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ORIGINAL ARTICLE

The Psychiatric, Psychological, and Psychotherapeutic Approach to Erectile Dysfunction – Between Good Practices and Clinical Challenges

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Abstract: *Erectile dysfunction (ED) has an intricate pathogenesis, with organic and psychosocial factors contributing to the shaping of its clinical manifestations and functional impairment. ED disrupts not only an individual's sexual life but may also contribute to impairments of self-esteem, social functioning, quality of life, overall well-being, mood, etc. The assessment process and therapeutic interventions should be adequate to the specific profile of each patient, therefore an interdisciplinary approach is usually recommended, in order to find the vulnerability factors, recent triggers, psychiatric and organic comorbidities or causes, and elements that contribute to maintaining the sexual dysfunction, such as lifestyle factors, interpersonal conflicts, or inadequate sexual education. This narrative review explores the evidence-based approaches to structured psychiatric, psychological, and therapeutical assessment in patients with ED, and the most validated psychosocial treatments available. The results support the use of recognized diagnostic criteria within DSM-5TR and ICD-11, together with structured instruments (scales, questionnaires, and inventories), in a multidisciplinary approach. The cognitive model and cognitive-emotional model of ED support the initiation of cognitive-behavioral therapy in these patients. Other interventions, like the PLISSIT model, sexual therapy, couple therapy, and sexual-focused psychoeducation are also supported by evidence. In conclusion, ED requires a combined, psychiatric, psychologic, psychotherapeutic, and organic-oriented assessment, with the purpose of tailoring the treatment to the patient's particularities.*

Keywords: *major depressive disorder, erectile dysfunction, antidepressants, antipsychotics, schizophrenia spectrum disorders, psychotherapy, psychoeducation*

INTRODUCTION

Erectile dysfunction (ED) is one of the most frequently reported sexual pathologies, with an estimated global prevalence varying from 3% to 76.5% [1]. The large variations in the reviewed reports regarding the prevalence of ED are explained by the method chosen during studies to define and quantify the manifestations of this disorder. When structured, validated clinical scales, questionnaires, or inventories were used, the prevalence of ED in young men was high [1]. Non-validated instruments have lower sensitivity, therefore the prevalence obtained using such tools is expected to be less accurate [1,2].

It is also important to highlight that ED was positively correlated with cardiovascular diseases, a high risk of all-cause mortality, mortality due to cardiovascular pathology, and a higher risk of developing dementia [1]. Further exploring this topic, ED is considered a "sentinel marker" for cardiovascular disease and could indicate a chronic and undetected coronary artery disease [2]. This correlation was supposed to be more significant in men with diabetes mellitus [2]. ED demonstrated significant value as an indicator of general health in men, irrespective of the cardiovascular risk factors [3].

Therefore, the importance of exploring the most adequate ways to diagnose and treat ED derives not only from the

relevance of this disorder on the quality of life and well-being of the patients but also from the potential comorbid conditions this diagnosis may reveal during the multidisciplinary assessment.

OBJECTIVES AND METHODOLOGY

The main objective of this review was to find the most evidence-based assessment methods for patients with ED from the perspective of mental health professionals. Secondary objectives were founding data on (a) the available psychosocial approaches to ED; (b) ways to integrate psychological, psychiatric, and psychotherapeutic evaluations for patients with ED; (c) finding the key aspects that can help the training of mental health specialists in the evaluation and treatment of patients with ED.

The identification of relevant articles involved searching three electronic databases (PubMed, Cochrane, and Clarivate/ Web of Science) as well as their list of references. There was no inferior time limit for the search, while the superior limit was June 2023.

All primary and secondary reports were allowed into the analysis. No language restrictions were applied.

The paradigm used for retrieving sources was “erectile dysfunction” OR “male sexual dysfunctions” AND “assessment” OR “psychotherapy” OR “counseling” OR “diagnosis” OR “cultural aspects” OR “skills training” OR “mental health specialists”.

RESULTS

The results of the literature search were distributed in three sections, according to their relevance for each category of mental health specialists involved in the assistance of patients with ED. The accent is placed on the need to conduct a multidisciplinary exploration of the ED (Figures 1 and 2) and to formulate a therapeutic plan that takes into account the main vulnerability factors identified during the initial assessment of the patient.

The psychiatric approach

The diagnosis of ED implies, according to the 5th edition (revised) of the Diagnostic and Statistical Manual of Mental Disorders (DSM-5TR), significant difficulty in reaching or maintaining an erection, or a marked decrease in the penile rigidity during erection, that appears on almost all occasions of sexual activity (75-100%) [4]. There is also the requirement of a minimal duration of 6 months for these symptoms, and they should cause clinical distress, in order to complete the diagnosis criteria [4]. Like in the case of all sexual dysfunctions, ED should be distinguished from organic, toxic, stress-induced pathology, or other mental disorders [4]. ED may be lifelong (if the patient did not have any period of normal sexual functioning) or acquired (if the dysfunctions started after a period of normal sexual functioning) [4]. ED can also be mild, moderate, or severe (depending on the level of symptoms-induced distress), or it may be generalized or situational (depending on the types of stimulation, situations, or partners that may or may not trigger the symptoms) [4].

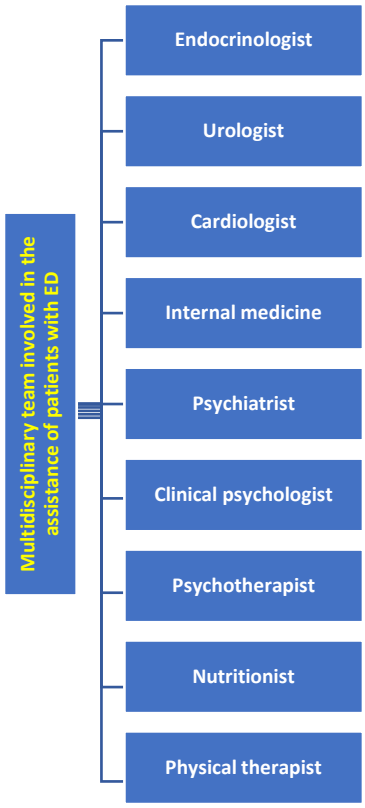

Figure 1: Multidisciplinary assessment of patients with ED

The diagnostic criteria in the DSM-5 and DSM-5TR changed from the previous versions (DSM-IV and DSM-IV TR) [4-7]. In these early editions, only two clinical criteria were mentioned, without any reference to the decrease of penile rigidity, as an independent criterion; also, no frequency of failed sexual acts was mentioned; no severity specifiers existed, but ED could have been classified as exclusively psychogenic or with mixed causation [6,7]. Further back, the third edition (revised) of DSM (DSM-III(R)) included the “male erectile disorder”, defined as a partial or complete, persistent and recurrent, incapacity to obtain and maintain the erection until the end of a sexual act, or recurrent/persistent lack of sexual excitation and pleasure during the sexual activity [8]. ED is included in the category of “male sexual dysfunctions”, together with delayed ejaculation, premature ejaculation, and male hypo-sexual desire disorder (Figure 3) [4-7].

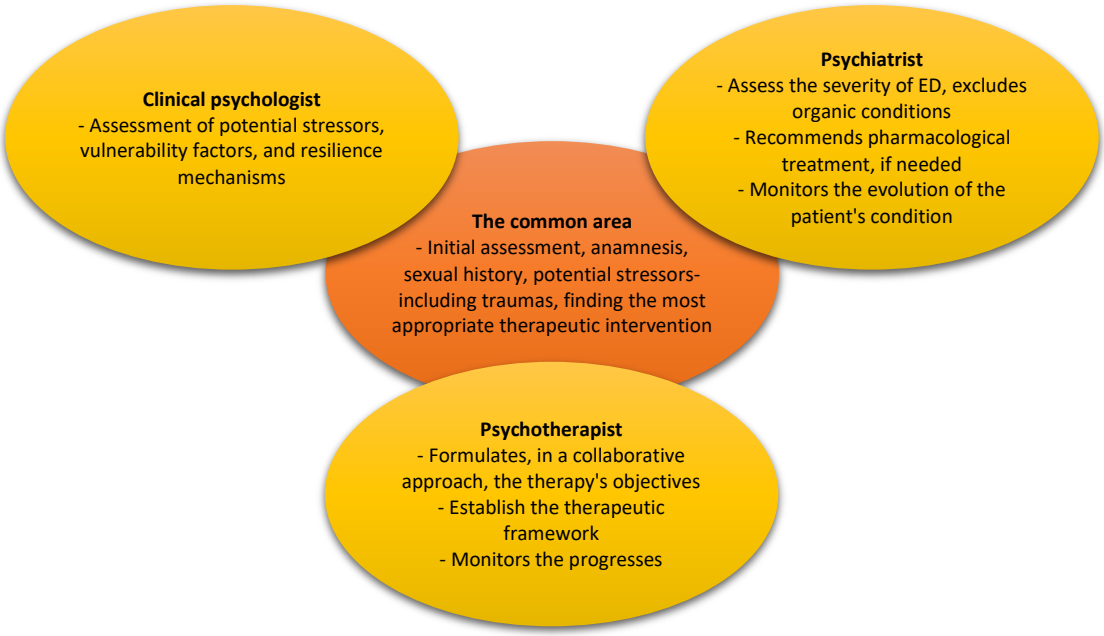

Figure 2: The roles of the clinical psychologist, psychiatrist, and psychotherapist in the assistance of patients with ED

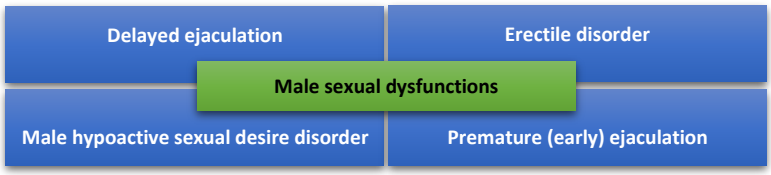

Figure 3: Male sexual dysfunctions [4-7]

The World Health Organisation's Classification of Diseases (ICD) mentioned in its latest edition (ICD-11), that ED is the "inability or marked reduction in the ability in men to attain or sustain a penile erection of sufficient duration or rigidity to allow for sexual activity" [9]. Also, ICD-11 specifies that ED appears although the libido and sexual stimulation exist, and its manifestations may be episodic or persistent (several months), and associated with significant distress at the clinical level [9]. In the previous edition, ICD-10 (the version for clinical research), ED had as its main clinical characteristics (1) the impossibility of participating in sexual activity according to the desire of the individual, (2) the dysfunction appears frequently, but may not be observed on every occasion, (3) the manifestations have a history of at least 6 months [10]. The ED may manifest itself as: a complete erection that may be obtained in the initial stage of sexual activity, but then disappears before ejaculation (if this appears); erection may be detected, but only in situations where the sexual activity is unprepared; partial erection, insufficient for sexual activity; or complete absence of erection [10].

The psychiatric assessment of patients with ED is recommended to be carried out from both the clinician's perspective (focusing on signs and symptoms) and the patient's (focusing on the consequences of dysfunction). There may be significant differences between the two perspectives, depending on the criteria for defining ED, for example, the duration of the manifestations, the frequency of their occurrence, and the functional impact. Sometimes the patient can admit the presence of erectile dysfunction and the associated discomfort, but at other times he avoids mentioning any aspect related to sexual functioning, presenting only general symptoms - "weakness", "permanent fatigue", "lack of initiative", etc.

Sexual dysfunction can be an isolated symptom or it can be integrated into a complex context, as it may appear together with multiple psychiatric symptoms (such as anxiety, insomnia, depression, psychotic manifestations, and substance addiction) or organic manifestations (like urinary hesitancy, high blood pressure, pelvic pain, etc.).

Among the main differential diagnoses in ED, major depressive disorder (MDD) is important to be considered, because a decreased libido has been detected in these patients during the acute episodes, and some of the adverse events of antidepressants involve sexual functioning [11-17]. According

to a systematic review and meta-analysis (n=49 reports), there is a high comorbidity rate of ED in patients with MDD (OR=1.39) and vice versa (OR=2.92), but a causal relationship can not be determined [11]. The incidence of sexual dysfunctions in patients undergoing treatment for MDD is difficult to be determined, but decreased sexual desire, decreased sexual excitement, reduced ability to reach orgasm, delayed orgasm, ED, delayed ejaculation, priapism, painful ejaculation, penile anesthesia were all reported in this population [12]. Therefore, sexual dysfunction may be a common MDD symptom, but also a frequent adverse effect of antidepressant treatment [14]. Due to this lastly-mentioned phenomenon, premature drug discontinuation in patients with MDD is not an uncommon event [14,18]. Nefazodone and bupropion have been associated with a lower incidence of sexual adverse events, due to their pharmacodynamic properties, unlike the selective serotonin reuptake inhibitors (SSRIs), which are among the most frequent drugs associated with such negative events [18]. At any rate, monitoring sexual adverse events during antidepressant treatment, as well as monitoring sexual functioning in these patients as part of the MDD clinical picture, are very important for preserving therapeutic adherence and quality of life [18-20].

Psychosocial stressors can trigger both major depression and erectile dysfunction [11]. Depression itself can reduce sexual functioning through multiple mechanisms (decreased initiative, fatigue, decreased self-esteem, ideas of uselessness and inability, etc.) [11-13]. Persistent erectile dysfunction can lead to reduced self-esteem, rumination about personal incapacity, and depression. In conclusion, patients with ED should be evaluated for signs of major depression and vice versa [11].

Psychotic disorders involve the presence of delusional ideas (some of which may have a sexual theme), hallucinations (some may be proprio- or interoceptive), thought and language disorganization, behavioral disorganization, negative symptoms (avolition, apathy, flat affect, anhedonia, alogia, etc.). Patients with psychotic disorders frequently associate sexual dysfunctions as a result of negative symptoms, antipsychotic medication, associated depression, etc [21-29]. In patients with psychotic disorders who had never received psychotropic treatment, 17% still accused the presence of sexual dysfunction [22]. Therefore, it is clear that not all sexual dysfunctions reported in this population are secondary to pharmacologic aspects, although a false causal relationship may be construed by patients, relatives, or even treating physicians. It must be mentioned that most mental health professionals do not ask their patients with psychosis about sexual dysfunctions, in clinical settings [23]. The sexual functioning in outpatients with schizophrenia spectrum disorders (SSD) has been associated with the level of subjective quality of life [24]. Also, a correlation between sexual dysfunctions in patients with SSD and their therapeutic adherence has been demonstrated, even when the dose, number, and duration of antipsychotics were not associated with the presence of sexual dysfunctions [25].

In an interesting study, patients with schizophrenia who were drug-naïve (N=20) were compared with patients who received long-acting first-generation antipsychotics (N=51) and with healthy controls (N=51), from the perspective of their sexual functioning [28]. Untreated patients with schizophrenia reported decreased sexual desire, while those who were receiving antipsychotics reported a restoration of the libido, although presented ED, orgasmic and sexual satisfaction problems [28]. Therefore, the structured assessment of sexual function is recommended to be conducted by mental health specialists in all patients diagnosed with SSD.

Anxiety disorders are included in the differential diagnosis of ED, but they may also be comorbid conditions with, or predisposing factors to sexual dysfunctions. While fear is the response to real or perceived imminent danger, anxiety is conceptualized as anticipating an unknown threat or an internal stressor [30]. Both anxiety and fear are associated with an activation of the sympathetic nervous system when anticipating an imminent danger, which prepares the individual for a fight or flight response [30-32].

One of the topics of interest for the current review is the presence of some specific phobias, like genophobia or erotophobia (fear of intimacy and sex), heterophobia (fear of the opposite sex), nosophobia (fear of microbes), coitophobia (fear of sexual intercourse), and haptophobia (fear of being touched by another person) [33-34]. These disorders may negatively affect the quality of sexual intercourse and even lead to avoidant behaviors.

Social anxiety disorder is characterized by fear of being evaluated or criticized by others when an individual is facing social situations, with severe negative consequences over all areas of functioning [35]. Unlike shyness, social anxiety disorder (or social phobia) has a severe impact on the quality of life in affected individuals [35]. According to a study (N=40 participants), men with social phobia report more frequent sexual dysfunctions and are more inclined to pay for sex [36]. The same study found moderate impairment in arousal, orgasm, sexual enjoyment, and subjective satisfaction with sexual activity in men with social phobia [36].

Panic disorder is defined by recurrent and spontaneous panic attacks, with significant negative functional impact [4-10]. Patients with panic disorder have a higher tendency to develop sexual dysfunctions vs. the general population [37]. According

to a review (n=6 reports), panic disorder was associated with a high prevalence of sexual aversion and sexual infrequency, while untreated patients with panic disorder may have a higher risk of ED vs. controls [37]. Patients with panic disorder can perceive the similarity between the neurovegetative activation during sexual intercourse and the one with onset during a panic attack [38]. Therefore, this symptomatic overlap maintains a negative conditioning that leads to the continuation of ED [38].

Agoraphobia is characterized by the fear of enclosed spaces, although the focus of this disorder is not limited to such triggers (i.e., newer classifications also include the fear of open spaces, being alone outside the home or being in a crowd, and using the public transportation) [4-10]. The exposure to feared situations can trigger discomfort, anxiety, or panic attacks [4-10]. The exploration of this disorder during the psychiatric evaluation of patients with ED is important because of the significant impact this type of phobia has on the overall functioning and quality of social relationships.

Generalized anxiety disorder has as its core criterion excessive anxiety or worries related to various daily activities, occurring for at least 6 months, and this disorder has been frequently associated with sexual dysfunctions in men [4-10,39]. In a study that evaluated 64 men with ED or premature ejaculation, 23.4% presented with anxiety disorders, and generalized anxiety disorder was the most frequently detected [39]. Men with preexisting anxiety disorders had a higher probability of presenting performance anxiety related to sex and of being diagnosed with premature ejaculation [39].

The prevalence of anxiety disorders in patients with ED ranges from 2.5% to 37%, followed closely by depressive disorders (18-35%) [40,41]. This association was most frequently reported in patients aged between 45 and 54 years [42]. Anxiety, as a non-specific symptom, can impair both sexual functioning and interpersonal behaviors. But the relationship between ED and anxiety is bidirectional because sexual dysfunction can induce anxiety, and consequently lead to a decrease in self-esteem, performance anxiety, and social avoidance.

Obsessive-compulsive disorders (OCDs) are currently conceived as a spectrum, with core symptoms represented by obsessions, compulsions, or both, that occur over a significant period of time or cause discomfort or significant dysfunctions to the patient [4-10]. Individuals with OCDs often present problems with sexual functioning, and 6% of them report the presence of ED, while 39% are dissatisfied with their sexual functioning [43,44]. The specific treatment for OCDs may also play an important role in the onset of ED, starting from tricyclics to SSRIs, especially because this disorder may require higher doses of drugs than MDD or anxiety disorders [44,45].

Body dysmorphic disorder (BDD) is considered the result of a preoccupation with self-perceived defects in physical appearance, which are not observable by others, or are considered minor when evaluated objectively [4-10]. ED was more commonly reported in men with BDD vs. the control group, although libido, frequency of intercourse, and masturbation were similar in the two groups [46]. Patients with BDD had more concerns about their penis size and tried to use different methods to increase it [46].

Post-traumatic stress disorder (PTSD) occurs following exposure (direct or indirect) to life-threatening or severe physical trauma or sexual violence, which translates into intrusion symptoms, avoidance of trauma-related stimuli, negative alterations in cognitions and mood, and alterations in arousal and affectivity [4-10]. The risk of erectile dysfunction in PTSD patients was significantly higher than in the general population [47]. PTSD was associated with overall sexual functioning, sexual desire and satisfaction, and sexual distress [47]. Avoidance and negative alterations in cognition/mood were associated with a higher risk for sexual dysfunctions in this population [47]. Psychotropic medication for patients with PTSD was not significantly associated with the risk of erectile dysfunction [48].

The presence of a defined sexual dysfunction does not exclude the existence of comorbid disorders from the same category. This observation is supported by the results of a study in which 86% of the respondents to an online questionnaire who had a sexual dysfunction also reported the presence of another sexual condition [49]. Men with one severe sexual dysfunction were significantly more likely to have such comorbidities [49]. ED and premature ejaculation were comorbid in 23-29% of cases explored in this study [49].

Substance use disorders may frequently cause the onset of sexual dysfunctions. Alcohol, opioid derivates, cannabis, and ecstasy were associated with higher scores on tests of sexual dysfunction vs. controls in a clinical study (N=101 vs. 43 participants) [50]. The association was not significant for alcohol and cannabis ($p>0.05$), but opioid and ecstasy users had significantly higher scores on the International Index of Erectile Function (IIEF) vs. controls [50]. Patients with alcohol dependence have a 72% rate of being diagnosed with one or more sexual dysfunctions, the most common being ED, reduced libido, and premature ejaculation, according to another study that enrolled 100 male subjects admitted to a detox center [51]. Additionally, illicit substances are sometimes used as aphrodisiacs to enhance sexual performance or pleasure. However, existing data show that most drugs have negative effects on erection, libido, and

ejaculation latency [50,51]. The data on cannabis use and its relationship with sexual functioning is controversial, because both men and women perceived this compound may increase their sexual functioning and satisfaction, especially desire and orgasm intensity [52]. Cannabinoids also have been associated with positive effects in a large variety of neurological disorders that may alter sexual functioning [53].

Pornography addiction or excessive use of online pornographic material represents a type of behavioral addiction with a potential negative impact on sexual functioning. There are several studies that have shown a high association between erectile dysfunction and excessive use of pornography, while other studies do not support this association [54-56]. Almost 60% of the patients with sexual dysfunction manifested when having intercourse with their partner, did not report this problem when using pornography [54]. However, a causal relationship between pornography and sexual dysfunctions does not exist, due to the lack of controlled studies and difficulties in designing such studies: sample biases, lack of clear diagnostic criteria, lack of validated instruments, the possibility that pornography abuse may be only a dimension of the more complex entity of sex addiction [54].

Cybersex is an excessive and uncontrolled use of online sexual activities leading to negative functional consequences [57]. Difficulties in forming intimate relationships have been associated with cybersex and pornography craving [58]. Men had higher scores for frequency of pornography online use than women and higher scores for craving the same materials [58].

Chronic organic conditions, such as diabetes mellitus (DM), blood hypertension, dyslipidemias, renal or hepatic failure, and endocrine pathologies (e.g., hypogonadism, hyperprolactinemia, hypothyroidism/hyperthyroidism) may all have an impact on sexual functioning [59]. Also, lifestyle factors such as smoking, chronic alcohol consumption, and excessive use of caffeine may be considered potential nocive stimuli on sexual functioning [59]. Neurological causes of ED that should be considered in the differential diagnosis are multiple sclerosis, spinal cord injuries, Parkinson's diseases, cerebrovascular accidents, etc., and the most common urological causes of ED are priapism, Peyronie's disease, and anatomical abnormalities [59]. The use of drugs like thiazides, spironolactone, clonidine, alpha-blockers, beta-blockers, antipsychotics, antidepressants, digoxin, ketoconazole, phenobarbital, etc. should be included among the potential triggers of ED [59]. Pelvic surgery and radiation therapy in the same area are other possible ED causes [59].

The pathogenetic factors of ED are traditionally split between psychological and organic, but this separation is artificial and, usually, there is mixed pathogenesis of this disorder in clinical practice (Figure 4). According to the results of a study focused on this distinction, in men ≤40 years old, approximately 85% had psychological causes for their ED and only 15% organic factors, while in men >40 years old, the rapport was 60/40 in favor of the organic causes [60]. Anxiety, depression, and relational conflicts were both causes and results of ED [60].

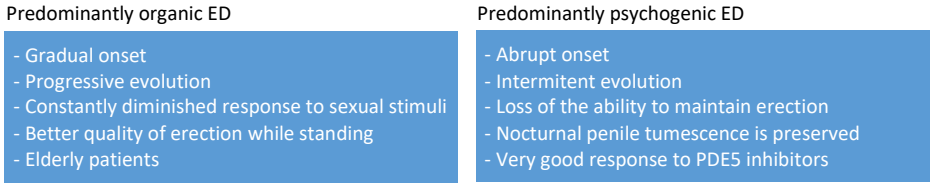

Figure 4: Indicators of psychogenic nature vs. organic causes of erectile dysfunction

Still, the dichotomous model of organic vs. psychological causes in ED is outdated, and the currently suggested multidimensional model, which includes vulnerability factors and precipitating factors, is preferred [61]. This model involves the participation of (1) immediate factors, such as performance anxiety, (2) personal history variables, like recent traumatic events/stressors, and (3) vulnerability factors in childhood and adolescence [61]. Additionally, there are some important elements that should be integrated into the initial evaluation of patients with ED, related to vulnerability: rigid pattern of education in childhood, dysfunctional intrafamilial relationships, uncertainty about gender roles during early phases of development, lack of sexual education, personality disorders [62-64]. Between the most commonly reported factors that contribute to the onset of ED, in combination with vulnerability factors, are a large variety of interpersonal stressors (e.g., dysfunctional marital relationships, extra-marital relationships), psychological reactions to organic diseases, recent physical or mental traumas, occasional failure of erection [61-63]. There are also a variety of elements that maintain sexual dysfunctions, such as performance anxiety, guilt, habituation, fear of intimacy, an untreated sexual dysfunction in the partner, low self-esteem, etc. [61-63].

Sensitivity to sociocultural aspects is needed when patients are evaluated for any sexual dysfunction. Perception of sexuality varies from one population to another, and the impact of social or professional stressors may vary across

different cultures [64,65]. Also, attitudes toward sex and the role of sexual activity are variables dependent on cultural context [65]. Gender roles are influenced by social and cultural factors, and they must be taken into account by practitioners when assessing patients with ED who are coming from another culture [64,65].

Studies exploring differences in sexual function and rates of sexual dysfunctions in homosexual and heterosexual populations are extremely few and their results are inconclusive [66]. ED in homosexual men was reported 1.5 times more frequently than in heterosexual individuals, according to a meta-analysis (n=4 studies) [66]. Homosexual men presented, in another study, a 45% higher risk of difficulties in obtaining an erection vs. heterosexual men [67]. Of these, 71% had little difficulty, 22% mild-moderate, 6% moderate, and 2% severe (according to IIEF-5 scores) [67]. Independent predictors for the presence of erectile dysfunction were age, a stable relationship, frequency of sexual activity with the partner, versatile sexual role, libido problems, ejaculation problems, and anodyspareunia [67]. Administration of phosphodiesterase-5 (PDE5) inhibitors was reported in 10% of homosexual men with ED, and 83% of them were satisfied with the effects of the medication [67]. Also, 43% used "legal drugs" to improve erectile dysfunction [67].

To conclude, the psychiatric evaluation of patients with ED involves the following steps: (1) formulating the diagnosis according to DSM-5 or ICD-11 criteria, based on an accurate collection of data on current mental and physical health status, personal medical history, and an assessment of vulnerability factors, triggers, and factors that maintain the sexual dysfunction; (2) verifying if there are concomitant sexual dysfunctions, besides ED; (3) exclusion of organic diseases, by recommending the adequate interdisciplinary and laboratory assessments; (4) formulating a therapeutic strategy, depending on the specific clinical aspects of the ED: psychotherapy, pharmacotherapy, or combined therapy. If non-psychogenic causes of ED or organic comorbidities have been identified, a multidisciplinary approach is recommended.

The psychological perspective

When evaluating a patient with possible ED, it is important to invite his partner to the initial interview, when possible, and to observe the dynamics of the couple's relationship [68]. The following aspects should be investigated during initial visits: fear of rejection, lack of satisfaction in the relationship, inappropriate sexual techniques, and sexual dysfunctions in the partner [68]. If one or more of the problems listed above are detected, the partner is invited to participate in psychotherapy [68].

However, there are also advantages to interviewing the patient alone: this way, it is possible to obtain a higher level of confidentiality, thus self-disclosure would be favored; various fantasies associated with guilt regarding his partner may be verbalized; aggressive sexual drives or traumatic personal experiences can be more easily revealed in the absence of the partner [68].

An example of structure for the first interview is the following: the couple can be interviewed for 10 minutes, to collect relevant historical data and establish the objectives of the assessment sessions; then each partner is interviewed separately, for 20 minutes; then the couple is brought together to formulate the conclusions [68]. Another assessment model considers the couple as the patient, and consequently, all assessments are made in the presence of both partners; the quality of the couple's relationship is a determining factor in the occurrence of erectile dysfunction and its resolution, therefore interviewing the couple is of paramount importance [68].

Forming an alliance with the patient is essential to a successful psychological interview, and to attain this result, the atmosphere must be safe, open, and non-judgmental; a strict agenda is not advisable, and flexibility is preferable [68]. The psychological assessment framework requires unconditional respect toward patients and an empathic, calm, and semantically adequate way to communicate with them [68,69]. The patient’s perspective on his own sexual dysfunction should be assessed and de-structured if based on myths or wrongfully understood scientific information [68,69]. The patient's personality needs to be assessed, as well as his core values, and attitudes towards life and others, his major existential goals, and the importance of relationships for the patient [68,69].

More specifically, the psychologist needs to assess the educational and cultural background of the patients, in order to formulate the questions and conclusions in an adequate manner; the main mechanisms of defense should be assessed, as well as his main coping strategies; gender identity disorders, sexual preferences, paraphilias, other sexual dysfunctions, childhood trauma (i.e., incest, rape, sexual or physical abuse) are essential elements to be evaluated; current level of functioning in all major areas is important to determine- actual relationships, professional performances, social support, relationships with nuclear family, hobbies; stressors in his current environment- bullying, mobbing, sexual harassment, discrimination, conflicts with peers; detailed analysis of the current sexual relationship; which are the main reasons for lack of satisfaction or failure in any functional domain?; dysfunctions in the main stages of the sexual cycle; factors that are associated with the onset and maintenance of the ED; how does it work a typical sexual intercourse for the evaluated

individual?; which are the possible factors that negatively interfere with the stages of sexual cycle?; personal sexual history and possible relationship with the current problems [69].

The structured assessment of ED symptoms and functional consequences is done using validated psychological instruments. Arizona Scale for Sexual Experiences (ASEX) was developed by the Department of Psychiatry and Psychology at the University of Arizona and the Department of Psychiatry and Behavioral Sciences at Stanford University [70]. This instrument is self-administered, but it can also be completed during an interview, by a mental health specialist [70]. It measures the following dimensions: sexual desire, sexual arousal, penile erection/vaginal lubrication, ability to achieve orgasm, and orgasmic satisfaction [70]. There are two versions, one for women and one for men [70]. Each item is scored on a six-point Likert scale, with higher scores indicating greater severity of the respective sexual dysfunctions [70].

The Brief Sexual Function Inventory (BSFI) is intended for the evaluation of sexual dysfunction for men only [71]. This inventory has 11 items scored on a Likert scale, which assesses 4 dimensions - sexual desire, the ability to achieve or maintain an erection, ejaculatory function, and satisfaction with one's own sexual activity [71]. Low scores on this scale indicate high severity of sexual dysfunction [71]. For erectile dysfunction there are 3 items, scored from 0 (no dysfunction) to 5 (severe/ persistent dysfunction): frequency of partial/complete erections in the presence of sexual stimulation in the last 30 days; the presence of erections consistent enough to allow sexual intercourse in the last month; difficulty getting an erection in the last 30 days [71]. The scale is self-administered, although it was originally created to be administered by the clinician [71-73].

The UKU scale (Udvalg for kliníske Undersogelser) is an instrument for the assessment of adverse effects of psychotropic medication, sexual adverse events included [74]. It has 48 items scored from 0 to 4 on a Likert scale included in its first section; the second section comprises the assessment of the functional impact of the reported adverse effects; the third part refers to the management of the respective adverse effects [74]. The items represent symptoms and clinical signs distributed by categories: mental (difficulties concentrating, drowsiness, depression, etc.), neurological (dystonia, stiffness, tremors, etc.), neurovegetative (diarrhea, constipation, palpitations, etc.), and other (pruritus, increased/weight loss, photosensitivity, etc.) [74].

The scale also includes 6 items dedicated to sexual functioning: increase/decrease in sexual desire, erectile dysfunction, ejaculatory dysfunction, orgasmic dysfunction, and lack of vaginal lubrication [74]. The scale enables global assessment of the functional impact these symptoms may have [74]. The causal relationship between the medication and the adverse effect is also evaluated as being improbable, possible, or probable [74]. Low scores on this scale mean reduced severity of the respective manifestation [74]. It is administered by a clinician, but there is also a simpler self-administered form (UKU-SERS-Pat) [74,75]. All items can be applied or only relevant ones can be selected; the full version is recommended for clinical trials [75].

International Index for Erectile Dysfunction (IIEF) is a multidimensional tool for assessing sexual dysfunction and comprises 5 factors - erectile function, orgasmic function, sexual desire, sexual satisfaction, and overall satisfaction [76]. These factors result from 15 items formulated as questions, referring to erection frequency, erection firmness, penetration capacity, erection maintenance frequency, sexual satisfaction, etc. [76]. Items are scored from 0-5 and refer to the manifestations detected in the last few weeks; the instrument is self-administered [76]. The scores were used as indicators of the possibility of initiating sildenafil administration (scores below 14 out of a maximum of 30 in the "erectile dysfunction" domain) or psychosexual counseling (scores between 14 and 25 in the same domain) [76]. IIEF version 1 is only administrable to heterosexual men, but IIEF version 2 is applicable to both heterosexual and homosexual men [76,77]. A shortened 5-item version was also in use (IIEF-5), with a total score between 0 and 30; a high severity of dysfunction is present at scores 0–10; scores below 26 indicate the presence of some degree of erectile dysfunction [78].

Erectile Firmness Scale (EHS) contains only one item and is a self-administered instrument [79]. It rates the firmness of the erection from (0) (absent) to 5 (complete) and it is used in clinical trials to determine response to medication [79].

Still, the most important tool for the psychological assessment of patients with sexual dysfunctions remains a detailed history focusing on the history of sexual development. Aspects related to the partner's perception of sex life are essential for building an accurate picture of sexual dysfunction. All the scales previously mentioned are in no way meant to be a substitute for an accurate collection of personal history and psychological examination.

However, these instruments help the psychologist in detecting ED symptoms when patients are embarrassed to talk about the subject, and they are also useful for the monitoring process (i.e., effectiveness or tolerability of a drug or the efficacy of psychotherapy). They may also be needed for screening purposes in vulnerable populations. The main limitations of the scales are the lack of cross-cultural validation and possible

differences in symptom reporting based on patient age [80].

The psychotherapeutic approach

According to the results of a review [60], the most frequently therapeutic intervention for ED is sexual therapy (50%), followed by cognitive-behavioral sex therapy (33%), while other types of psychosocial approaches have an equal representation (16%) – cognitive-behavioral therapy, group therapy, and couple therapy.

The psychotherapies dedicated to ED are derived from various interpretative models of this disorder. For example, the cognitive model of ED states that explicit/implicit requests for sexual performance lead to an expectation of performance (e.g., messages received from the partner create the expectation of an erection) [81]. In normal conditions, the attention of the individuals is focused on erotic stimuli, which increases the vegetative excitation, and favors the onset of erection (positive feedback); on the contrary, negative feedback involves catastrophic expectations, lack of perceived control over own body, focus of attention on partner's opinion about a potential failure or on other, non-sexual, stimuli, which increases the vegetative activation and focus on negative consequences, thus leading to ED [81].

The cognitive-emotional model of ED is based on a presumed occasional failure to obtain an adequate erection (no triggers are identified); following this random event, the individual activates cognitive schemata focused on personal incompetence and the misconceptions about the "macho" role; ruminations about future failures and an internal pressure to perform better next time is the following step; possibly as a defense mechanism that tries to protect the individual against a future failure, thoughts and images related to sexual activity disappear, therefore the stimulation decreases; the final stage is the "natural" consequence of the previous steps, and consists in ED's onset [82].

The main questions that help the therapist to formulate a treatment plan are: "What kind of phantasies and related emotions are associated with the current partner?", "Who has the initiative or how does the engagement in sexual activity appear?", "Is achieving sexual arousal within the current relationship and in general an easy process or a difficult one?", "How does the patient consider he can satisfy his partner and how does the partner perceive the satisfaction she receives?" [83]. Also, the therapist should explore the ability of an individual to achieve orgasm and under what conditions is it achieved; to verify what happens when one of the partners does not reach orgasm, and if this becomes a source of relational conflict; which is the definition of satisfactory sexual activity the same for both partners; to determine the level of satisfaction with sex life and with life in general in both partners [83].

According to other therapists specialized in sex-marital therapy, the specialist must keep detailed reports on the patient's status at each visit and of the suggested techniques; the therapist offers operationalized definitions of the problems he/she wants to elaborate on; the therapist evaluates the global functioning of the patient, not only of his sexual function; the therapist schedules monitoring visits at pre-determined intervals [84].

The PLISSIT model comprises "permission", i.e., the patients want to be considered "normal people", not "perverted", "deviant", "sick" or "abnormal"; often they are not disturbed by a certain behavior, but by the thought that they might do something bad or wrong; therefore, reassurance of normality is important for fantasies, thoughts, and dreams (e.g., those related to other people, or homosexual phantasies), for anxiety that can be associated with sexual stimulation (e.g., the appearance of spontaneous erections in inappropriate conditions); there are, of course, limits to validation, like fantasies with extreme sadism, pedophilic drives, etc. [85]. "Limited Information" is another core concept of this model that refers to the fact that clinicians provide limited information on relevant aspects of sexual concerns presented by the patient; the information is adjusted to the particularities of the patient, avoiding unnecessary scientific terminology and over-generalization; it is considered helpful in combating sexual myths [85]. "Specific Suggestions" refer to the fact that the therapist should formulate her/his suggestions according to the specific information obtained from the patient; these are direct attempts to change problematic behavior; these suggestions take place within the theoretical framework of short therapy [85]. "Intensive Therapy" includes specific techniques of sexual therapy [85]. During psychotherapy, the patient is encouraged to elaborate on the topic of his sex life [85]. The psychotherapist's attitude is one of empathetic listening and guiding the interview toward areas of interest in a discreet, non-confrontational manner [85]. The therapist is non-critical, normalizes, and helps validate the patient's emotions [85].

A frequently used technique in sex therapy is sensation focus [86]. These exercises progress from non-genital to genital tactile stimulation, with the instruction for the patient to refrain from vaginal penetration; thus, the patient's anxiety related to the sexual act will be reduced (desensitization), and the partner can be stimulated even in the absence of focusing on the genital area; after the patient has regained the confidence in himself, by managing to focus his attention on bodily sensations, penetration can be re-introduced into the therapy plan, gradually; it is recommended to formulate as objectives sensory focus sessions, 2 times a week, 10 minutes

each; by changing roles between partners, each of them being active and passive, the patient gains experience in giving and receiving sexual stimulation [86].

Cognitive therapy and sexual fantasy training involve masturbation using guided imagery to regain control over erection, coupled with cognitive restructuring; homework includes scoring the satisfaction obtained by the patient and his partner [86].

Psychoeducation targets the increase of patients' level of information on the phases of the sexual cycle and encourages open discussions about sexuality [87]. This psychoeducational approach may have as an objective the modification of sexual scripts, which largely depend on social myths and misperceptions about sexual functioning [87].

CONCLUSIONS

The etiology of ED is usually mixed and, as a result, a multidisciplinary approach to both its diagnosis and treatment is recommended. Therefore, this review supports the conclusions of currently available guidelines for sexual dysfunctions, that a multidisciplinary, pharmacological, and psychosocial treatment is superior to monotherapy [86-88]. It is important for mental health specialists to approach the subject of ED in an empathic, non-conflictual, and non-judgmental manner, in order to obtain the information needed not only for the diagnosis but also for the formulation of the therapeutic objectives.

The main factors to be approached during the initial interview are the circumstances of the ED onset, vulnerability factors and triggers, sexual orientation of the patients, gender-related problems, and personal history of trauma [86]. Questionnaires and structured interviews are useful both initially and during the therapeutic process, as a way to document the evolution of ED symptoms. These assessment methods are selected according to the specifics of the case, but a combination of unstructured, structured interviews and scoring techniques using a validated clinical tool is preferred.

There are multiple psychometric methods for evaluating the severity of erectile dysfunction, quality of life, general functionality, etc., and the mental health specialist is the one who selects the most appropriate tools for each individual patient based on objective (severity of symptoms, functional impact), but also on subjective factors (personal experience). The stages of evaluating a patient with ED are flexible but generally involve a stage of constructing the psychiatrist/ psychologist/psychotherapist-patient relationship, describing the objectives and methods used for the evaluation, then a stage of investigating the sexual history, and a phase summarizing the collected data, which paves the way to a therapeutic solution. The desired outcomes of the therapy should be framed around satisfaction, pleasure, and quality, rather than quantity [86]. Directive and non-directive techniques can be combined depending on the particularities of the case. For an experienced mental health specialist, cultural, social, or psychological "barriers" can not represent major obstacles in the relationship with the patient. These aspects are discussed and re-interpreted through the lens of the objectives established by mutual agreement with the patient. The clinician is attentive to cultural, social, and educational details and integrates the patient's values into his/ her discourse. Active listening is essential to obtain "sensitive" information and to create an appropriate therapeutic framework.

Conflicts of interest and sources of funding

The authors declare no conflict of interest. This research received no external funding.

Authors' contribution

OV conceived the idea of the review. OV, AGM, BMP, CAC, CFP and DU designed the study. OV, CFP, AGM, CAC, CFP, DU, MD, DGV, CN and CAS screened the studies during the primary search. OV, AGM, BPM and CAS drafted the first version of the review. OV, CAC, CFP, DU, MD, DGV, CN and CAS revised the manuscript and elaborated the conclusions of the review. All authors had full access to all data contained in the review and decided to submit the manuscript for publication.

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