED may be important in this context. An example of SS assessment questions is presented in Table 7.2. Exploration of factors such as the characteristics of sexual arousal, the influence of relationships on sexual function and the broader influence of school, healthcare, media and society across the lifespan may provide a basis for a more in-depth understanding of the needs of the patient. Therefore, the application of this model to ED represents an inclusive and comprehensive approach to sexual function assessment.

**Table 7.2** Illustrative assessment questions when assessing erectile dysfunction according to the systems sexology model

System	Questions for patient assessment
Body	<p>Do you like your body? Do you believe it is sexy enough?</p> <p>Do you have cardiovascular disease, diabetes or other chronic physical health conditions?</p> <p>Tell me about your lifestyle. (Do you take legal or illegal drugs? Do you smoke? Do you drink alcohol? Do you practise sport? How is your nutrition?)</p> <p>How would you describe your erectile function? How has your erectile function changed over time?</p>
Mind	<p>How do you know when you are sexually aroused?</p> <p>Did your parents and caregivers view sexuality as a positive or negative part of life?</p> <p>Did your educators view sexuality as a positive or negative part of life?</p> <p>How have previous sexual relationships influenced your current relationship?</p> <p>How does your current partner(s) impact(s) your erectile function? Which are your partner(s) needs, objectives, and goals?</p>
Experience	<p>Was sexual education part of your school experience? How has this shaped your attitudes towards sexual activity?</p> <p>What influence does media (movies, television, music, the internet, socials) have on your expectations of a sexual relationship?</p> <p>Is it acceptable for you to have sexual relationships before marriage?</p> <p>Whom is it okay to be attracted to? What makes an appropriate sexual partner?</p> <p>What is your relationship with the LBGT+ community?</p>
Society	<p>How do you perceive your sexual role in relation to your gender?</p> <p>Do worries about money influence your sexual function and sentimental relationships?</p> <p>Do you feel able to express your sexuality in your society?</p> <p>Is the society where you are living a friend or foe of your expression of your sexuality?</p>

Adapted from reference [57]

## 7.5 Comparison of the Three Paradigms in Terms of Their Conceptual Frameworks and Clinical Implications

The three paradigms discussed in previous sections demonstrate the diverse range of perspectives that can be used to understand the diagnosis and treatment of ED. From a conceptual perspective, the three paradigms reflect different phases of the wider evolution of medical and social thought over time. The Manichean dichotomy may be considered reflective of the dualism that emerged as a consequence of the suppression of medical knowledge development by religious views. While Descartes employed dualism as a means of separating complex components within a system, providing an opportunity to advance biomedical knowledge dramatically, it may not be seen as an over-correction to maintain this dualism. Conceptually, this dualism has led to a separation of the mind from the body in medical disciplines and may be considered damaging to the understanding of the patient as a person within their environment [15].

The emergence of the BPS model represented a shift in the conceptual perspective towards appreciating the person, rather than focusing exclusively on the disease process (the biomedical model). This undeniably has strengths in illustrating health as a holistic combination of factors and not merely the absence of disease [41]. However, it may also be limited when considering the wider factors that influence health, without appreciation of more nuanced factors that can influence health and well-being in an environment and given time. SS adds to the BPS model and emphasises the wider systems that influence health, thus building a more complete – and multifaceted – picture of the factors influencing the general and sexual health of the individual [11]. However, as complexity increases and multiple influences are included, it can be argued that these models become unwieldy in practical application. The time needed to explore these complex systems during a consultation and the uncertain relevance of all factors for the individual patient may pose a barrier to the uptake of such models. This is particularly true where clinicians have a dualistic model of health embedded in their practice, specifically in the field of sexual medicine, as a consequence of clinical training or engrained cultures of practice [59].

A comparison of the clinical implications of these paradigms does suggest that there are benefits to pursuing the more complex SS approach, however (Table 7.3). For instance, these paradigms may have an impact on how healthcare professionals approach ED. The Manichean approach would focus on the categorisation of patients according to psychogenic or organic risk factors for ED and then implementing a treatment course that reflects the outcome of this assessment. This would overlook the interaction between these factors and could preclude effective treatments. For instance, PDE5is have shown efficacy in diagnosed idiopathic and organic ED, suggesting that categorisation in this way may not have a clear benefit to treatment planning [60]. In addition, patients classified as having psychogenic ED may not undergo thorough investigations for biological and lifestyle risk factors, limiting opportunities for the early prevention of NCDs where ED is an early marker [20]. Therefore, the adoption of this paradigm may arguably be damaging to treatment decision-making and could overlook opportunities for wider health promotion. In contrast, the BPS and the evolved SS approaches should provide a more holistic examination of ED, including risk factors and links with the environment, which can guide more effective treatment decisions and opportunities to address wider health issues.

Ultimately, overt or hidden Manichean thinking may have a negative effect on patients, the quality of the care they experience and their outcomes in the context of ED. The benefits of the BPS and the SS approaches include the potential not only to optimise decision-making but also to explore ED within the wider context of health and well-being. When viewing ED as an early marker of NCD (the true *canary in the coalmine*), SS is particularly valuable and may support wider health by allowing consideration of the range of factors linked to sexual, social and general health, as in the fashionable *One Health* perspective.

**Table 7.3** Comparison of paradigms in relation to erectile dysfunction and their clinical implications for diagnosis and treatment

	Manichean dichotomy model	Biopsychosocial model	Systems sexology model
Conceptual basis	Delineation of psychogenic and organic ED, emphasis on biomedical disease model or on psychological issues. The basis for medical and psychological reductionisms	Largely mentioned and used, but often not completely and integrally. Reflects the patient as a person; biological, psychological and social contributors to health; recognises the interplay between these factors in ED	Holistic but complex perspective. Reflects the importance of systems of influence on health and well-being; recognises ED as multi-factorial and refractory to psychological, medical, and surgical oversimplifications. It is based on the developmental origin of health and diseases
Influence on ED diagnosis	ED is categorised according to psychogenic or organic aetiologies	ED diagnosis is nuanced and appreciates the link between factors	ED diagnosis is nuanced, comprehensive and considered across multiple systems
Aim of the diagnosis	To find the aetiologies	To identify the aetiologies from a holistic perspective	To identify the specific weight of environmental, psychological, lifestyle and physical risk factors
Influence on ED treatment	Psychogenic treatment is separate from organic treatment	Treatment is tailored to the needs of the patient to maximise biological and psychosocial function	Transdisciplinary, multidisciplinary and transcultural. Treatment is tailored to meet the wider needs of the patients in their environment
Output of ED treatments	Medical treatments for organic patients, psychotherapy for psychogenic patients	Integration, when possible, of medical and psychological treatments	Intervention on the lifestyles and on the patient's environment. Then, integration of counselling with medical and psychological therapies
Strengths	Simple approach to implement	Recognises the interplay between biopsychosocial factors to meet the needs of patient	Comprehensive model; aligned with systems medicine for NCDs.
Limitations	Outdated, wrong in the grounding theory, reductionist approach; lacks validity, given the interplay between organic and intra-psycho factors	Limited insight into the sexual desires, needs and values of the patient; fails to appreciate wider systems of influence (media, societal, economic, political, etc.); still affected by the <i>original sin</i> of the psychogenic/organic dichotomy, only partially masked by the alibi of the admission of 'mixed' forms, always interpreted as a dualistic mix of the mind and the body	The breadth of the model requires challenging assumptions of sexual health to facilitate practical application

Abbreviations: *ED* erectile dysfunction, *NCDs* non-communicable diseases

## 7.6 Managing ED in the Light of Systems Sexology

We have argued in this chapter that the diagnosis of ED is a potentially complex process, reflecting a range of factors related to the patient, their environment and their relationships. The Manichean dichotomy, as applied to sexual dysfunction, can be considered obsolete in modern practice. Psychogenic ED does not exist: a complex interplay of the systems of the mind, experience, society, and body is acting in almost every patient with ED. While the use of the BPS model of care can improve upon Manichean thinking when diagnosing ED, providing a greater level of nuance in understanding the causes, contributors and potential sustaining factors of the condition, this too has limitations, as above highlighted.

SS may influence treatment decisions and treatment options considered in patients with ED in a number of ways [10, 43, 61]. As noted within the focused discussion of SS, this model may have an influence on the workup, investigation and needs assessment of patients. This includes a more complete evaluation of the patient as a whole and avoidance of a reductionist approach to categorising ED. This approach has inherent value in guiding the patient in their treatment decisions for their ED and also in supporting the patient in achieving overall health and well-being. For instance, SS may be applied in defining individualised treatment goals for the patient, taking into account their broad context, including sexuality and age. Furthermore, treatment goals may take into consideration the wider needs of a patient in a relationship, involving or not their partner in the ED management [43]. Indeed, the use of a SS approach promotes the active involvement of the patient's partner in both diagnostic and treatment processes. While this is also true of the interpretation of the BPS model when applied to ED [44], the SS model can be considered an advancement of the BPS approach through its inclusion of an extensive set of influences and factors that contribute to health. Whether treatment goals meet the specific needs of individual patients with ED may directly impact their outcomes because of the interconnectedness of sexuality, relationship status and health indicators [61]. The three clinical cases depicted below are representative examples of the SS approach.

*Charles complains of subclinical ED [62]. He is unable to get a valid erection when he is with a young and demanding secretary, but when he is having sex with his wife, there are, apparently, no problems. The urologist decided, without any particular diagnostic workup, in a perfectly orthodox Manichean perspective, that the problem is without a doubt psychogenic and suggested personal psychotherapy and/or marital therapy for the husband and wife. After almost 3 years of psychodynamic therapy, the patient sought a second opinion, having seen some improvement in hysterical traits and anxiety but no change in erectile function during his extra-pair relationships. In a more in-depth consultation, the dynamic penile Doppler demonstrated a 20% reduction in blood flow, likely related to the unhealthy lifestyle of Charles. The conclusion of the expert in SS was that Charles was able to compensate for the vascular damage in a non-stressful environment (at home) but not in a stressful and demanding setting (with the mistress). In keeping with the SS perspective, Charles underwent a re-educational programme focused on lifestyle factors, 3–4 h of counselling to discuss myths and sexual expectations and even non-judgmental discussion of the ethical and social aspects of his sexual life, and he was prescribed a*

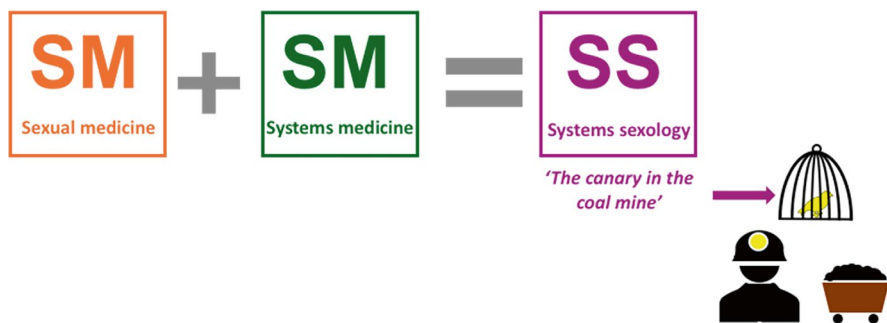
*discreet form of sildenafil 50 mg, such as the orodispersible film [63], which, being temperature stable, could be carried in the pocket and used without water when engaged in a more complex affair with respect to the matrimonial routine.*

*Luke has well-compensated type 1 diabetes mellitus, but his disease was sufficient to warrant a diagnosis of organic ED due to his inability to successfully penetrate his girlfriend. The diabetologist treated the patient with 5 mg of tadalafil daily, followed by on-demand tadalafil 20 mg before sexual intercourse, and then vardenafil 20 mg. All of these regimens proved unsuccessful in improving sexual function. The expert in SS, who has been consulted after 1 year of useless treatments, discussed with Luke his sexual orientation, also by using a new dedicated powerful psychometric tool, genuinely inspired by the SS, named XYGO [64]. This led to the discovery of Luke's hidden same-sex inclination, which he never practised because of the homophobic Mediterranean environment in which he lives. A short psychotherapy course was undertaken to help shift his egodystonic orientation toward an egosyntonic one. The counselling then transitioned to a more liberal environment and was followed by the prescription of low doses of a short-acting PDE5i to be used on demand, mostly at the beginning of a new same-sex relationship. This approach produced an excellent therapeutic outcome.*

*Ambrose is affected by gynaecomastia. He does not have sex because of body shame. During masturbation, the erection hardness score, measured by the Masturbatory Erection Index [65], was below the normal threshold. The endocrinologist discovered normal prolactin and thyroid-stimulating hormone (TSH) levels, total testosterone levels in the low-normal range and slightly higher than normal oestradiol levels. Testicular ultrasound showed both testes to be normal in size and echostructure, while breast ultrasound showed a true but small enlargement of the gland, in addition to increased adipose tissue. Ambrose is living in a heavily polluted environment where pesticides and other endocrine interferents are used daily in his job. He is also an overweight member of the working class and eats junk food almost daily. Changing environment and habits and having a short trial with anti-oestrogens were sufficient to revert gynaecomastia and improve Ambrose's self-confidence. He is now an activist for environmental causes, sharing with his first girlfriend, a vegetarian lady, not only renewed political conscience but also the happiness of sexual health.*

A SS approach allows for consideration of the environment, time, society, gender roles, religion, culture, healthcare, media, school and other systems that may influence ED and is aimed at capitalising on the potential for optimal sexual function among those affected, both individuals and partners. However, to enshrine this model in sexual medicine practice, more needs to be done to challenge dualism and the Manichean dichotomy of psychogenic versus organic ED. We note the importance of ED as an early marker of NCDs as a key driver of the adoption of this model. This may be achieved by aligning the evaluation and management of ED with the systems approach seen in NCD care (Fig. 7.7).

Consequently, ED may be identified as a specific condition and can be managed accordingly but may also be recognised as a wider indicator of the health of the patient in their unique environmental context, prompting wider investigations, preventative strategies and the treatment of NCDs. SS is therefore integral in realising the role of ED as the canary in the coalmine for NCDs.

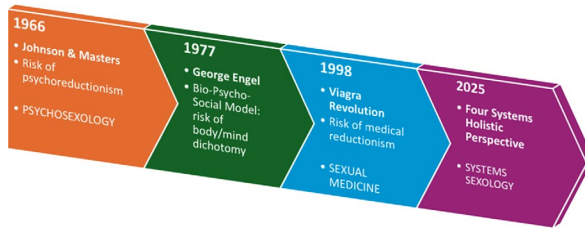


**Fig. 7.7** The  $SM + SM = SS$  equation of therapeutic success in erectile dysfunction care. This is the integration of the traditional *sexual medicine* (the first  $SM$ ) with the knowledge of *systems medicine* (the second  $SM$ ) in understanding the developmental origin of health and diseases, recognizing the role of the *four systems* (mind, experience, society and body) and of *lifestyles* in generating the *non-communicable chronic diseases*. In this perspective, sexual dysfunctions in general and erectile dysfunction in particular represent the perfect early *biomarker* of non-communicable chronic diseases as the *canary in the coalmine*

## 7.7 Conclusion

The complexity of human sexuality, its health and its symptoms and diseases has been and still is a challenge for research and clinical practice. After the two steps in the XIX-XX centuries of the psychodynamic-cognitive-behavioural therapies and then of the *Viagra Revolution*, both psychosexology and sexual medicine did not modify their reciprocal posture nor the risk to be prone to the original sins of psychological and medical reductionisms (Fig. 7.8).

In this context, the adoption of the BPS model, despite its holistic original aim, did not really amend the body/mind dichotomy (psychogenic/organic/mixed) almost universally present, like a karst river, in Western sexology. As a consequence, both psychosexology and sexual medicine have been almost universally considered ‘Cinderellas’ in academic contexts. Despite evidence that sex, in our species, is the driver of a majority of human behaviours and, from a biomedical perspective, the beginning of life itself, despite the exquisite ability of sexual symptoms to work as perfect biomarker of NCDs—the canary in the coalmine, once again—the systematic and official teaching of sexology is overtly ignored in an enormous majority of universities and in psychology and medical schools across the globe [67]. This is due certainly to taboos, ignorance, prejudices and a desire to keep the population less informed about sexual and gender issues, a perverse and pernicious aim of an increasing number of illiberal governments. However, we have to admit that, despite the numerous efforts of many scholars around the world, the field of sexology remains crystallised within the body-mind dichotomy; arrogantly entrenched in defending small patches of psychological, medical or surgical expertise; and, finally, unable to embrace the Socratic *scio nihil scire* (Lat. for “I know that I know nothing”) and the Galilean *provando e riprovando* (It. for “trying and trying again” or “proving and disproving”), which are the epistemological bases of any modern



**Fig. 7.8** The timeline of the development of sexual medicine and psychosexuality. Four steps could be identified. The first was born from the great exploration of human sexual behaviour, ‘normal’ and pathological, by Alfred Kinsey and the Johnson & Masters duo [66]. On the one hand, this constituted the foundation of scientific exploration in sexology, but on the other hand, it produced a *psychosexology* that was not always attentive to the scientific method and was always firmly anchored to the mind/body dichotomy postulated in the 1960s. The intervention of the *bio-psycho-social model* did not always improve the patients’ prospect of being diagnosed and treated with a truly holistic vision. The *Viagra Revolution* was then the brilliant and highly effective solution to one of the most serious sexual problems of the *boneless* humanity (see the first chapter of this book) but also at the basis of the birth of *sexual medicine*, a medical discipline, but largely cultivated by surgeons, frequently producing a dramatic *medical reductionism*. The time has come to renew our paradigm with the borderless vision of SS that considers the *four fully integrated systems* that make up human sexuality and sexual identity: that of the mind, that of experience, that of society and that of the body. Note that SS is postulated not as a new discipline but as a method for studying human sexuality and as a tool to improve and renew the ‘old’ bio-psycho-social approach in the interest of patients’ sexual health

scientific thought. We therefore strongly agree with Perelman and colleagues who, with intelligence, experience and competence, recently found that <<too many sex therapists and sexual medicine experts claim to adopt the [BPS] model while merely paying it lip service>> [68].

It is time now for a new paradigm, and we propose here a truly holistic one — the SS — in the interest of fruitful research, of the universal teaching of human sexuality and its diseases in the undergraduated and postgraduated shools, and of the sexual and general health of humanity.

**Conflicts of Interests and Acknowledgements** EAJ is or has been a consultant and/or paid speaker for Bayer, FQM, Ibsa, Kanna, Lundbeck, Menarini, Merck, Mia, Otsuka, Pfizer, Recordati, Shionogi, and Viatrix. TAH is an employee of Viatrix Inc. and holds stocks. EAJ’s research is partially supported by the Italian Ministry of University (MUR) PRIN Grant ‘The endocrine, vascular and sexual crosstalk in people living with HIV (PLWH): exploratory trial on the role of phosphodiesterase 5 Inhibitors’, MUR 2022AWB8T4; by the PRIN Grant ‘Exploring the role of medicines in the induction as well as the management of sexual dysfunction through analysis of Big Data and Smart data’, MUR P2022SE38P; and by the #NEXTGENERATIONEU (NGEU) grant funded by the MUR, National Recovery and Resilience Plan (NRRP), project MNESYS (PE0000006)—A Multiscale integrated approach to the study of the nervous system in health and disease (D.N. 1553 11.10.2022). Finally, the authors are indebted to Dr. Quan Pham (Hanoi Medical School) for critical reading of this chapter.

Editorial support for the authors was provided by Innovaacom LLC, funded by Viatrix Inc.

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