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AN INTEGRATIVE REVIEW OF PHYSIOTHERAPEUTIC APPROACHES FOR THE TREATMENT OF DYSpareunia IN POST-GYNECOLOGICAL CANCER PATIENTS

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ABSTRACT

Introduction: Dyspareunia is the most common sexual complaint among women after gynecological cancer treatment. The modalities commonly used for the treatment of gynecological cancer are radiotherapy, surgery and chemotherapy. The main dysfunctions experienced after the cancer treatment are dryness, decreased sexual desire, dyspareunia and vaginal stenosis, which may be associated with loss of clitoral and vaginal sensations during intercourse with penetration. **Objective:** The present study investigated the physiotherapeutic approaches in the treatment of dyspareunia in post-gynecological cancer patients. **Materials and Methods:** A bibliographic survey was carried out using the BIREME, SciELO and MEDLINE databases, focusing on relevant articles published in English and Portuguese in the last ten years. **Results:** A total of studies were found in the electronic search process, of which nine were included in this review: two randomized clinical trials, five systematic reviews and two bibliographic reviews. **Conclusion:** The present study found that physical therapy offers an important resource in speech this sexual dysfunction for the treatment of dyspareunia after gynecological cancer treatment, providing a better quality of life for affected women.

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INTRODUCTION

Sexuality is present from birth and is developed over time (Freud, 1969). According to the Diagnostic and Statistical Manual of Mental Disorders (DSM-5) of the American Psychiatric Association (2013), the sexual response cycle consists of four successive phases: desire, excitement, orgasm and resolution. A disorder of any these phases may lead to the development of sexual dysfunctions (Ferreira *et al.*, 2007; Antonioli and Simões, 2010). According to the 10th edition of the International Statistical Classification of Diseases and Related Health Problems (ICD-10), sexual dysfunction (SD) occurs when an individual is unable to participate in a sexual relationship as he or she would wish (WHO, 1998).

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Sexual desire and genital pain disorders represent the most frequent types of female sexual disorders (Fleury and Abdo, 2009). According to ICD-10, dyspareunia is defined as pain during sexual intercourse, and SD is more common among post-menopausal women with gynecological cancer (GC). In this population, the most common cause of painful symptoms during sexual activity is vulvovaginal atrophy resulting from hypoestrogenism, which may be the result of surgery-, chemotherapy- or pelvic radiation-induced menopause and/or the use of certain medications (Fleury and Abdo, 2009). According to the Brazilian Society of Gynecological Cancer (2015), cervical cancer (CC) is one type of GC, and it is the second most prevalent type of malignancy among women worldwide, with an estimated 16,370 thousand new cases and 5,043 thousand deaths, according to data from the National Institutes of Cancer (INCA) (2014). With preventive measures, early CC detection is possible in sexually active women and fertile women aged 20-29 years; the risk of CC increases over

Table 1. Studies referring to physiotherapeutic approaches in post-treatment gynecological cancer dyspareunia (randomized clinical trials)

Author/Year	Population	Method	Intervention	Results	Conclusion
Piassarolli et al., 2010	Women 18-40 years with SD (mean: 30.5 years (\pm 5.4SD) ; IG: (n:45) CG: (n:45)	Clinical and controlled before and after approach	Qt: FSFI; IG: 10 sessions, 1-2x/week, 50 min, 10 positions (5 phasic contractions and 5 tonic/10s, followed by relaxation of 10s, for a total of 100 contractions); HE: 1x/day: After the 5 th and 10 th sessions, subjected force grade and EMG activity were evaluated and the SF questionnaire was completed.	IG: 69% were discharged for total improvement of sexual complaints The in. = 85% (force grade 1 or 2); A Int. = 77% (force grade 3 or 4); ET: 69% (strength of PFM grade 4 or 5); Improvement is at least two degrees in strength and present in all FSFI domains.	Physical therapy can be a resource to assist in the resolution of SD and improvement of the QoL.
Yang et al., 2012	Women with GC; CG: 52.3 years \pm 5.2(n=17) IG: 52.5 \pm 2.9 (n=17)	Randomized and controlled prospective clinical trial	Qt: HRQOL, EORTC CLQ-C30, EORTC QLQ-CX-24, APFQ, muscle strength of the PF. IG: 45-min exercise sessions; 30 min/week; t: 4 weeks. EP: biofeedback and body center exercises. CG: No EP.	IG : improvement in SD score compared to CG; \uparrow of the proportion of sexual activity before (45.7%) and after (75%) the exercises; \uparrow MS.	An EP can improve the QoL of patients with GC and PF dysfunction via \uparrow pelvic SM and enhancement of the excitatory motor.

SD: sexual dysfunction; SD:standard deviation, IG:intervention group, CG:control group, n:number of participants, Qt:questionnaire, FSFI:Female Sexual Function Index, HE:Home exercise, EMG:electromyographic, SF:sexual function, The in.:initial evaluation, A int.:intermediate evaluation, ET:end of treatment, PFM:pelvic floor muscles, QoL:quality of life, GC:gynecological cancer, HRQOL:Health Related Quality of Life Questionnaire: EORTC QLQ-C30:European Organization for Research and Treatment of Cancer Quality of Life Questionnaire "Core" 30 Items, EORTC QLQ-CX-24:European Organization for Research and Treatment of Cancer Quality of Life Cervical Cancer-specific Questionnaire, APFQ:Australian Pelvic Floor Questionnaire, PF:pelvic floor, t: time, EP:exercise program, \uparrow :increase; MS:muscle strength.

Table 2. Studies referring to physiotherapeutic approaches in gynecological cancer post-treatment dyspareunia (systematic and bibliographic reviews)

Author, Year	Population	Method	Results	Conclusion
Franceschini et al., 2010	Women with female SD after CC treatment	Narrative bibliographic review	Main types of SD after CC treatment: hypoactive desire, anorgasmia, \downarrow excitation, dyspareunia and vaginismus; Complications: VS and vaginal atrophy, \downarrow lubrication and sensitivity	The use of VDs and MT are effective for VS. EE, KT and MT are most frequently recommended for the treatment of anorgasmia, vaginismus and dyspareunia.
Miles and Johnson, 2014	Women with GC after PR	Systematic review	In rare cases, dilation during or shortly after PR may cause damage, and there is no convincing evidence from any study to demonstrate that it prevents VS.	There is no evidence to show that routine vaginal dilation during or after PR prevents its late effects or improves QoL.
Denton and Maher, 2015	Women with GC after PR	Systematic review	There is little evidence regarding the use of DVs to prevent VS. Improvement of FC, self-esteem and self-confidence after treatment.	For the prevention of VS after PR, patients must maintain vaginal patency through some form of vaginal dilation.
Delgado et al., 2015	Women with SD	Systematic qualitative review	KT, HG, EE, <i>biofeedback</i> , MT and VC associated or not, are used in dyspareunia, anorgasmia, vaginismus and \downarrow of lubrication and vaginal libido.	Among the physiotherapeutic resources to treat female SD, we highlight KT, EE, <i>biofeedback</i> , VC and MT.

SD: sexual dysfunction, CC: cervical cancer, \downarrow : reduction, VD: vaginal dilator, MT: manual therapy, VS: vaginal stenosis, EE: electrostimulation, KT: kinesiotherapy, CG: gynecological cancer, PR: pelvic radiotherapy, QoL: quality of life, FC: functional capacity, HG: hypopressive gymnastics and VC: vaginal cone

time, reaching its peak in women aged 45-49 years (Fitz *et al.*, 2011; Noronha *et al.*, 2013; Lammerink *et al.*, 2012). CC treatment may involve radiation therapy, surgery and chemotherapy, and these methods can lead to a number of disorders associated with the urinary, genital and anorectal systems, and besides interfering in the quality of sexual life (Yang *et al.*, 2012). Cancer as major dysfunctions studies have reported that dryness, vaginal pain, decreased sexual desire, dyspareunia and vaginal stenosis may be associated with the loss of clitoral and vaginal sensations during sexual intercourse with vaginal penetration (Falk and Dizon, 2013; Schover *et al.*, 2013). Increasingly, physiotherapy has been shown to be a therapeutic resource in the management of sequelae caused by CC treatment measures.

Physiotherapeutic treatment consists of guidelines on pelvic anatomy and sexual disorders, body awareness, manual therapy and reeducation of the pelvic floor musculature through kinesiotherapy, vaginal cones, biofeedback, electrostimulation and vaginal dilators (Delgado *et al.*, 2015; Huffman *et al.*, 2016). The present integrative review aims to investigate physiotherapeutic approaches to the treatment of dyspareunia in post-gynecological cancer patients.

MATERIALS AND METHODS

Type of Study: This integrative review study was carried out from June 2014 to June 2018.

Inclusion criteria: The present study examined randomized clinical trials and literature in Portuguese and English from 2008 to 2018, focusing on studies of 18-65-year-old women with sexual dysfunction post-treatment of CG; studies comparing or not physiotherapeutic techniques. Repeated studies and those focused on males were excluded.

Search strategy: This systematic review was based on the guidelines of the *Preferred Reporting Items for Systematic Reviews and Meta-Analyses* (Prisma, 2009). A comprehensive electronic search was conducted using the Regional Library of Medicine (BIREME), Scientific Electronic Library Online (SciELO) and MEDLINE databases. The descriptors used were: dyspareunia; gynecological cancer. The following cross-over keywords were also used: radiotherapy AND sexual dysfunction, physiotherapy AND dyspareunia, sexual dysfunction AND gynecological cancer.

Table 2. Studies referring to the physiotherapeutic approaches in gynecological cancer post-treatment dyspareunia (systematic and bibliographic reviews)

Author, Year	Population	Method	Results	Conclusion
Ferreira et al., 2015	Women 18-65 years with PF dysfunction (n = 1341)	Systematic review	Improved No survivors SF APFQ C L receiving TPFM. No IG (TPFM) there was improvement of SF, ↑ in consciousness, PFM control, tighter vagina sensation, self-confidence, libido, orgasms, pain resolution with coitus and partner sexual gratification	Improvement at least one sexual variable in women with PF dysfunction.
Wolpe et al., 2015	Women with SD	Systematic review	TPFM improved with excitation and lubrication. With MT, there was ↓ of pain and improvements in orgasms, desire, excitement and lubrication due to the relaxation of the musculature, improved muscle recruitment and vascularization.	KT, EE, MT, with or without binaries, were effective in SD treatments. TPFM can be beneficial if performed weekly, at home, with results lasting a short period of time.
Huffman et al., 2017	Women surviving with SD	GC Review of bibliographic literature	VDs are recommended to prevent vaginal stenosis. There was ↓ dyspareunia due to increased PFM control, which was achieved through MT, KT, biofeedback and VD techniques.	Future studies in GC patients should include outcomes identifying at-risk subgroups who may benefit from early intervention and broader SD treatment options.

PF: pelvic floor, n: number of participants, APFQ: Australian Pelvic Floor Questionnaire, GC: gynecological cancer, TPFM: training of pelvic floor muscles, IG: intervention group, SF: sexual function, ↑: increase, PFM: pelvic floor muscle, SD: sexual dysfunctions, MT: manual therapy, ↓: reduction, KT: kinesiotherapy, EE: electrotherapy, VD: vaginal dilator.

Extraction of data: After the searches were conducted, potential studies were initially selected based on titles, and the abstracts were reviewed. Studies that met the inclusion criteria were read in full. To analyze the articles, data on study types, the group allocation, demographic information, physiotherapeutic interventions, session duration and frequency, results and conclusions was collected. This data was transcribed to a worksheet in Microsoft Word 2013 software.

RESULTS

After the title screening and the abstract review of the initial 38,674 articles, 14 were found to meet the inclusion criteria (Figure 1). After the selected articles were read in full, nine were chosen for analysis (Tables 1 and 2) to demonstrate the relevance of physiotherapeutic approaches in post-treatment GC dyspareunia. Encouraging results were identified when the approach involves exercise of the pelvic floor muscles (PFM), vaginal dilators, manual therapies and electrotherapy.

DISCUSSION

Franceschini *et al.* (2010), Miles and Johnson (2015) and Denton and Maher (2015) discuss systematic reviews of interventions performed by health professionals (physicians, nurses and physiotherapists), including vaginal stenosis and pelvic post-radiotherapy for GC treatment. They also examine the benefits of several techniques, including two that are recognized and applied by physiotherapists: vaginal dilators and manual therapy. Physiotherapeutic techniques that help in the treatment of vaginal stenosis:

Dilators: The use of vaginal dilators is recommended to prevent vaginal stenosis (Delgado *et al.*, 2015). According to Franceschini *et al.* (2010), women who use dilators after intracavitary radiotherapy have a lower incidence of vaginal stenosis when compared to women who only use sexual intercourse with vaginal penetration to prevent stenosis. Denton and Maher (2015) indicate that the use of graduated

vaginal dilators and regular intercourse are standard practices for the prevention of vaginal stenosis, although the uptake and application of these measures are variable. On the other hand, Miles and Johnson (2015) and Huffman *et al.* (2016) have found insufficient evidence to form a solid conclusion about the efficacy of dilatation therapy because of the heterogeneity of studies on the duration of dilation therapy and patients' poor adherence to dilator usage recommendations. However, the use of vaginal dilators is recommended to prevent vaginal stenosis, and dilation may be valuable once inflammatory and psychological scar formation has occurred, as the pathophysiology of vaginal dilation during or shortly after radiotherapy is different from that of vaginal dilation many months or years after therapy (Miles and Johnson, 2015; Huffman *et al.*, 2016).

Manual therapy: Franceschini *et al.* (2010) state that manual therapy, specifically digitopression, promotes the reduction of stenosis, facilitating the resumption of sexual activities due to improved vaginal lubrication. Wolpe *et al.* (2015) assert that manual therapy reduces pain and improves orgasms, desire, arousal and lubrication because it relaxes muscles, improves muscle recruitment and increases local vascularization. Accordingly, Delgado *et al.* (2015) show a decrease in dyspareunia through the use of soft tissue massage on the pelvic region and vaginal muscles to release areas with collagen accumulation. In addition to manual techniques, myofascial trigger points release the pelvic region, and other studies note an improvement in dyspareunia due to better PFM control, as well as through the use of Kegel exercises, biofeedback, electrotherapy, thermotherapy and vaginal dilators (Delgado *et al.*, 2015; Wolpe *et al.*, 2015; Huffman *et al.*, 2016).

Electrostimulation associated with pelvic floor muscles exercises: Franceschini *et al.* (2010) use electrical stimulation and associated with exercises for pelvic floor muscles, observing slow improvement in the contraction and relaxation of pelvic floor muscles in all subjects and decreased pain during intercourse in most patients with dyspareunia.

Training of Pelvic Floor Muscles (TPFM): In a clinical trial by Piassarolli *et al.* (2010), women undergoing TPFM show significant improvement in their sexual function scores (SF) on the Female Sexual Function Index (FSFI) questionnaire (in all domains and the total score) and in their electromyographic (EMG) amplitudes during treatment. In addition, all subjects have increased pelvic floor muscles strength and most have reduced sexual complaints. In a systematic review, Ferreira *et al.* (2015) report that only the study by Yang *et al.* (2012) includes a sample of women who overcame cancer, demonstrating that the TPFM program improved pelvic floor function and some quality of life aspects in women who have overcome gynecological cancer. According to Yang *et al.* (2012), more than 40% of women who overcame cancer expressed interest in receiving sexual health care, indicating that SF and physical function improved in the group that performed the TPFM program, while emotional functions improved in both groups. Thus, not only the strengthening, but also the awareness and proprioception of this musculature can promote a greater perception of the perineal region, thus improving self-image, arousal, vaginal lubrication, receptivity to sexual activity and satisfaction with performance (Piassaroli *et al.*, 2010; Wolpe *et al.*, 2015).

Conclusion

For the treatment of dyspareunia post-treatment of gynecological cancer, physiotherapy techniques, including kinesiotherapy, therapy and vaginal dilators – separately and in combination – are important resources in the intervention of this sexual dysfunction, leading to a better quality of life for affected women. However, it is not possible to state which intervention is most appropriate for the treatment of dyspareunia due to the diversity of techniques used in the examined studies.

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