

Women's Sleep Disorders: Integrative Care

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ABSTRACT

The integrative care model is rooted in a biopsychosocial approach. Integrative is a term which refers to increasing the harmony and coherence of your whole being, and integrative care is therefore focused on the person, not on either the disease or a therapy. It is provided collaboratively by a health team comprising physicians, psychologists, physiotherapists, acupuncturists, and meditation, nutrition, and floral therapy. Previous studies have demonstrated that interventions based on the integrative care model improved women's lifestyle and quality of life. Our aim was to describe the use of complementary and alternative medicine (CAM) alongside traditional medicine among women with sleep conditions in our Women's Sleep Disorders Integrative Treatment Outpatient Clinic. We are sharing our experiences and clinical practice as the model we developed seems to have both physical and psychological benefits for women with sleep problems. We discuss the wide range of benefits that result from this type of complex intervention, and the contextual factors that may influence these benefits. This will inform future practitioners and we hope to contribute to quantitative research in the clinical setting. The study highlights the importance of treating sleep complaints with a caring relationship and a CAM approach, alongside conventional medicine. Exploration of the lived experience of CAM and its meaning enables healthcare professionals to gain insights into the patients' needs, preferences, and values. Gynecologists, clinicians, and health care providers should support and guide patients in their decision to use CAM by providing evidence-based and comprehensive advice on the potential benefits, risks and related safety issues of this approach.

Keywords: Sleep, Complementary Therapies, Sleep Disorders, Intrinsic, Women's Health

INTRODUCTION

The integrative care model is rooted in a biopsychosocial approach. Integrative is a term which refers to increasing the harmony and coherence of your whole being, and integrative care is therefore focused on the person, not on either the disease or a therapy. The intention with integrative care is to promote and enhance wellbeing, resilience, and the realization of an individual's potential capacities for self-care, self-regulation, and self-healing. The integrative care model comprises the integrated care, which is a concept bringing together inputs, delivery, management and organization of services related to diagnosis, treatment, care, rehabilitation and health promotion. Integration is a means to improve services in relation to access, quality, user satisfaction and efficiency. It is provided collaboratively by a health team comprising physicians, psychologists, physiotherapists, acupuncturists, and meditation, nutrition, and floral therapy. Previous studies have demonstrated that interventions based on the integrative care model improved women's lifestyle and quality of life¹.

Our aim was to describe the use of complementary and alternative medicine (CAM) alongside traditional medicine among women with sleep conditions in our Women's Sleep Disorders Integrative Treatment Outpatient Clinic.

We are sharing our experiences and clinical practice as the model we developed seems to have both physical and psychological benefits for women with sleep problems. We discuss the wide range of benefits that result from this type of complex intervention, and the contextual factors that may influence these benefits. This will inform future practitioners and we hope to contribute to quantitative research in the clinical setting. The study highlights the importance of treating sleep complaints with a caring relationship and a CAM approach, alongside conventional medicine. Exploration of the lived experience of CAM and its meaning enables healthcare professionals to gain insights into the patients' needs, preferences, and values. Gynecologists, clinicians, and health care providers should support and guide patients' in their decision to use CAM by providing evidence-based and comprehensive advice on the potential benefits, risks and related safety issues of this approach.

SLEEP

Sleep is an essential biological phenomenon, with one of its functions being to maintain corporal homeostasis. It is a physiological and behavioral process, necessary for quality of life and body regulation at any stage of life.

In the modern world, sleep is often compromised due to the burden of domestic and professional demands for both genders. With the aging process, sleep duration and quality change. Sleep deprivation or restriction leads to several physiological and behavioral modifications in our bodies². Insufficient sleep, either in quantity or quality, may have a number of health effects such as metabolic dysfunction, hypertension, cerebral vascular disorders, diabetes, neurocognitive diseases and cardio metabolic outcomes, increasing mortality³⁻⁷.

There are more than 80 sleep disturbances, among which the most prevalent are: hypersomnia, circadian rhythm disorders, movement disorders related with sleep, obstructive sleep apnea and insomnia, the last two being the most prevalent in women⁸. Although sleep disorders are common in both genders, women are more prone to some of them⁹. Several studies about the prevalence of sleep complaints in different parts of the world, demonstrated that women are 1.3 to 1.8 times more prone to develop insomnia, for example, than men¹⁰.

As adults age, difficulties in sleep initiation and maintenance often become a frequent complaint. These difficulties are reflected in complaints about increased sleep latency (the length of time needed to fall asleep), sleep fragmentation (the number of nighttime awakenings), the duration of awakenings, and a reduction in the amount of sleep. These sleep difficulties are more commonly reported by women.

SLEEP IN WOMEN

In women, complaints of poor sleep quality have a prevalence of 47%, mainly for sleep duration of less than 6 hours per night¹¹. In Brazil, there is a high prevalence of sleep disorders such as obstructive sleep apnea, restless leg syndrome and insomnia among women⁸. For postmenopausal women, the prevalence of insomnia complaints was between 61% and 83% when measured by a polysomnography exam (PSG)⁸. When sleep conditions are associated to other comorbidities such as mood disorders, pain, obesity and clinical diseases, the scenario becomes more critical and may increase the chances of worsening sleep problems¹². Depression was associated with a 4 time increase in the frequency of complaints of poor sleep quality¹¹. Obesity may also contribute to a high prevalence of respiratory problems during sleep, resulting in sleep fragmentation and insomnia¹³. In women, some of these sleep conditions may be explained by the presence of estrogenic receptors in brain areas related to sleep regulation¹⁴.

In a study published in the journal of the National Sleep Foundation in 2002, 20% of the women interviewed reported excessive sleepiness, fatigue or both, the younger ones being more prone to these complaints¹⁵.

Even though hormonal oscillations may be a natural condition in the female physiology, during the menstrual cycle, pregnancy and postmenopause there may be complaints of unpleasant sensations and even pain, such as dysmenorrhea¹⁶, nausea^{17,18} and vasomotor symptoms¹⁹ respectively. These conditions, in consequence, may disturb sleep and lead to reduced sleep.

The impact of gynecological factors, such as menstrual cycle, pre-menstrual complaints and menopause upon sleep are frequently investigated in the literature, both subjectively and objectively. Premenstrual complaints were associated with restless leg syndrome and lower oxygen saturation time (below 90% during sleep)²⁰. Irregular menstrual cycles were 2 times more prone to demonstrate sleep complaints as compared to regular cycles²⁰. Sleep varies during the phases of the menstrual cycle, mainly due to hormonal and body temperature variations, and

may be accompanied by other symptoms such as lethargy, fatigue and concentration difficulties in the premenstrual period¹². In a study by the National Sleep Foundation in 1998, 70% of the women reported sleep problems due to premenstrual symptoms such as cramps, headaches and breast pain¹⁵. Regarding the use of contraceptives, their users showed a higher prevalence of snoring, a reduced number of awakenings and higher REM sleep latency during PSG exams compared with non-users²⁰. In addition, women using contraceptives had lower apnea-hypopnea indexes compared to women in luteal and follicular phases²⁰. This indicates that the gynecological state is associated with sleep parameters, in both, subjective and objective measures.

During pregnancy, hormonal and temperature adjustments and physical discomfort can make sleep more difficult. Anxiety about having a baby, difficulty in finding a comfortable sleeping position, higher urinary frequency, back pain, fetal movements, and abdominal discomfort, are among the common problems encountered^{16,20-22}. Around 67.7% of pregnant women showed poor subjective quality of sleep²¹. Between 66% and 94% of pregnant women showed sleep pattern modifications during pregnancy, with diurnal repercussions, such as sleepiness, insomnia and variations in sleep-wake pattern. CAM has been shown to actively contribute to women's reproductive and physical health during the preconception period. Data from the Australian Longitudinal Study on Women's Health demonstrated that women attempting to conceive were more likely to consult with an acupuncturist or a naturopath/herbalist²³.

During perimenopause, there seems to be a worsening of sleep problems in middle-aged women due to the hormonal alterations related with the period, alongside several other factors, which directly (vasomotor) or indirectly (aged-related sleep alterations) lead to or aggravate sleep problems²⁴. This period's complexity is reflected by a variety of neurological changes that can result in impaired temperature regulation, depression, insomnia and pain, which act as clusters in terms of occurrence and gravity, and might persist during the postmenopausal period²⁵.

After menopause, the postmenopausal period is a time of increased sleep problems²⁶, partly because of the climacteric symptoms associated with subjective sleep loss²⁷ and, partly because of sleep problems associated with the aging process²⁸. Postmenopausal women with vasomotor complaints, such as hot flushes and nocturnal flushes and night sweats, had higher indexes of restless leg syndrome when compared to women without vasomotor symptoms²⁸. Women experiencing vasomotor symptoms can consider a number of potential treatments with efficacy of varying levels. Evidence exists regarding the use of individualized estrogen therapy as the most effective treatment for relieving vasomotor symptoms, and is accompanied by a great improvement in quality-of-life²⁹. However, estrogen therapy is accompanied by potential long-term harms such as increased incidence of breast cancer, heart attacks and stroke. For many women hormone therapy is not indicated, and therefore use nonhormonal agents which compare favorably in the treatment of psychological, urogenital, and sleep problems related to the climacteric period. Herbal medicines such as valerian or lemon balm may assist

in reducing symptoms of sleep disorder during the postmenopause³⁰. In postmenopausal women reduced hormone levels, mainly of progesterone which is considered a ventilatory stimulant, are associated with increased frequency of apnea and hypopnea during sleep³¹. In previous studies, we found an increased prevalence of 32% in the apnea and hypopnea index (AHI) in postmenopausal women, suggesting respiratory sleep disturbances such as obstructive sleep apnea⁸. In the following year, our group demonstrated that 50% of the women who complained of insomnia were diagnosed with OSA³⁴. Recently, in a representative sample of the city of São Paulo, we compared sleep between pre- and postmenopausal women. We found an increase in the N3 stage of NREM sleep, higher AHI and lower oxygen saturation in postmenopausal women, even after covariant-adjusted analysis³⁵. These data indicate that there are distinct variations in the sleep pattern connected with gonadal steroids, suggesting that more specific investigations about this relationship are necessary to improve the quality of life in women²⁰.

In addition to these changes mainly caused by progesterone, lower estrogen levels can lead to hot flushes and other symptoms, which can also interrupt sleep. Hot flushes are associated with symptoms including increased anxiety, irritability and depression. Depressive complaints are a component of the ageing process in its physical and psychosocial aspects³². A review of the literature on mood disorders such as depression and the use of CAM therapies revealed that they have the potential to improve symptoms of depression³³. An integrative interdisciplinary care approach can be used effectively in mood disorders and treatment-resistant depression³³.

Besides the physical and hormonal changes, factors related to social, work, family and domestic life can also negatively impact sleep. The recent increase of women in the workforce was not accompanied, in most cases, by a decrease in domestic and family responsibilities. These changes have had a negative effect on the sleep of many women. In this socio-cultural context, women can find themselves in a condition of chronic sleep deprivation, and subject to the associated deleterious health conditions.

TREATMENTS APPROACHES AND INTEGRATIVE CARE

Integrative care is the practice of medicine incorporating elements of CAM³⁶. Integrative medicine is a system of individualized care, focused and oriented on each patient, aiming to emphasize well-being, treatment, and cure, in their biopsychosocial and spiritual dimensions³⁷. This fusion aims to support the patient in an interdisciplinary way, and develop a caring patient-physician-team relationship.

Integrative Medicine is based on 3 premises: 1) the patient's interests, symptoms, and quality of life are central; 2) an understanding of the patient's expectancies and beliefs by the health professional; 3) a rigorous and interdisciplinary medical health treatment^{38,39}. The interdisciplinary nature of integrative medicine may improve the quality of life and the specific symptoms of each phase of a woman's life, such as, pain, pos-

tural alterations, constipation, fatigue, mood swings, memory loss and sleep disturbances.

The use of CAM is common in a number of countries and, is more frequently used by women. In Australia and many European countries, the use of alternate methods was reported by more than 50% of the population; in the United States, 76.1% of women used some type of non-conventional therapy⁴⁰. In recent decades CAM has become increasingly popular and evidence of the efficacy of its treatments has grown. The use of CAM in the USA increased from 33% to 42% between 1990 and 1997 among the total population⁴¹, and in the 2000s this increased from 34% to 37%⁴². In the UK, a recent systematic review showed that almost 52% of the population applied alternative remedies at least once during their lifetime⁴³. We do not have this data for Brazil yet.

Physicians must be aware of their patients' use of CAM, as there are potentially serious side-effects caused by drug interactions with herbal treatments. Patients should always inform their attending physician about their use. Gynecologists and others who care for women need to be aware of the evidence supporting or refuting the claims made for both conventional medicine and CAM. We wanted to share our experience of an integrative approach focused on treatment of sleep disturbances in women.

In an effort to deliver more effective treatment, we created the Women's Sleep Disorders Integrative Treatment Outpatient Clinic, a partnership between two departments at the university where this study took place. Our aim was to offer women with sleep disturbances a more specialized and individualized health care using an integrative approach.

THE AUTHORS AMBULATORY EXPERIENCE

The therapeutic options for the treatment of sleep conditions include pharmacological and/or non-pharmacological treatment, depending on the case. In pharmacological treatment we use antidepressants, non-benzodiazepine hypnotics, benzodiazepines, melatonin agonists, phytotherapeutics (such as valerian and others), and hormonal therapy when indicated. Other treatment options are considered and offered to women who search for help, taking into account the side effects associated with particular medications.

The Women's Sleep Disorders Integrative Treatment Outpatient Clinic supports therapies such as psychology, physiotherapy, acupuncture, meditation, nutrition, and flower therapy in an integrative interdisciplinary model, with the patient working together with the physician (Table 1). In addition, all the professionals working with the patients explain the importance of sleep hygiene to them.

Non-pharmacological treatments such as cognitive behavioral therapy, with techniques involving sleep hygiene, sleep restriction, stimuli control, relaxation and other phenomenological and psycho-dynamical interventions act upon the predisposing and maintaining factors of some sleep disorders⁴⁴. In this way, cognitive behavioral therapy and psychotherapy has contributed to a better quality of sleep^{45,46}.

Physiotherapeutic techniques such as myofascial release, chiropraxy, global postural reeducation, urogynecological physiotherapy and kinesio therapeutic exercises and Pilates, have demonstrated improvement in climacteric symptoms including on sleep pattern and sleep complaints^{47,48}. Physical exercise also has great potential during this transition phase of female life due to the improvement it can produce in vasomotor symptoms, sleep quality and, consequently, the quality of life⁴⁹. Our group have investigated the effect of massage therapy on insomnia, and found a positive effect on sleep pattern and quality of life⁵⁰. The hypothesis was that massage therapy would produce beneficial effects in postmenopausal women through inflammatory and immunological changes⁵¹. These findings demonstrate the effectiveness of physiotherapy approaches for the treatment of postmenopausal symptoms, particularly insomnia, and indicate that it is a promising line of treatment. An increase in sleep duration and a decrease in the sleep latency were seen in postmenopausal women after the physiotherapeutic intervention, in addition to a general improvement in physical condition⁵². Besides sleep disorders per se, physiotherapy can also act upon symptoms such as anxiety, which are often related to insomnia. Manual therapies are efficacious in the treatment of insomnia and anxiety, subjectively and objectively (by PSG) improving sleep pattern: a decrease in rapid eyes movement (REM), sleep latency (often related to depressive symptoms) and an increase in stage 3 non-REM (NREM) sleep, also called slow wave sleep⁴⁹. Estrogen reduction can lead to nocturia and sleep fragmentation, as the number of times the individual wakes up is related to a worse quality of sleep⁴⁸. The practice of yoga has been proven to have positive effects on reducing insomnia^{54,55}. Therefore, physiotherapy can help to ameliorate the symptoms of the peri- and postmenopause periods.

Another alternative which has demonstrated great value in the treatment of sleep disturbances is acupuncture⁵⁶, mainly in the treatment of anxiety, hot flushes⁵⁷ and in subjective improvement in the quality of sleep⁵⁸. Acupuncture was effective in the psychological domain of quality of sleep in postmenopausal women with insomnia⁵⁸.

Anxiety can also be attenuated with meditation. Mindfulness meditation, or full attention meditation, used as an adjunct, may be a valuable recourse for decreasing anxiety, depression, chronic pain and vasomotor symptoms, comorbidities very common in patients in the postmenopausal period⁵⁹. In overweight or obese women, mindfulness significantly reduces stress and produces beneficial effects on glucose metabolism⁶⁰. This reduction in stress can help to reduce sleep problems⁶¹.

Sleep quality is influenced positively or negatively by the routine consumption of food and drink. For an adequate night of sleep, it is necessary to eat at set times and avoid caloric meals just before going to bed. Weight is another important factor in sleep: Individuals with an elevated body mass index (BMI) tend to have a shorter total sleep time⁶². Thus, the quality and timing of meals as well as maintaining a normal weight are fundamental to preventing comorbidities that can lead to sleep disorders.

Studies with Floral Therapy are still incipient, but there are some which have demonstrated the efficacy of the technique

Table 1. Integrative treatments approaches, target population and the sleep outcomes at Women's Sleep Disorders Integrative Treatment Outpatient Clinic.

Integrative Approach	Target population of women	Sleep Outcome	References
Acupuncture	Climacteric symptoms, mood disorders, overweight or obese	Insomnia	56,58
Floral Therapy	Climacteric symptoms, mood disorders	Insomnia	64
Isoflavone	Climacteric symptoms	Insomnia	65
Mindfulness	Mood disorders, pain	Insomnia	61
Nutrition	Overweight or obese, anxiety symptoms	Insomnia; OSA	*
Physiotherapy			
urogynecology	Nocturia	General sleep disturbances	48
global posture reeducation, myofascial release, kinesio therapy, manual therapy	Musculoskeletal pain, climacteric symptoms, anxiety symptoms	Misperception of sleep; Insomnia; OSA	50,51,51
chiropraxy	Climacteric symptoms	Insomnia	47
Psychotherapy	Mood disorders	Insomnia; complaints of nightmares; CPAP adherence; misperception of sleep; sleepwalking	44,46
Yoga	Climacteric symptoms	Insomnia	54,55

OSA: obstructive sleep apnea; CPAP: continuous positive airway pressure.

* Data not published

on the menopausal symptomatology³⁶. Among the climacteric symptoms, mood alterations such as anxiety and depression, which often cause insomnia, respond well to Floral Therapy^{63,64}.

Regarding isoflavone, our previous investigation found that its compounds reduced insomnia, and altered sleep pattern, increasing sleep efficiency⁶⁵. It also decreased vasomotor symptoms⁶⁵.

Sleep disorders are highly prevalent, especially in women, since they have a great hormonal variation throughout life. It is necessary to increase and disseminate knowledge about treatments, and is particularly important to develop an integrative approach to care, which should be a humanized and personalized treatment, more likely to be successful.

Therefore, although there is some evidence for the effectiveness of CAM in the treatment of sleep problems, it is necessary to perform more randomized controlled trials to see if these results are replicable. In addition, more measures of sleep, both objective ones, such as PSG and actigraphy, and subjective measures, such as sleep diaries and questionnaires, need to be employed to explore the evidence in the literature related to the function and mechanisms of the non-pharmacological treatments used in integrative medicine.

CONCLUSIONS

The Women's Sleep Disorders Integrative Treatment Outpatient Clinic contemplates integrative interdisciplinary care practices with an approach that aims to promote clinical improvement in human and physical issues, with positive results on sleep quality and sleep pattern. This is a pioneering work in the arena of the sleep medicine, with promising results that can benefit women in their different stages of life.

GLOSSARY

- Polysomnography (PSG) is the main exam for the evaluation and diagnosis of sleep disorders.

- Restless leg syndrome is a sleep disorder in which the inferior limbs (more frequently) move involuntarily during sleep leading to awakenings and/or delay in initiating sleep.
- REM (rapid eye movement) sleep stage is a stage of sleep characterized by muscle hypotonia (or atonia), cortical desynchronisation, intense brain activity and dreams.
- Apnea is the cessation of respiratory flow.
- Hypopnea is the reduction of the air flow during respiration.
- Obstructive sleep apnea is characterized by recurrent obstruction of the superior airway during sleep. This occurs repetitively, resulting in awakenings due to the required increased respiratory effort., which produces sleep fragmentation. Other clinical signs or symptoms are associated with OSA, such as excessive daytime sleepiness, snoring and increased body mass.
- The apnea and hypopnea index (AHI) measures the number of these events per hour and is used to classify the severity of sleep apnea: <5 events per hour=no apnea; between 5 and 14.9 events per hour= mild apnea; between 15 and 30 events per hour= moderate apnea and >30 events per hour=severe apnea.
- The NREM (non-REM) stage of sleep is subdivided into stage 1 (N1), stage 2 (N2) and stage 3 (N3). The latter is also known as slow wave sleep or deep sleep.

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