



Instituto Universitário

MENOPAUSE AND MIDLIFE: MENOPAUSAL SYMPTOMS, BODY
WEIGHT AND WELL-BEING

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Menopausa; sintomas de menopausa; peso corporal; bem-estar

Keywords:

Menopause; menopausal symptoms; body weight; well-being

Categorias de Classificação da Tese

3360 Health Psychology & Medicine

3365 Promotion & Maintenance of Health & Wellness

RESUMO

A menopausa tem sido genericamente definida como um fenómeno bio-médico, tendo como consequência a emergência de sintomas físicos e psicológicos decorrentes da diminuição de estrogénios endógenos. O presente trabalho pretende alargar esta conceptualização da menopausa, contextualizando-a no modelo bio-psico-sócio-cultural, explorando se variáveis pessoais (como a espiritualidade) e contextuais (por exemplo, acontecimentos de vida) podem predizer sintomas reconhecidos como de menopausa.

É ainda objectivo deste estudo explorar que variáveis estão associadas ao aumento de peso na transição para a menopausa e na pós-menopausa, e se uma intervenção breve cognitivo-comportamental pode promover a diminuição de peso em mulheres com obesidade e excesso de peso.

Finalmente, pretende-se construir um modelo causal de bem-estar subjectivo na meia-idade.

Uma amostra comunitária constituída por 1.003 mulheres com idades compreendidas entre os 42 e os 60 anos, recolhida maioritariamente através de estabelecimentos de ensino na área de Lisboa, preencheu um questionário para recolha de informação sócio-demográfica, relacionada com saúde, menopausa e estilo de vida. As participantes responderam ainda a instrumentos validados para averiguar o bem-estar subjectivo, depressão, ansiedade e stress, sintomas de menopausa, percepção de controlo sobre os afrontamentos, espiritualidade, acontecimento de vida e preocupações com a forma corporal.

Desta amostra, 17 mulheres com excesso de peso ou obesidade participaram numa intervenção cognitivo-comportamental individual para a perda de peso. Antes da intervenção, imediatamente após e quatro meses depois do seu término, as participantes foram avaliadas em relação a medidas antropométricas, psicológicas e de comportamento alimentar.

Os resultados mostram que, tanto os acontecimentos de vida, como a espiritualidade, predizem de forma significativa a gravidade dos sintomas de menopausa. Além destes, também variáveis de estilo de vida, sócio-demográficas e relacionadas com o estado de saúde associam-se de forma significativa a estes sintomas.

Dos doze grupos de sintomas de menopausa averiguados (psicológicos e físicos), apenas três são preditos pelo estado de menopausa. Assim, sintomas vasomotores, sexuais e alterações na pele e nos pêlos faciais são os únicos sintomas que parecem decorrer das alterações hormonais.

Observou-se ainda que mulheres com uma escolaridade mais baixa, com uma prática de exercício físico mais reduzida, com um problema psicológico auto-relatado, mais preocupadas com a forma corporal e em pós-menopausa apresentavam um ganho de peso maior. A perda de peso após a intervenção mostrou-se estatisticamente significativa, comparando o peso antes da intervenção e quatro meses após a mesma, ficando contudo abaixo dos 5% do peso corporal.

Verificou-se ainda que o bem-estar subjectivo na meia-idade é predito pelo humor deprimido, presença de um problema psicológico, espiritualidade, stress, acontecimentos de vida e ainda consumo de café.

Esta investigação permite concluir que a maior parte dos sintomas identificados como decorrentes da menopausa são, nesta amostra, determinados por factores não hormonais,

sendo a única sintomatologia consequente do estado de menopausa os sintomas sexuais, vasomotores e alterações na pele/pêlos faciais. Tal contribui para uma compreensão da menopausa para além da abordagem medicalizada que tem vigorado na literatura. Adicionalmente, são identificados factores de vulnerabilidade em relação ao aumento de peso e bem-estar na meia-idade, que permitem potenciar mudanças neste âmbito.

ABSTRACT

Menopause has been generically defined as a bio-medical phenomenon, having as consequence the emergence of physical and psychological symptoms, subsequent to the decrease of endogenous estrogens. The present research intends to broaden this conceptualization of menopause, contextualizing it in the bio-psycho-socio-cultural model. Therefore, we will explore if personal (such as spirituality) and contextual variables (for example, life events) can predict symptoms recognized as menopausal ones.

It is also the aim of this study to investigate which variables are associated with weight gain in the menopausal transition and post-menopause. Also, it is our objective to explore if a brief cognitive-behavioural intervention can promote a weight decrease in obese and overweight women.

Finally, we intend to build a causal model of subjective well-being in midlife.

A community sample of 1,003 women, aged between 42 and 60 years, mainly collected in schools and universities in Lisbon, answered a questionnaire to gather socio-demographic, health and menopause-related, and lifestyle information. Moreover, participants filled in validated instruments to assess subjective well-being, depression, anxiety and stress, menopausal symptoms, perceived control over hot flashes, spirituality, life events and body shape concerns.

From this sample, 17 overweight and obese women participated in an individual cognitive-behavioural intervention for weight loss. Before the intervention, immediately after and at a 4-month follow-up, participants were assessed regarding anthropometric, psychological and eating behaviour variables.

Results show that both life events and spirituality significantly predicted menopausal symptoms' severity. Besides these two, also lifestyle, socio-demographic and health-related variables were significantly associated with menopausal symptoms.

From the twelve sets of menopausal symptoms assessed (psychological and physical), only three were predicted by the menopausal status. Therefore, vasomotor and sexual symptoms, and skin and facial hair changes are the only ones which appear to be a consequence of hormonal changes.

Women with less schooling years, less physical activity, the presence of a self-reported psychological problem, more concerned with body shape and in post-menopause, manifested higher weight gain. The weight loss consequent to the cognitive-behavioural intervention was statistically significant, when comparing body weight prior to the intervention and weight at the follow-up; however, the loss was lower than 5% of body weight.

Subjective well-being in midlife was predicted by depressive mood, presence of a psychological problem, spirituality, stress, life events and coffee intake.

This research allows the conclusion that the majority of symptoms identified as menopausal are, in this sample, determined by non-hormonal factors; the only symptoms consequent to menopausal status are sexual, vasomotor and skin/facial hair changes. This outcome contributes to an understating of menopause beyond the medicalized approach that is common in the literature. Additionally, vulnerability factors for weight modifications and well-being in midlife, which allow the development of changes in this field, were identified.

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GENERAL INTRODUCTION

1. Menopause

It is estimated that at least 2% of the world's female population is going to start having menstrual changes (that is, entering peri-menopause) or will have the final menstrual period (post-menopause) in the decade of 2010-2020 (Skouby, 2004).

The improvement of life conditions, and the development and advances in public health and medicine, has enabled an increase of life expectancy trend in the past two centuries (having as exceptions the periods during which infectious diseases epidemics and pandemics, war and famine emerged) (Olshansky et al., 2005). As a consequence, nowadays women spend a third of their life in the post-menopausal stage.

Obermeyer, Ghorayeb and Reynolds (1999) emphasize the importance of the research developed on menopause given the aging of the world population, and also the loss of the cardio-vascular protection that endogenous estrogens provide to women, which ends at the time of menopause. Additionally, this protection of women's health, provided by estrogens, is also demonstrated in another research, which suggests that a later menopause is linked with a longer overall survival and a lower risk of death due to ischemic heart disease (Ossewaarde et al., 2005).

1.1 Menopause-related Concepts

Women are born with a finite number of oocytes and throughout the reproductive aging process (which starts prior to birth and develops in a continuum), the progressive loss of these oocytes (during atresia or ovulation) is observed, which does not necessarily happen at a constant rate. The reproductive failure is what signals menopause (Hansen et al., 2008).

Since age is a weak indicator of menopause, a staging system was developed to identify the different menopausal statuses. Therefore, pre-menopausal women are the ones who will present an absence of menstrual cycles' alterations. Women in menopausal transition (also designated as peri-menopause) will evidence menstrual cycle changes, i.e., the cycle length will vary (in more than seven days than usual) and/or intervals of amenorrhea (superior to two months) will be observed. The post-menopause phase starts with menopause and endures until the end of life. Menopause per se is defined as the last menstrual period, confirmed after a 12-month amenorrhea (Soules et al., 2001). Speroff and Fritz (2005) clarify that the term climacteric, usually found in literature, traduces the phase of peri- and post-menopause, during which vasomotor symptoms, psycho-physiological and atrophic changes occur.

1.2 Menopausal Symptoms

During peri-menopause, several symptoms may arise and can prevail until post-menopause. Among others, the literature has documented hot flashes, joint pain, sleep disorder, depressive mood, irritability, fatigue and decrease of libido as the most common (Genazzani, Schneider, Panay, & Nijland, 2006; Obermeyer, Schulein, Hajji, & Azelmat, 2002; Obermeyer, Reynolds, Price, & Abraham, 2004; Obermeyer, Reher, Alcalá, & Price, 2005; Pinkerton & Zion, 2006).

Symptoms exacerbation has been identified as a robust predictor of the search for medical help behaviour, especially regarding vasomotor symptoms (Avis, Crawford, & McKinlay, 1997; Guthrie, Dennerstein, Taffe, & Donnelly, 2003; Whitcomb, Whiteman, Langenberg, Flaws, & Romani, 2007). However, literature has evidenced that, although physical changes happen throughout the climacteric period, the menopausal transition experience is also influenced by cultural, social and political factors (Berger & Forster, 2001; Hunter, O'Dea, & Britten, 1997).

1.3 Medicalization

The use of medical language to assert a concern, apply a medical theoretical approach to conceptualize an issue and treat it with medical interventions consists in

medicalization; therefore, medicalization resides in the management of non-medical problems as if they were illness or disorders. More than a neutral term, this concept emphasizes a critique regarding the (over)medical approach to non-medical issues (Conrad, 1992).

It is known that the iatrogenic cause of ill-health is mediated not only by pharmacological and surgical interventions, but also by environmental and cultural transformations. Hence, it is suggested that medicalization disables personal-care, leads to the decline of the ability to cope (supported by the cultural context) and promotes a dependence on health services and professionals for one's health management (Illich, 1982).

Nowadays, medicalization is more driven by pharmaceutical industry and genetics, consumers, managed care, commercial and market interests than by professional claim-makers (Conrad, 2005). Also, the advertising of prescription drugs directly to the consumer, as well as the appearance of private medical markets, play a relevant role in this medical approach to conditions that are not medical or not in need of medical management (Conrad & Leiter, 2004).

It has been observed that, in the occidental societies, the depreciation of aging, as opposed to youth, strength and extended ability to implement actions, led to the medicalization of age progression as if it was a disease (Paúl & Fonseca, 2001).

Menopause has been mentioned as a paradigmatic case of medicalization (Sievert et al., 2008). It was defined as a deficiency disease at a time when synthetic estrogens started being commercialized; hormonal therapy, promoted both by physicians and pharmaceuticals, appeared as a way to delay aging and preserve valuable attributes, such as youth and beauty (McCrea, 1983).

Meyer (2003) states that the conceptualization of menopause as an estrogens' deficiency state and its medicalization, which started in the United States and spread afterwards to Europe, is causing harm to women around the world.

Women who see menopause as a hormonal deficiency condition or perceive menopausal transition as a synonym of aging, are more prone to use hormonal therapy and recognize its benefits in relation, for example, to skin appearance (Liu & Gass, 2007).

However, opting for a treatment for menopausal symptoms (hormone therapy), specifically in women who do not have a favourable attitude towards the use of medication in general, is influenced by fear of ill-health; this apprehension might be

boosted by prior experiences of health absence in family members or by medical advice. Moreover, the main information sources regarding the treatment of menopausal symptoms are social peers and the media (Griffiths, 1999).

The promotion and use of hormone therapy, seen in the last decades, has been regarded by the sociological literature as a strong sign of menopause's representation as a medical condition (Griffiths, 1999). Hormone replacement therapy gained its highest notoriety in the 1990's as a preventive medical approach of coronary heart disease, dementia, osteoporosis and vasomotor symptoms (Sievert et al., 2008).

However, in 2002, the outcomes of the randomized controlled trial Women's Health Initiative (WHI), evidenced that participants doing estrogens and progestin had an increased risk for breast cancer, and higher incidence of thromboembolic episodes, coronary heart disease, stroke and pulmonary embolism when compared with counterparts doing a placebo. For this reason, this arm of the study was terminated at the fifth year of the study (Naftolin, Schneider, Sturdee, & Executive Committee of the International Menopause Society, 2005). And although many researchers and clinicians continue to deliberate about WHI's results and methodological issues, many women have stopped using hormone therapy since then (Sievert et al., 2008).

The medicalization degree varies according to cultures and might even present differences inside the same country. A Spanish research has evidenced that the conceptualization of menopause in the context of a medical theoretical approach (given by rates of surgical menopause and hormone therapy use) is significantly higher in urban areas than in rural regions (Bernis & Reher, 2007).

Therefore, as it appears that, socially, menopause has been conceptualized as an illness in need of medical care (Ferguson & Parry, 1998), Meyer (2003) states that biases regarding the female gender, particular cultural assumptions and certain policies have led to the medicalization of this female developmental process. And, contrary to what might be expected, this will function as an obstacle to health awareness and this conceptualization of the menopausal transition will increment a focus on women's own bodies transformations and age progression, making the experience of menopause's acceptance more difficult (Ferguson & Parry, 1998). Exemplary of the generalized medicalization, regarding the menopausal transition, are the publications' trends, which have been predominantly based on the biomedical conceptualization of menopause (Rostosky & Travis, 1996).

1.4 Bio-medical Model of Menopause

The bio-medical paradigm focuses on menopause from a physiological point of view. According to Hansen and colleagues (2008), the main mechanism influencing reproductive aging is the depletion of the ovarian pool of non-growing follicles. From the biological model's point of view, the age variability of natural menopause (average 51 ± 8 years) is explained in terms of disparities in the initial determination of non-growing follicles or the rate of non-growing follicles depletion (Hansen et al., 2008). However, the authors conclude that age by itself cannot account for a great percentage of variability in non-growing follicles between different individuals.

As mentioned before, during the last decades of the XX century menopause was defined as an estrogens deficiency disease (Liu & Gass, 2007). The recommendation of the American Association of Clinical Endocrinologists, in 1999, was that menopause was a condition that should be treated given that it was caused by hormones' deficiency (Cobin et al., 1999).

The medicalization of menopause was originated from its physiological understanding that started in the decades of 1930 and 1940, and also from the concomitant emergence and availability of pharmacological therapies responsive to the physiological characteristics of the menopausal transition process (Liu & Gass, 2007).

The emergence of diverse symptoms during climacteric is frequently explained by the bio-medical model. According to this framework, depressive symptoms, fatigue, concentration and memory problems are associated with endogenous estrogens' decrease (Collins & Landgren, 2002). Additionally, Saletu et al. (1996) and Brace and McCauley (1997) sustain that well-being is equally influenced by endogenous estrogens: low levels of estradiol lead to the decrease of neurophysiological vigilance, which in turn is associated with the increase of depressive mood and other menopausal symptoms emergence. Sarrel (1999) also endorses a biological explanation, specifying that hormonal changes around menopausal transition play an important role in the psychological symptoms and sexual difficulties' manifestation.

Several authors associate a depressive mood and anxiety to hormonal fluctuations observed in specific phases of the reproductive cycle, namely during the days prior to the menstrual period, after giving birth and along the menopausal transition (Becker, Orr, Weizman, Kotler, & Pines, 2007; Birkhäuser, 2002; Soares, Poitras, & Prouty, 2003).

However, research has evidenced that women using hormonal therapy might not present lower frequency of menopausal symptoms (namely, hot flashes). Therefore, it is recommended, particularly to specialists developing research in reproductive aging from a biological perspective, that cultural influences are accounted for, given their possible influence in biomedicine (Sievert, 2003).

In addition, recent research efforts have been made in order to assess which menopausal symptoms are due to hormonal changes and which ones are caused by aging, changing health status, lifestyle and psychosocial factors (Dennerstein, Dudley, Hopper, Guthrie, & Burger, 2000). Like climacteric symptomatology, also the age at the natural menopause is influenced by socio-demographic factors (Sievert, 2003). In this context, and despite the evidences, the alternative frameworks regarding menopausal transition and middle-age, specifically integrating psychological dimensions, are still scarce (Rostosky & Travis, 1996).

1.5 Bio-psycho-socio-cultural Model of Menopause

Although the biological contribution for menopause conceptualization is indisputable, the integration of psychological and social variables in the individual understanding of aging accounts for a more complete understanding of the aging process (Paúl & Fonseca, 2001). Moreover, only the bio-psycho-social model can explain the evidence that, in around 50% of the cases, the climacteric's psychosomatic and emotional symptoms (including depressive mood) go into remission with placebos (Wasilewski, 2004). In this context, the literature evidences conclusions contrary to the ones being drawn according to the biological model, that is, symptoms like mood fluctuations and depression during midlife do not occur exclusively due to the menopausal status, specifically, due to the hormonal changes (Coope, 1996; Deeks, 2003).

Lowenberg and Davis (1994) propose the concept of holistic health, which emphasizes the personal responsibility regarding one's health status and well-being through the implementation of specific strategies (for example, search for health-related relevant information), risk behaviours' modification, adoption of a healthier lifestyle, stress reduction and management, among others. The holistic health intends to broaden the comprehensive framework of symptomatology, incorporating psychological,

relational, lifestyle-related and environmental aspects in the symptoms' understanding. In this context, an integrative model where the climacteric is perceived as a personal growth period is proposed, emphasizing the importance of bio-psycho-social factors, which account for the differences regarding health status and quality of life in middle-aged women, and the improvement of health policies so that they can lead to a global health promotion (Ulacia et al., 1999).

Contrasting with the hormonal deficiency representation, the climacteric period can be conceptualized as a developmental and normative process, with a minimal or null impact in women's life; therefore, psycho-social and cultural variables are going to modulate the way women experience the menopausal symptoms (Collins & Landgren, 2002). This paradigm supports that the difficulties associated to the menopausal transition and post-menopausal phase are culturally built and have their origins in the attitudes regarding aging, women's role in society and negative stereotypes (Kaufert, 1982).

Several authors emphasize that psychosocial and cultural factors might influence menopausal symptoms' reporting during peri- and post-menopause (Beyene, 1986; Deeks, 2003, 2004; Lock, 1994; Obermeyer et al., 2002). Vasomotor symptoms are paradigmatic of a physiological process which is influenced by psychological variables (Hunter & Mann, 2010). Particularly, it has been evidenced that the prevalence of hot flashes varies according to ethnicity (Tan, Haines, Limpaphayom, Holinka, & Ausmanas, 2005) and lower cultural level, as well as life events, are linked to depressive symptoms in post-menopausal women (Amore et al., 2004).

Contrasting with Hansen and colleagues (2008), other authors identify the reproductive aging as process which is permeable to the influence of non-hormonal variables. Hence, differences in reproductive aging can also be determined by age, body mass index and environmental context (Bernis & Reher, 2007).

The representation of menopause itself also varies. In a study comparing Portuguese with British women, significant differences emerged: the latter linked menopause to the loss of womanliness, whereas Portuguese participants perceived menopause as a set of physical and psychological changes (Figueiras & Marteu, 1995). Hunter (1992) highlights that women who have negative expectations about menopause (that is, the belief that this period implies psychological and physical symptomatology) are more likely to endure a negative experience of the menopausal transition, namely, feeling depressed. Similarly, Rotem, Kushnir, Levine and Ehrenfeld (2005), concluded

that the more negative the attitudes concerning menopause, the more exacerbated the symptoms will be during climacteric phase. This conclusion has been equally documented by Liao and Hunter (1998) regarding the depressed mood and vasomotor symptoms.

It has been suggested that, to accurately analyze reproductive aging and menopause's characteristic symptoms (like hot flashes), variables of women's context should be considered, specifically, the modernization associated with urban environments (which can influence the symptoms' risk), or protective behaviours during the menopausal transition phase, the ecological attributes regarding social support and lifestyle (such as nutritional and physical exercise habits) and also the development of women's identity as middle-aged human beings (Bernis & Reher, 2007).

Hence, the integration of biological, psychological, social and cultural factors allows a broader comprehensive approach of menopause. Consequently, the impact that menopause appears to have on women's sexual life (Deeks, 2002; Graziottin & Basson, 2004; Mansfield, Voda, & Koch, 1995; Mishra & Kuh, 2006; Nappi, Verde, Polatti, Genazzani, & Zara, 2002) can be explained through multi-nature factors. Mishra and Kuh (2006) report that peri- and post-menopausal women, compared with their premenopausal counterparts, manifest a decline in sexual life (which is associated with psychological symptomatology, a life perceived as stressful and smoking behaviour), and report more frequently difficulties in sexual intercourse (linked to the presence of somatic and vasomotor symptoms); vaginal dryness was a relevant risk factor for both negative occurrences. Besides vaginal dryness, marital status (namely, being married) can also be a significant predictor of the decrease in sexual pleasure and desire in pre- and peri-menopausal women (Mansfield, Voda, & Koch, 1995).

It has also been proven that a negative self-image, weight gain, depressive and urogenital symptoms are more frequently observed in women with sexual complaints (Nappi et al., 2002). Avis, Stellato, Crawford, Johannes and Longcope (2000) support the conclusion that, although menopausal status might have an influence in some sexual issues, its impact is weaker than the health status', which can significantly impact women's sexual functioning. Additionally, the changes in sexual response might be explained by developmental alterations and socio-cultural factors related with aging, or even with the partner's circumstances (such as becoming less interesting, less interested or sick) (Mansfield, Koch, & Voda, 2000).

Deeks (2002) emphasizes that, although there are numerous studies exploring the impact that physiological modifications have on the sexual life during the climacteric, there is still a poor understanding regarding the influence of psychological factors in menopausal women's sexual experience.

Binfa et al. (2004) have observed that life events can predict the occurrence of menopausal symptoms, and Hardy and Kuh (2002) have mentioned that certain symptoms observed in middle-age women are not linked to the menopausal transition but rather to life events or difficult situations of current life (namely, related with family issues).

Having the offspring leaving home, daily-life stress, health problems and death of a loved one are risk factors for the development of a depressed mood during the climacteric (Kaufert, Gilbert, & Tate, 1992). Moreover, feelings of loss and self-uselessness can also emerge during midlife (Betti et al., 2001), which might interfere with the euthymic mood.

Overload of responsibilities and demands has also been identified as a frequent experience between the forties and fifties, which can be a source of significant stress: women often divide their time and availability between adolescent children and aged or diseased parents (Mansfield & Voda, 1997).

Furthermore, the deterioration of one's health (or partner's health) during middle-age and financial problems can also be identified as events that will have a negative impact on during midlife, and which can overlap the climacteric phase (Mansfield & Voda, 1997).

Besides midlife events, factors related with lifestyle and interpersonal relationships might again play an important role in depressive mood and anxiety symptoms' manifestation during climacteric (Deeks, 2003). Moreover, the socio-demographic status, like the marital and professional statuses, can influence the emergence of psychological ill-being in this stage of women's development (Liao & Hunter, 1998). Furthermore, Deeks (2003) reports that body image can be one of the factors associated with depressive mood and anxiety during the menopausal transition.

The vast majority of menopause-related literature has focused on the negative outcomes and associations. Nevertheless, some authors document that many women link the phase of their lives, when menopause happens, with positive experiences. Deeks and McCabe (2004) emphasize several studies which report that women feel relief with the cessation of the menstrual period, the end of pre-menstrual syndrome,

and also evidence a valorisation of the freedom from contraception and non-planned pregnancy; it is also reported that women feel calmer, wiser and perceive a higher status in the community subsequent to menopause.

An increased state of calm and concentration, as well as feeling energized, have also been documented by menopausal women elsewhere; in addition, women can also assess their emotional and physical health, during this reproductive aging stage, in a very positive way (Mansfield & Voda, 1997). The matureness of midlife can also promote the development of a higher assertiveness in women with ages around 50 (Mansfield & Voda, 1997).

Moreover, women can associate this change in the menopausal status with an increased well-being (Berger & Forster, 2001) and, during the menopausal transition, they can describe a modification in personal interests and the discovery of new ones (Betti et al., 2001). Additionally, a higher spirituality, in this phase of women's life, has been linked with less menopausal symptoms' reporting (Kim, 1998; Steffen, 2009).

Despite the identification of depressive mood, anxiety, sleep disorders and sexual problems along the climacteric period, the literature evidences that the presence of these symptoms might be due to socio-demographic and psychosocial negative factors (Wiklund, 1998). Moreover, research in the field of menopause is strongly focused on the negative experience of menopausal transition and post-menopause; nonetheless, the relation between depression and anxiety symptoms, and menopausal status is still inconclusive and inconsistent (Mansfield & Voda, 1997). Collins and Landgren (2002) highlight that most studies about menopause are conducted with women who search for medical help to manage the symptoms, therefore excluding the exploration of the climacteric's experience of the overall female population who do not seek medical care to deal with menopause and do not evidence high symptoms' severity.

Regarding the menopausal symptoms, Coope (1996), and Hardy and Kuh (2002), report that there is an absence of unanimity regarding which ones are in fact a consequence of the menopausal status (specifically, the symptoms which occur during the climacteric period more frequently than in other life's phases and are subsequent to the estrogens' decrease). Hunter and O'Dea (2001) mention evidences from several studies which point to menstrual irregularities and vasomotor symptoms as the only consistent indicators of menopausal transition.

2. Body Weight

Although the tendency of the life expectancy has been of an increase for the past thousand years, this trend has been predicted to come to an end, given the impact of obesity in life expectancy (Olshansky et al., 2005).

Obesity was acknowledged as an epidemic and as an objective public health's threat more than a decade ago, by the World Health Organization (World Health Organization, 1998). In addition, the increasing incidence of obesity has been linked to a growing morbidity and mortality, bearing a significant economic, personal and social burden (Nawaz & Katz, 2001).

Since the increase in the prevalence of obesity has been observed in genetically stable populations, it is plausible to consider contextual and lifestyles changes as strong contributors for it (Duvigneaud et al., 2007).

Carmo et al. (2007) reported that the prevalence of overweight and obesity, among the Portuguese adult population, is equal to 39.4% and 14.2%, respectively. The authors document an increased trend, comparing data from 2003-2005 with results from 1995-1998.

Cognitive-behavioural approaches provide the basis to understand the excessive food intake mechanisms, which usually lead to overweight and obesity. Concerning the aliments intake, the literature evidences that the excessive food ingestion presents cognitive and neuronal similarities with addictive behaviours (Kelley, Schiltz, & Landry, 2005). Therefore, through a learning process, certain food-related stimuli are going to provoke an anticipatory hyper-activation; the strong desire for food will lead to a behaviour of excessive food intake (Jansen, 1998; Rodin, Schank, & Striegel-Moore, 1989). Hence, the emotional component (that is, perceiving the food stimulus as positive, which in turn is going to influence the person's motivation) and the internal pressure to act (which is dependent on the hyper-arousal level when the person is exposed – physically or mentally - to the food cue) are going to explain the (maintenance) of excessive ingestion of food (Drobes et al., 2001).

Craeynest, Crombez, Koster, Haerens and Bourdeaudhuij (2008) have demonstrated that people manifest a higher hyper-arousal when facing fat-enriched food than when before light aliments; and this association it is not mediated by the

individuals weight category (that is, both normal weight and overweight people evidence this differentiation in terms of food-related arousal).

During midlife and menopausal transition, women frequently report an increase in body weight (Campbell & Samaras, 2000; Dubnov, Brzezinski, & Berry, 2003; Heymsfield et al., 1994).

Research with adult women has demonstrated that alcohol intake and more years of education are related with a decreased risk of overweight (Duvigneaud et al., 2007). Carmo et al. (2007) support this establishing that, besides less schooling years, a lower socio-economic status is linked with a higher prevalence of obesity. Furthermore, the presence of binge eating is associated with a higher calorie intake and more psychological disorders in obese people (Allison, Grilo, Masheb, & Stunkard, 2005).

Given the impact of overweight and obesity on women's health, it is urgent to find interventions which can lead to an effective weight loss. In this context, cognitive-behavioural therapies, both individual and in group format, have proven to be effective in the promotion of weight loss (Agras, Telch, Arnow, Eldredge, & Marnell, 1997; Brennan, Walkley, Fraser, Greenway, & Wilks, 2008; Calleja, Germán, Trincado, & Lucas, 2007; Eichler, Zoller, Steurer, & Bachmann, 2007; Gallagher, Jakicic, Napolitano, & Marcus, 2006; Grilo & Masheb, 2005, 2007; Jelalian, Mehlenbeck, Lloyd-Richardson, Birmaher, & Wing, 2006; Kalodner & DeLucia, 1991; Mefferd, Nichols, Pakiz, & Rock, 2007; Tsiros et al., 2008; van den Akker et al., 2007; Weber & Wyne, 2006; Wilfley et al., 2002; Wilfley, Welch, & Stein, 2003).

3. Well-being during Midlife

It has been proven before that, rather than the endocrine changes, it is the health status, psychosocial variables and lifestyle that determine well-being in women during midlife (Dennerstein, Smith, & Morse, 1994).

The study of aging as a healthy process and the exploration of which life trajectories are related with well-being and a good health is barely explored (Franco et al., 2009). Some authors emphasize the need to investigate the broader context of women's lives during midlife, beyond the menopausal status (Woods & Mitchell, 1997) and very few studies have explored well-being during menopausal years (Dennerstein, Smith, & Morse, 1994).

Subjective well-being encompasses the subjective evaluation (positive or negative) of people's lives, including positive and negative affects in relation to life events, appraisals and feelings about satisfaction with life (including important domains like work, health, relationships, among other), interest and commitment (Diener & Ryan, 2009).

This construct integrates the concept of life satisfaction (general appraisals of the person's life and satisfaction with important domains such as work and relationships) and both positive and negative affects (that is, the presence of enjoyable emotions and mood and low levels of unpleasant mood or emotions) (Diener, 2000).

According to Diener (2000) the variability of subjective well-being is explained by several factors. The bottom-up theories of subjective well-being conceptualize this internal experience as permeable to the influence of external variables, such as socio-demographic characteristics (namely, age, marital and professional status, income and education), perceived health status, life events, among others (Galinha, 2008). Top-down theories represent well-being as a result of individual variables (like emotional dimensions) which, interacting with the person's reality, will lead to a positive or negative well-being state. Research has confirmed the causal models of well-being as bidirectional and (being neither of them better and both explaining the data adequately), therefore, the subjective well-being can simultaneously be established as the cause and the consequence of contextual (specifically, life events) and personal factors (for example, personality determinants) (Feist, Bodner, Jacobs, Miles, & Tan, 1995).

Currently, an integrative approach of both theories, regarding the subjective well-being concept, is used (Galinha, 2008).

Therefore, the research has been confirming the subjective well-being theories, demonstrating that this can be influenced by life events (Alati et al., 2007; Dennerstein, Lehert, & Guthrie, 2002; Smith-DiJulio, Woods, & Mitchell, 2008). Diener (2000) postulates that positive life events will correlate with positive emotions, whereas negative life events will be linked to negative mood. However the impact of life events on well-being can be overcome in the short run given the adaptation mechanisms: individuals tend to adapt very quickly and there is evidence that only recent events are correlated with subjective well-being (Suh, Diener, & Fujita, 1996).

During midlife, women usually play several concomitant roles, among them the roles of partner, mother, paid worker and caregiver of aged parents. It has been concluded that, even though the number of roles might influence the presence of negative emotions, this effect will be neutralized with the satisfaction conveyed by the roles and when the demand associated with the different tasks is managed (Reid & Hardy, 1999).

It has been demonstrated that life satisfaction does not decrease with age progression; however, positive affect decreases from one age cohort to the following one. Also, some resources that are associated with well-being (such as marriage and income), might change across the life-span (Diener & Suh, 1998) and this might have an impact on the subjective experience of well-being, especially during midlife. Biswas-Diener, Vittersø and Diener (2010) and Kaczmarek (2004) support this conclusion, documenting that, characteristics such as income, marital status and education can influence well-being.

In addition, a healthier lifestyle can as well contribute to well-being improvement (Franco et al., 2009; Lee, 1999).

Health-related factors (Dennerstein et al., 1994) and menopausal status (Dennerstein et al., 2002) can also impact the well-being, as can spirituality (Cohen & Koenig, 2003; Sadler & Biggs, 2006) and weight increase (Allison, Mackell, & McDonnell, 2003). Regarding menopausal symptoms, there is evidence that these can disrupt well-being during the climacteric (Oldenhave, Jaszmann, Haspels, & Everaerd, 1993) although this is not a unanimous conclusion (Smith-DiJulio et al., 2008).

Besides socio-demographic, menopause and health-related factors, life events and personal characteristics, it is important to account for cultural variability when exploring

the subjective well-being, since cross-cultural differences exist (Biswas-Diener et al., 2010; Daukantaitė & Zukauskienė, 2011).

4. Aims of the Present Research

Therefore, given the evidences presented in the literature, this research intends to address eleven main questions.

First, it is our objective to explore the particular representations of menopause and its perceived consequences (both positive and negative), in a sample of peri- and post-menopausal Portuguese women, since they can vary across different populations. To accomplish this, several interviews with open-ended questions are going to be done, in order to collect data to build theoretical models which explain the structure of the three concepts (representations, perceived positive and negative consequences of menopause).

Thereafter, and also subsequent to the exploration of menopause's perceived negative consequences (and also supported in pre-existing scales), it is our aim to develop and validate an inventory to measure both frequency and intensity of menopausal symptoms (and, hence, build an instrument that accurately assesses the severity of symptoms), since the available measures for climacteric symptoms assert either frequency or bothersomeness. Additionally, we intend to investigate if there are significant differences between measuring symptoms in terms of frequency and intensity. Furthermore, it is our goal to characterize a community sample of Portuguese peri- and post-menopausal women in terms of menopausal symptoms distribution.

Subsequently, and using the inventory previously developed in the context of this study, it is our objective to explore different types of predictors of vasomotor symptoms' severity, in a symptomatic sample of middle-age women, namely socio-demographic, health and menopause-related variables, lifestyle and perceived control.

And because vasomotor symptoms are the menopausal clinical manifestations which lead women to search for medical help more frequently, it is also our objective to explore if psychological variables, such as stress and depression, can be significant predictors of hot flashes and night sweats' occurrence (using a sample of pre-, peri- and post-menopausal participants who have, and do not have, hot flashes and night sweats).

Moreover, our fifth objective is to assert, in a sample of peri- and post-menopausal women, which socio-demographic, health and menopause-related, and lifestyle variables significantly predict the severity of both physical and psychological menopausal symptoms.

In the context of a broad approach to menopause, it is additionally our aim to evaluate if spirituality can be a predictor of less severe menopausal symptoms, independently of socio-demographic, health and menopause-related and lifestyle, in peri- and post-menopausal women.

Similarly, our seventh goal is to explore if life events can determine menopausal symptoms' severity, by building a causal model, which controls for confounding variables. Also an aim in the research is to compare women in pre-, peri- and post-menopause, regarding menopausal symptoms' severity.

Because of the evidences that, during the menopausal transition, women usually gain weight, our next objective is to explore which variables determine weight variation and, specifically, weight gain in menopausal women. Furthermore, we intend to characterize a sample of peri- and post-menopausal participants in relation to weight variation from pre- to current menopausal status (in terms of loss, maintenance or gain) and also to identify in which phase of their life-span the overweight started.

Given the evidences of weight gain around peri-menopause, our ninth goal is to explore if a brief and individual 8-week cognitive-behavioural therapy (CBT) can promote changes in anthropometric (weight and abdominal perimeter), psychological (sexual and health-related quality of life, anxiety, stress and depression) and behavioural variables (restrain, emotional and external eating, as well as in binge eating disorder status). With this purpose, a quasi-experimental design will be used, including an assessment before the intervention (and control condition), after the intervention (and control condition equivalent time) and a 4-month follow-up; overweight and obese participants will be randomly assigned to the CBT or to the control group (waiting list).

As mentioned before, the literature also evidences high body mass index (BMI) as a health and well-being risk factor. Therefore, our tenth aim is to assess what determines the different BMI categories in midlife women. Consequently, a causal model comparing normal weight, overweight and obese participants regarding socio-demographic, health and menopause-related variables, lifestyle and psychological variables (such as body shape concerns, depression and stress), will be built.

Finally, and because the variables influencing well-being are numerous and often studied apart from each other, our last aim is to build a global causal model of well-being in midlife women, encompassing socio-demographic, health and menopause-related variables, lifestyle, body shape concerns, life events, stress, spirituality and menopausal symptoms.

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PART I – MENOPAUSE AND MENOPAUSAL SYMPTOMS

Representations and Perceived Consequences of Menopause by Peri- and Post-menopausal Portuguese women: a qualitative research

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Abstract

Our aim in conducting this study is to describe the representations and perceived consequences of menopause, elicited through a semi-structured interview with 36 Portuguese women, in peri- and post-menopause. The most prevalent response of the interviewed women was to see menopause as a normal/neutral phase of their life cycle

(28.3%). Menses' cessation (58.7%) was identified as the most prevalent positive consequence of menopause, and a range of psychological changes (18.3%) was the most mentioned negative consequence. Health care provider's awareness of women's attitudes will allow them to communicate more effectively and to reinforce women's positive attitudes.

Keywords: menopause; representation; consequences; positive; negative.

1. Introduction

Women's representation of menopause and their response to this period of life reflects both medical and nonmedical perceptions. Given the importance of the support that is rendered by health care providers to menopausal women, in terms of both information and meaning (Jones, 1997), and also of the psychosocial and cultural contexts in determining the meaning and impact of menopause (Hunter, 1994), the investigation of how peri- (i.e., when women start having a variable cycle length or at least two skipped cycles and an interval of amenorrhea of at least 60 days) and post-menopausal women (that is, who manifest amenorrhea for at least 12 months) (Soules et al., 2001) represent this process and its consequences, is clinically relevant.

Currently 10% of the women population worldwide is going through menopause or has already gone through this process (Skouby, 2004).

The biomedical model, which represents menopause as a cluster of physical and emotional difficulties caused by hormone deficiency, contrasts with the socio-cultural model, which conceptualizes menopause as a natural, developmental process, with little or no consequences for women (Hunter, & O'Dea, 2001). It is evident, in a large amount of studies, that menopause's perception and symptoms are influenced by several factors, not only physiological but also of psychosocial and cultural nature (Collins, & Landgren, 2002; Hall, Callister, Berry, & Matsumura, 2007; Keefer, & Blanchard, 2005; Kowalcek, Rotte, Banz, & Diedrich, 2005; Singh, & Arora, 2005; Uncu, Alper, Ozdemir, Bilgel, & Uncu, 2007). Although physiological processes are well conserved in the human species, and overall communications have reduced the cultural gaps in developed countries, qualitative studies can explore with detail cultural contents relevant for successful interventions (Strickland, 1999).

Therefore, it is relevant to explore how different cultures, namely the Portuguese one, perceive the menopause process, in order to adequate interventions to their beliefs about menopause, in future clinical and research settings.

Women may have ambivalence towards menopause, welcoming it on one hand, and fearing it on the other (Im, & Meleis, 2000). Thus, women can perceive menopause has a process which has both positive and negative features.

Although the vast majority of the research around menopause has focused on the negative experiences and adverse symptoms, other studies have evidenced that women can recognize positive experiences associated with menopause (Berger, & Forster, 2001; Betti, Orsini, Sciaky, Cristini, Cesa-Bianchi, & Zandonini, 2001; Deeks, & McCabe, 2004). However, as Winterich (2003) infers, very little research explores the positive sexual changes during the climacteric period.

Our aim, in performing this research, was to explore women's menopause representations and its perceived consequences (both negative and positive), in a group of women in menopausal transition and post-menopause.

2. Materials and Methods

The sampling of participants was based on the availability of respondents, and they were recruited by a non-probabilistic sampling procedure. Participants had to be in menopausal transition (i.e., have a variable cycle length or at least two skipped cycles and an interval of amenorrhea of at least 60 days) or in post-menopause (that is, manifest amenorrhea for at least 12 months) (Soules et al., 2001). 36 women gave their informed consent after a presentation of the study.

A qualitative approach, employing content analysis, was used to analyze the data collected by means of a semi-structured individual interview, with 36 women in the menopausal transition and post-menopausal.

The content analysis was done using the following procedure: 1) develop and define major emergent categories, mutually exclusive, that were reflective of the 36 interviews for each one of the three pre-existing categories (menopause representations, positive consequences and negative consequences of menopause); 2) generate a list of coding cues; 3) analyze the statements and characterizations for best fit and which substantiate a given emergent category, for each interview; 5) identify sub-categories, within and

across the interviews, while preserving the principle of homogeneity of the category, whenever the categories did not express per se the multiplicity of elements that it integrated, and 6) derive major emergent categories of the study (Bardin, 2007).

The pre-existing categories explored in the 36 interviews were: menopause representations (“what is menopause for you?”), positive consequences of menopause (“does menopause have any positive consequences? If so, which ones?”), and negative consequences of menopause (“does menopause have any negative consequences? If so, which ones?”). The same participant could express more than one representation or identify more than one consequence. All representations and consequences evidenced were taken into account and subjected to analysis. At the end of the content analysis, only emergent categories which were mentioned by at least 10% of the sample were considered.

A jury of two psychologists (both faculty) made an independent analysis of the 36 interviews and, afterwards, made a co-resolution regarding the categories.

A Multiple Correspondence Analysis (MCA) was used to thoroughly represent the associations between the emergent categories obtained from the text analysis, and to find latent constructs that can work as major determinants in women’s conceptualization of menopause. A descriptive analysis and the associations between observed categories were analyzed with MCA using SPSS (v. 16, SPSS Inc, Chicago, IL).

3. Results

3.1 Participants

Thirty-six women were interviewed and questioned about their menopause representations and perceived (positive and negative) consequences. The mean age of participants was 56 ($SD=5.369$; $Min.=39$; $Max.=64$). Regarding the menopausal status, there were 6 women in menopausal transition and 30 women in post-menopause. 36% of participants had a college degree and 22% had completed high school. Concerning the marital status, 58% of participants were married or living with a partner and 17% were divorced.

3.2 Content analysis: emergent categories of representations of menopause and its perceived consequences (positive and negative)

Regarding menopause representations, the jury found 7 emergent categories of answers, namely, 1) a normal/neutral phase of life cycle (which had four sub-categories, specifically, normal/natural phase of life, phase that you accept, another/a new phase of life and a neutral phase of life cycle), 2) cessation of menses (which has five sub-categories, the end of the objective experience of menstruation, improvement in hygiene, ovarian failure/reduction of estrogens, freedom to go to the beach/pool and the end of the reproductive capacity), 3) aging, 4) a positive experience (which had two sub-categories – a subjective positive experience and an objective gain), 5) a negative experience (which also had two sub-categories – a subjective negative experience and an objective loss), 6) negative physical consequences, and finally, 7) depreciation of the menopause.

A normal/neutral phase of life was the most mentioned representation of menopause, as seen in Table 1

Table 1 – Emergent categories and sub-categories resulting from content analysis of the pre-category of menopause representations

Categories	Sub-categories	Sub-category frequency	Category frequency	Category percentage
Normal/neutral phase of life cycle	Normal/natural phase of life	12	26	28.3
	Phase that you accept	3		
	Another/a new phase of life	9		
	A neutral phase of life cycle	2		
Cessation of menses	End of the objective experience of menstruation	6	16	17.4
	Improvement in hygiene	2		
	Ovarian failure/reduction of estrogens	4		
	Freedom to go to the beach/pool	1		
	The end of the reproductive capacity	3		
Aging	---		15	16.3
Negative	Subjective negative experience	7	14	15.2

experience	Objective loss	7		
Positive experience	Subjective positive experience	6	8	8.7
	Objective gain	2		
Negative physical consequences	---		8	8.7
Depreciation of the menopause	---		5	5.4
Total of representations mentioned	---		92	100

Regarding the positive consequences of menopause, the jury identified three emergent categories: 1) cessation of menses (in which were identified seven sub-categories, namely, end of the objective experience of menstruation, improvement in hygiene, ability to stop contraception, terminus of pre-menstrual syndrome, greater sexual freedom, stop buying and using tampons/pads and freedom to plan vacations), 2) psychological changes (divided in nine categories: feeling calmer, feeling less concern, feeling more confidence, increased assertiveness, increase in the ability to accept life's aspects, increased maturity, desire to invest in pleasurable things, give more value to positive experiences and increased sensitivity), and 3) absence of positive consequences.

Cessation of menses (58.7%) and positive psychological changes (27%) were the most mentioned positive consequences of menopause, as evidenced in Table 2.

Table 2 – Emergent categories and sub-categories resulting from the content analysis of the pre-category of positive consequences of menopause

Categories	Sub-categories	Sub-category frequency	Category frequency	Category percentage
Cessation of menses	End of the objective experience of menstruation	14	37	58.7

	Improvement in hygiene	3		
	Terminus of contraception	8		
	Terminus of pre-menstrual syndrome	1		
	Greater sexual freedom	3		
	Stop buying and using tampons/pads	5		
	Freedom to plan vacations	3		
	Feeling more calm	4		
	Feeling less concern	1		
	Felling more confidence	1		
	Increased assertiveness	1		
Psychological changes	Increased ability to accept life's aspects	2	17	27
	Increased maturity	1		
	Desire to invest in pleasurable things	5		
	Give more value to positive experiences	1		
	Increased sensitivity	1		
Absence of positive consequences	---	9	14.3	
Total			63	100

Regarding the negative consequences of menopause, there were found eight emergent categories: 1) psychological changes (which had eight sub-categories, namely, depressed mood/mood swings, hopelessness regarding the future, irritability/lack of patience, feelings of self-depreciation, anxiety, aggravation of pre-existing vulnerability, memory loss, general psychological change), 2) physical changes (which had six sub-categories, specifically, flaccidity in body parts, perception of changes in the body in general, physical constraints in doing certain things, dry skin, hair loss and

tiredness/decrease of energy), 3) concern with disease appearance or aggravation (divided in five sub-categories, osteoporosis/osteopenia, high blood pressure, cardiovascular disease, high cholesterol and worry with health deterioration in general), 4) changes in sexual life (which had five sub-categories, specifically, decreased libido, vaginal dryness, general difficulties in sex life, estrangement from partner due to sex-related difficulties and guilt and insecurity related with her own sexual performance), 5) vasomotor symptoms (which had two sub-categories, presence of vasomotor symptoms and feelings of shame related with the presence of vasomotor symptoms), 6) absence of negative consequences, 7) weight gain, and 8) perception of loss (which has four sub-categories, namely, loss of femininity, loss of the reproductive capacity, quit doing some pleasurable things and concern with the possibility of losing an attractive figure). Negative psychological changes (18.3%), physical changes (17.2%) and concern with disease appearance or aggravation (15%) were the most mentioned negative consequences of menopause (Table 3).

Table 3 – Emergent categories and sub-categories resulting from the content analysis of the pre-category of negative consequences of menopause

Categories	Sub-categories	Sub-category frequency	Category frequency	Category percentage
	Depressed mood/mood swings	2		
	Hopelessness regarding the future	2		
	Irritability/lack of patience	4		
Psychological changes	Feelings of self-depreciation	2	17	18.3
	Anxiety	2		
	Aggravation of pre-existing vulnerability	1		
	Memory loss	2		
	General psychological change	2		
Physical	Flaccidity in body parts	3	16	17.2

changes	Perception of changes in the body in general	4		
	Physical constrains in doing certain things	3		
	Dry skin	1		
	Hair loss	1		
	Tiredness/decrease of energy	4		
	Osteoporosis/osteopenia	7		
Concern with disease	High blood pressure	2		
appearance or aggravation	Cardio-vascular disease	1	14	15
	High cholesterol	1		
	Worry with health deterioration in general	3		
	Decreased libido	7		
	Vaginal dryness	1		
	General difficulties in sexual life	1		
Changes in sexual life	Estrangement from partner due to sex-related difficulties	1	11	11.8
	Guilt and insecurity related with own sexual performance	1		
	Presence of vasomotor symptoms	8		
Vasomotor symptoms	Feelings of shame related with the presence of vasomotor symptoms	2	10	10.8

Absence of negative consequences	---	9	9.7
Weight gain	---	8	8.6
	Loss of femininity	2	
	Loss of the reproductive capacity	3	
Perception of loss	Quit doing some pleasurable things	2	8
	Concern with the possibility of losing an attractive figure	1	
Total		93	100

As mentioned earlier, the same participant could identify more than one representation or consequence (hence, the total of answers – for example, the total of category’s frequency for negative consequences is 93 - exceeds the number of participants, that is, 36). In order to have an overview of how many participants mentioned a certain category, the frequency of the categories mentioned by each participant was explored. Therefore, regarding to the categories of the theme “representation of menopause”, a normal/neutral phase of life cycle was mentioned by 19 participants, cessation of menses by 11, aging was identified 15 times, negative experience was mentioned by 11 women, a positive experience was evidenced by 6 people, negative physical consequences by 8 and 5 people undervalued the topic (depreciation of the menopause). Positive consequences of menopause were demonstrated by three emergent categories that were mentioned as follows: cessation of menses was mentioned by 23 participants, absence of positive consequences by 9 and positive psychological changes by 8. Regarding the negative consequences of menopause, we found eight emergent categories that were mentioned as follows: concern with disease appearance or aggravation was mentioned by 12 participants, negative physical changes by 11, negative psychological changes by 10, negative changes in sex life was evidenced by 10

women, vasomotor symptoms by 8 participants, weight gain by 8, absence of negative consequences was identified by 7 and perception of loss by 5 participants.

3.3 Multiple Correspondence Analysis (MCA) of the emergent categories of representations of menopause and its perceived consequences (positive and negative)

The MCA explores the correlational structure of the three pre-categories, i.e., representations of menopause, positive and negative consequences, organized in three models (one for each pre-category) with several factors and factor loadings (which give the relation between each emergent category and a factor).

The results evidenced that the representations of menopause are better explained by a three-dimension model. The three factors account for 66% of total inertia (variance) observed (Table 4).

Table 4 –Three-dimensional representations of menopause: factor loadings for each dimension, mean loadings and % inertia (variance) explained

Categories	Dimensions			Mean
	Negative features	Positive or neutral features	Phase of life cycle	
Menses cessation	.027	.722	.010	.253
Normal/neutral phase of life cycle	.250	.022	.522	.265
Aging	.566	.033	.106	.235
Depreciation of the menopause	.199	.290	.089	.193
Negative physical consequences	.503	.029	.082	.205
Positive experience	.062	.344	.090	.166
Negative experience	.411	.005	.262	.226
Eigenvalues	2.017	1.445	1.162	1.542
% of Variance	28.821	20.648	16.601	22.023

Regarding to positive consequences of menopause, a two-dimension model was evidenced by MCA as a best-fit solution and explained 96% of total inertia (variance) (Table 5).

Table 5 – Two-dimensional representation of positive consequences of menopause: factor loadings for each dimension, mean loadings and % inertia (variance) explained

Categories	Dimensions		Mean
	Menses cessation	Psychological changes	
Absence of positive consequences	.928	.021	.475
Menses cessation	.816	.138	.477
Positive psychological changes	.040	.946	.493
Eigenvalue	1.785	1.105	1.445
% of Variance	59.484	36.833	48.159

Perceived negative consequences of menopause are best explained in a four-dimension model (accounting for 74% of total variance), as evidence in Table 6.

Table 6 – Four-dimensional representation of the negative consequences of menopause: factor loadings for each dimension, mean loadings and % inertia (variance) explained

Categories	Dimensions				Mean
	Sexual and Psychological changes	Disease and physical changes	Vasomotor symptoms	Perception of loss	
Absence of negative consequences	.692	.050	.069	.001	.203
Vasomotor symptoms	.000	.258	.431	.033	.180

Negative sexual changes	.419	.000	.295	.001	.179
Concern with disease	.090	.412	.016	.351	.217
Weight Gain	.194	.161	.064	.270	.172
Negative psychological changes	.193	.000	.190	.165	.137
Negative physical changes	.253	.480	.000	.047	.195
Perception of loss	.088	.178	.220	.290	.194
Eigenvalue	1.929	1.540	1.286	1.156	1.478
% of Variance	24.107	19.247	16.081	14.451	18.471

4. Discussion

This research evidenced in this sample of peri- and post-menopausal women, the positive consequences of menopause were mentioned 63 times (and were organized in 16 sub-categories) whereas the negative were evidenced 93 times (and 31 categories/sub-categories were identified). This demonstrates that in this sample there is a higher number of perceived negative consequences regarding menopause, comparing with the positive consequences.

Previous studies have shown that attitudes towards menopause are positive or neutral (Avis, & McKinlay, 1995; Chirawatkul, & Manderson; 1994; Padonu, Holmes-Rovner, Rothert, Schmitt, & Kroll, 1996). These findings are supported by the data collected in the present study: 28.3% of the total of representations indicate menopause as a normal/neutral phase of life cycle and 8.7% identified it as a positive experience. Similarly, other studies emphasize that women perceive menopause as a natural transition in the life cycle (Lock, 1986).

However, some women have defined menopause as a negative experience (15.2% of all representations alluded); in the same way, Shore (1999) and Delanoë (1997) concluded that majority of women in their studies have negative representations of menopause.

Several authors also evidence that women perceive menopause has a process related to aging (Jones, 1997; Lock, 1991; Padonu, Holmes-Rovner, Rothert, Schmitt, & Kroll, 1996). This relation is also obvious in the present study.

Concerning the positive consequences of menopause, the results point out that the most positive consequence mentioned is the cessation of menses. Several studies have emphasized that women see the cessation of menses as a positive experience (Avis, & McKinlay, 1991; Deeks, & McCabe, 2004) and consider menopause as socially good for women (Singh, & Arora, 2005)

In this research women evidenced positive psychological changes as an advantageous consequence of menopause; other studies have concluded that an increase of the feeling of calmness is mentioned by women during the years of menopause (Deeks, & McCabe, 2004; Mansfield, & Voda, 1997).

Regarding the negative consequences of menopause, women have designated negative psychological changes (18.3%) and vasomotor symptoms (10.8%) as two negative consequences of menopause. These results agree with the observations of Padonu, Holmes-Rovner, Rothert, Schmitt and Kroll (1996) which have concluded that psychological symptoms are viewed more negatively than vasomotor symptoms.

Deeks, Zoungas and Teede (2008) evidence that both in peri- and post-menopause, but more significantly in pre-menopause, women feared loss experiences. This goes in the same direction as our results that show the perception of loss (8.6% of all negative consequences elicited) as one of the negative consequences of menopause.

Although in Crawford, Casey, Avis and McKinlay's (2000) research the menopause transition was not associated with weight gain, the present study emphasizes that 8.6% of participants have identified weight gain as one of the negative consequences of menopause. Similarly, in an Australian study, women perceived menopause as a process that has an impact on weight gain (Deeks, Zoungas, & Teede, 2008). In addition, the perception of midlife weight gain has recently been confirmed by a population-based sample of women and men from across Canada. The body mass index gain of 1.2 units for women over the decade between ages 45 and 54 was significantly more than for men in the same decade (Hopman, Leroux, Berger et al., 2007).

Another perceived negative consequence of menopause is the concern with disease appearance or aggravation (15%). Likewise, other researchers have concluded that peri- and post-menopausal women fear that menopause affects adversely their physical health (Deeks, Zoungas, & Teede, 2008; Singh, & Arora, 2005).

According to psychodynamic psychiatrists, the end of fertility is associated with symbolic losses (Lock, 1991). In the present research 8.6% of the sample highlights the perception of loss as a negative consequence of menopause.

Menopausal process can facilitate the manifestation of depressed mood and sexual changes, which can have an impact on the participants' personal life (Nappi, & Nijland, 2008). In the present study, negative psychological and sexual changes were also reported as two negative consequences of menopause.

MCA suggests that the representation of menopause can be explained by three factors. The first factor is represented by negative experience, negative physical consequences and aging; therefore age progression can be viewed as a negative experience by these menopausal women, given the strong relation with two other negative representations. The second factor, that supports the representations of the menopause model, is composed by three independent aspects: the termination of menses, a depreciation (or minimization) of the menopause of the participant, and the menopause as a positive experience. This association could suggest that the termination of menses is associated with neutral or positive representations, which would be congruent with the findings of previous studies (Avis, & McKinlay, 1995; Chirawatkul, & Manderson; 1994; Padonu, Holmes-Rovner, Rothert, Schmitt, & Kroll, 1996), although both positive experience and absence of positive consequences have low loadings in this factor (that is, inferior to .40).

The third factor evidences menopause's representation as a phase of life cycle; this means that menopause is seen as a normal or expected transition that is clearly distinct from negative and positive representations.

In conclusion, women might represent menopause as being a negative or positive experience or as a life cycle transition.

The perceived positive consequences of menopause are explained by two major factors, one clearly psychological (positive psychological changes) and the other of a more physical nature (termination of menses and absence of positive consequences). The strong association between the emergent categories of cessation of menses and absence of positive consequences may mean that the termination of menses is not always perceived as a positive consequence, although it accounts for 58.7% of all positive consequences mentioned. Other researches reached the same conclusions: women feel

relief or neutral feelings towards the menses cessation, or refer to the end of menstruation as having little significance (Lock, 1991; Avis, & McKinlay, 1991).

The MCA regarding the model of negative consequences of menopause highlights that this pre-category is largely explained by a four-factor structure. Hence, negative psychological changes, negative sexual changes and the absence of negative consequences constitute the first factor; the second one gathers negative physical changes and concern with development or aggravation of disease; the third is vasomotor symptoms and the fourth factor is defined by weight gain and perception of loss. In this model of negative consequences of menopause, negative psychological changes (as well as negative sexual changes) are strongly associated with the absence of negative consequences. Since positive psychological changes were not related with the absence of positive consequences in the model analyzed previously (i.e., the model of positive consequences), it can be hypothesized that changes at a psychological level might be more significant when they are positive than when they are negative, since in the model of negative consequences, the psychological changes are associated with the absence of negative consequences. Moreover, psychological changes have a low loading in this factor (.193). The association between the absence of negative consequences and sexual changes might also mean that the later are not very significant.

The second (negative physical changes and concern with disease) and third (vasomotor symptoms) factors, although of physical nature, are distinct dimensions. A similar result has been found in other studies regarding factor analysis of menopausal symptoms: somatic experiences and vasomotor symptoms are usually identified as being different factors (Green, 1998).

The fourth factor aggregates weight gain and perception of loss. These two negative consequences of menopause, although bearing low loadings (.270 and .290, respectively), have similarities: weight gain may reflect the lost of a known body shape which may be perceived as changed due to menopause. Therefore, the model of negative consequences of menopause has four main factors, one of psychological/sexual nature, other of physical nature, a third one which represents vasomotor symptoms and a last factor which reflects the subject of lost.

5. Conclusion

Despite the associations that women establish between menopause and a series of consequences (positive or negative), the menopause process might not be the only variable influencing the representations and perceived consequences, since psychosocial and cultural factors can have an impact in the reporting of menopause symptoms and in the way women perceive menopause.

Our results emphasize that, in a group of Portuguese women, representation of menopause may be of a negative, a positive or a neutral experience, or as a life cycle transition. The perceived positive consequences are cessation of menses or absence of positive consequences on one hand, and positive psychological changes on the other hand. Negative consequences of menopause are of psychological/sexual nature, physical nature, vasomotor symptoms or weight gain and lost perception.

The non-probabilistic nature of this study cannot lead to generalizations. However, and contrary to studies using closed-end questionnaires, this approach allows for insightful gains into the overall nature of representations of menopause and the perceived consequences of this transition. There is evidence that women can internalize the biological model and perceive menopause in terms of deficiency, attributing to the menopausal process several psychological difficulties (Ballinger, 1990).

Given that the psychosocial and cultural context can determine the meaning and impact of menopause (Hunter, 1994) and that health care professionals may reinforce these representations or modify them (Moscovici, 1990), it should be clear what the cognitive constructions women have about menopause are, with qualitative studies making an important contribution to this understanding.

In future research, it would be useful to explore whether these conclusions are confirmed in larger samples. It would also be pertinent to study if certain types of representations of menopause and associated consequences, identified in the present research, are correlated with other psychological variables, given the high frequency of psychological phenomena being identified by the participants as negative consequences of menopause.

There may be some socio-cultural biases in our results that also limit generalizations. Yet, the conservation of physiological processes within the human species and the proximity between developed societies, due to global communications, has reduced the cultural gap. Thus, women's representations of menopause may well be similar across

different countries and socio-economic groups. Therefore, the present research is an important examination of how a group of Portuguese women see menopause and its consequences which can affect the way they live this phase and relate with family and social context.

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**Menopause Symptoms' Severity Inventory (MSSI-38): Assessing symptoms'
frequency and intensity**

Accepted in Climacteric

Short title: Menopause inventory

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ABSTRACT

Objectives Menopausal instruments usually assess frequency or intensity of symptoms. The present study develops and validates an inventory to assess menopausal symptoms' severity through the measurement of their frequency and intensity, and explores the differences between women with different menopausal status.

Methods A community sample of 1,003 Portuguese women in pre-, peri- and post-menopause filled the proposed inventory with 47-items. Factor exploratory and confirmatory analyses, and comparative statistics for paired and independent samples, were applied using PASW Statistics v.19 and AMOS v.18 software.

Results The final structure with 38-items organized in twelve factors showed overall good psychometric properties (in terms of factor analysis, convergent, discriminant and

criterion validity, as well as regarding reliability, sensitivity, and measure invariance in two different and independent samples). Wilcoxon test confirmed significant differences between frequency and intensity of symptoms. Moreover, peri- and post-menopausal women in this community sample presented low symptoms severity (ranging from 0.6 to 1.4 in a scale from 0 to 4) and, although post-menopausal participants present higher levels (when compared with their peri-menopausal counterparts), the two groups only diverge significantly in some physical symptoms (namely, aches and pain, vasomotor symptoms, numbness, skin and facial hair changes, urinary and sexual symptoms). *Conclusion* This research emphasizes that symptoms' severity measurement should account for both frequency and intensity. Moreover, it contributes with a dully validated 12-dimension inventory for menopausal symptoms. Regarding to differences between peri- and post-menopausal women, the symptoms' increment only happens in physical symptoms, although the severity levels are not exacerbated.

INTRODUCTION

As the aging of the world's population becomes more pronounced, valid and reliable measures to assess situation-specific symptoms become an important research direction in order to identify the necessity of interventions, evaluate the impact of therapies and map a specific population on a particular set of problematic occurrences.

Both genders manifest, during the aging process, physical and psychological deterioration with several associated symptoms (including episodic sweating, memory and concentration impairment, anxiety, depressive mood, joint complaints, among others) [1].

According to the bio-medical model, menopause refers to the last menses that occurs after a continuous loss of ovarian follicles throughout the reproductive lifespan, and gradual reduction of hormones' production by the ovaries, which lead to changes in the length of the menstrual cycle and ultimately to its cessation. This circumscribed occurrence will take place during the menopause transition period [2]. This period encompasses the transition from a reproductive to a non-reproductive life phase, during which the emergence of particular symptoms will occur, being their severity associated to bio-psycho-social factors [3-5]. As a result, menopausal symptoms vary greatly across cultures [6-8].

Usually women do not experienced all menopausal symptoms; it is known that about 75% of post-menopausal women manifest some symptoms, experiencing them in an acute way. Moreover, different symptoms will have a dissimilar impact, ranging from mild discomfort to extreme distress [9].

To evaluate these changes that emerge in midlife, several instruments have been designed to assess symptoms that occur during the climacteric period [1,10,11], including some that were developed from previous scales [11].

Menopause's symptoms measurement usually includes the evaluation of the presence of the symptoms, but should also include a self-rating assessment of their intensity or severity [12]. However, most of the available measures do not assess simultaneously the frequency and the intensity of each symptom which would result in a more exact assessment of their severity level.

In order to identify an accurate severity of menopausal symptoms in peri- and post-menopausal women an inventory was developed, to assess the frequency (how many times) and the intensity (how strong/intense) of each symptom.

Some of the items, included in this inventory, are evidenced in the literature as changes that occur during menopausal transition, but have been absent in previous menopausal scales and checklists. Some examples are the increment of facial hair, weight gain, breast tenderness, loss of head hair, changes in the skin (dryness or texture and tone alterations), as they can be identified as hormone therapy secondary effects [13].

METHODS

Participants

After having given their informed consent and agreed to participate in the research, a community sample of 1,003 Portuguese women between 42 and 60 years of age filled in all the instruments adequately (45 were excluded due to incorrect filling in).

The instruments included the Menopause Symptoms' Severity Inventory (MSSI-38), the Portuguese adaptation of the Depression, Anxiety and Stress Scales [14] the Utian Quality of Life Scale [15], and the Body Shape Questionnaire [16], as well as a questionnaire to identify the menopausal status [17] and to explore socio-demographic, health and menopause-related characteristics. Participants form a community sample recruited through basic, middle and high schools, universities and corporate settings.

The menopausal status was defined according to Soules et al. [17]. Pre-menopausal women were identified for not having any changes in their menstrual cycle. Perimenopausal women would report variable cycle length (more than seven days different than usual), or had skipped two or more cycles and had an amenorrhea interval superior to sixty days. Post-menopausal women were confirmed for having at least a twelve-month period of amenorrhea.

To improve the accuracy of menopausal status' determination, in addition to the actual age, the age of the individual when the last menstrual period occurred was also asked.

Table 1 describes the peri- and post-menopausal participants.

Table 1 - Distribution of the study's participants according to socio-demographic and health-related characteristics

Characteristics	Pre-		Peri-		Post-	
	n	%	n	%	n	%
N	282	28.4	298	30.1	412	41.5
Age (<i>M; SD</i>)	45.7(3.230)		47.6(3.787)		53.9(4.207)	
Marital status						
Married or in a relationship	202	71.9	218	73.2	277	67.4
Not married or in a relationship	79	28.1	80	26.8	134	32.6
Education						
Primary school	19	6.9	28	9.5	62	15.4
Middle school	51	18.5	68	23.1	98	24.4
High school	79	28.6	91	31.0	109	27.1
University degree	127	46.0	107	36.4	133	33.0
Professional status						
Active	259	92.5	262	89.7	317	78.7
Inactive	21	7.5	30	10.3	86	21.3
HT, herbal/soy therapy or Nothing						
HT	4	1.5	13	4.5	49	13.5
Herbal/soy	0	0	16	5.5	48	13.3

therapy						
Nothing	273	98.5	262	90.0	265	73.2
Body mass index (kg/m ²)						
≤ 24,9	166	59.1	157	53.0	205	50.6
> 24,9	115	40.9	139	47.0	200	49.4

Item generation

A list of symptoms, which could be manifested by peri- and post-menopausal women, was compiled from different sources including menopause literature and pre-existing menopause-related instruments [1,10,11], researchers' clinical experience and menopause-specific knowledge of three consultants (two gynaecologists and one psychologist). Thirty-two semi-structured interviews were also conducted on the subject of menopause experience, which were later reviewed by two researchers to determine, amongst other things, additional symptoms or problematic occurrences.

Question format

For each symptom participants were asked how frequent (how many times) and how intense (how strong) the symptom had been during the last month.

Responses were organized in a five-point Likert-type scale (ranging from 0 to 4) for both frequency (that is, "never", "yes, less than once a week", "yes, once or twice a week", "yes, several times a week" and "yes, daily or almost every day") and intensity (namely, "not intense", "minimum intensity", "moderate intensity", "high intensity" or "extreme intensity").

Item Reduction

After exploratory factor analysis, nine items from the initial forty-seven were eliminated: i) strong or fast heartbeat; ii) difficulty in sleeping; iii) mood swings; iv) feeling impatient towards others; v) flatulence (gas) or pain caused by gas; vi) dry skin; vii) breast tenderness; viii) difficulty in urinating and ix) very strong and/or irregular vaginal bleeding. These items were excluded because they presented poor association with the factor to which they were predictably associated in the exploratory factor analysis, were absent in at least 50% of the sample, presented a kurtosis higher than 7 and a skewness higher than 3, or did not have an adequate internal consistency (this was

the case of a thirteenth factor that compiled two items – breast tenderness and strong and/or irregular vaginal bleeding - which had a Cronbach's alpha of .40; composite reliability was also calculated for this factor but again it was very low, .51.

The final structure included thirty-eight symptoms, evaluated both in terms of frequency and intensity, and organized in twelve factors (anxiety; depressive mood; cognitive impairment; vasomotor symptoms; numbness; mouth, nails and hair changes; perceived loss of control; sexual symptoms; aches and pain; body shape; skin and facial hair changes and urinary symptoms).

Statistical and Psychometric Analysis

To identify if frequency scores were significantly different from intensity scores, the data distributions of each symptom were compared using the Wilcoxon test for paired samples.

Construct validity was asserted by factor analysis (exploratory and confirmatory), convergent and discriminant validity.

To explore the factor structure of the inventory, an exploratory factor analysis was made with PASW Statistics (v. 19.0, SPSS Inc., Chicago, IL), using the principal components method and a varimax rotation. This analysis was made in 60% of the peri- and post-menopausal sample, randomly selected. To demonstrate the invariance of the measurement model, a confirmatory factor analysis was conducted using AMOS software (v. 18.0, SPSS Inc., Chicago, IL).

The convergent validity of the inventory was analysed through the average variance extracted (AVE). An adequate value should be higher than .50 [18].

This discriminant validity was explored comparing the inter-factors' squared correlation with the AVE of each individual factor. In order to have discriminant validity the association between factors should be smaller than the individual AVE [18].

Criterion validity was explored through concurrent-oriented validity of some scales, using Pearson's correlation with similar constructs. To test this, three other subscales were used, namely, the Depression, Anxiety and Stress Scales – DASS [14], the Utian Quality of Life Scale for sexual quality of life [15] and the Body Shape Questionnaire – BSQ [16].

In addition, to demonstrate that the measure was adequate in assessing symptoms that occur during menopause (that is, during the menopausal transition and post-menopause), the invariance of the measurement model was tested integrating, in the

analysis, women who were not in the menopause phase (pre-menopausal participants), and therefore were not expected to have menopausal symptoms. This analysis had the purpose of proving that the measurement model would be variant when using a group of women who were not in menopause.

Reliability was studied applying the Cronbach's alpha, and sensitivity was explored through the analysis of minimum and maximum values, skewness and kurtosis. Values are expected to range from 0 to 4 and skewness and kurtosis are expected to have values below 3 and 7 respectively, while reliability scores should be above .70 [18].

To evaluate if age could function as a moderator for the impact of menopausal status over the symptoms, a structural model was built to evaluate a possible interaction effect will be evaluated to the twelve symptoms.

Finally, to explore if there are significant differences between women in peri- and post-menopause, regarding the twelve sets of symptoms, a one-way ANOVA was applied.

RESULTS

Frequency and intensity

To assert if the frequency was significantly different from the intensity measurement, every item's (symptoms) frequency and intensity were compared with Wilcoxon test for paired samples. As evidenced in the table 2, there are significant differences between the measurement of frequency and intensity, for most symptoms.

Table 2 – Mean and standard deviation of each symptom for the sample of peri- and post-menopausal women and comparison of the two menopausal status groups (Wilcoxon test) for each symptom

Items	Frequency <i>M(SD)</i>	Intensity <i>M(SD)</i>	Wilcoxon test (peri- vs. post-) <i>Z sig.</i> [†]
1 – Feeling tense or nervous	1.59(1.065)	1.49(1.000)	-3.825***
2 - Getting easily excited (that is, agitated, excited or startled)	1.30(1.170)	1.21(1.094)	-3.900***
3 – Panic attacks	.27(.720)	.29(.726)	-1.278 n.s.
4 – Difficulty in concentrating	1.27(1.144)	1.19(1.056)	-3.277***

5 – Feeling tired or with lack of energy	1.78(1.215)	1.59(1.101)	-6.792***
6 – Loss of interest in most things	.87(1.100)	.84(1.076)	-1.363 n.s.
7 – Crying spells	.63(1.015)	.63(.990)	-.175 n.s.
8 – Irritability	1.31(1.051)	1.28(1.059)	-1.228 n.s.
9 – Being unhappy with your personal life	1.09(1.157)	1.01(1.113)	-3.119**
10 – Feeling anxious or nervous	1.50(1.099)	1.36(1.042)	-5.568***
11 – Feeling a loss or lack of memory	1.39(1.194)	1.22(1.094)	-6.407***
12 – Overall decrease in the performance capacity (for example, doing less things than you are used to do)	1.27(1.177)	1.15(1.089)	-5.058***
13 – Feeling depressed, down or sad	1.27(1.165)	1.21(1.096)	-2.142*
14 – Wanting to be alone	1.37(1.273)	1.28(1.224)	-3.821***
15 – Feeling dizzy or fainting	.44(.815)	.42(.822)	-1.426 n.s.
16 – Sense of tension and pressure on the head or body	1.10(1.103)	1.02(1.042)	-3.564***
17 – Numbness or tingling in some body parts	1.21(1.271)	1.09(1.167)	-5.112***
18 – Headache	1.22(1.143)	1.22(1.130)	-.212 n.s.
19 – Pain in the muscles and joints	1.69(1.297)	1.53(1.203)	-5.757***
20 – Loss of sensation on the hands or feet	.74(1.137)	.67(1.050)	-2.683**
21 – Difficulty in breathing or breathlessness	.56(.989)	.51(.896)	-2.812**
22 – Pain on the back of the neck or head	1.53(1.306)	1.42(1.185)	-4.581***
23 – Decrease in physical strength	1.32(1.210)	1.20(1.099)	-4.447***
24 – Weight gain	1.06(1.223)	1.00(1.174)	-2.387*
25 – Increased facial hair	.62(1.029)	.56(.956)	-3.295***
26 – Changes in the appearance, texture or tone of your skin	.67(1.003)	.62(.951)	-2.969**

27 – Feeling bloated	1.39(1.239)	1.27(1.190)	-4.654***
28 – Lower back pain	1.82(1.330)	1.68(1.235)	-4.719***
29 – Urine loss when laughing or coughing	.98(1.254)	.82(1.108)	-6.302***
30 – Hot flashes	1.17(1.411)	1.06(1.296)	-4.831***
31 – Night sweats	1.15(1.383)	1.03(1.276)	-5.663***
32 – Excessive sweating	.74(1.123)	.71(1.081)	-1.959*
33 – Loss of sexual interest	1.50(1.364)	1.41(1.287)	-3.868***
34 – Excessive wish to urinate	.77(1.124)	.67(1.033)	-4.594***
35 – Vaginal dryness (feeling of dryness, burning and problems during sexual intercourse)	1.03(1.269)	.97(1.206)	-3.279***
36 – Hair problems (for example, insufficient or excessive hair)	.73(1.101)	.71(1.042)	-1.583 n.s.
37 – Nail changes (changes in colour, thickness, appearance of the nail, etc.)	.72(1.119)	.70(1.081)	-1.781 n.s.
38 – Mouth and teeth problems (pain and burning feeling in the gums, altered taste, increased sensitivity to hot and cold, dry mouth, etc.)	.80(1.092)	.75(1.054)	-2.204*

†2-tailed; n.s. not significant; * $p \leq .05$; ** $p \leq .01$; *** $p \leq .001$

To assess the psychometric qualities of the measures assessed by the inventory, construct-related and criterion validity were evaluated for each factor. Moreover, reliability, sensitivity and measurement invariance, in two independent samples, were also explored.

The severity of each symptom is given by the frequency and intensity's mean for that symptom.

Construct Validity

Factorial Validity

The exploratory factor analysis was done, using PASW Statistics (v. 19.0), on 60% of randomly selected data, from the total sample of peri- and post-menopausal women. Factors extracted were those with eigenvalue greater than one and theory-supported.

The best-fit solution was a twelve factor structure, excluding nine items from the original inventory. The sampling adequacy was confirmed by the Kaiser-Meyer-Olkin test ($KMO=0.938$) and the total variance explained by this twelve-factor structure is 73.0%

Table 3 evidences the range of all symptoms' loadings that compose each one of the twelve factors.

Table 3 – Range of symptoms' loadings for each factor

Factors	Nr. of items	Range of symptoms loadings	Variance explained by factor (%)
Anxiety	5	0.495 - 0.754	9.407
Depressive mood	5	0.643 – 0.743	9.112
Aches and pain	6	0.478 –0.754	8.769
Cognitive impairment	3	0.619 – 0.726	7.247
Vasomotor symptoms	3	0.705 – 0.899	6.555
Mouth, nails and hair changes	3	0.577 – 0.785	5.502
Perceived loss of control	3	0.586 – 0.680	4.859
Numbness	2	0.762 – 0.767	4.763
Urinary symptoms	2	0.748 – 0.783	4.462
Sexual symptoms	2	0.705 – 0.823	4.302
Skin and facial hair changes	2	0.670 – 0.800	4.065
Body shape	2	0.677 – 0.688	3.963
Total variance explained (%)	38	---	73.006

Convergent validity

All subscales present good AVE scores (i.e., equal or above .50) except for the mouth, nails and hair changes (.41) and perceived loss of control (.38) subscales.

Discriminant validity

Of the sixty-six paired-factors possible comparisons, for the existent twelve factors, fifty-seven presented good discriminant validity. The nine exceptions with low discriminant validity were the following pairs: depressive mood and cognitive impairment; cognitive impairment and aches/pain; depressive mood and anxiety;

aches/pain and numbness; skin, facial hair changes and body shape; depressive mood and perceived loss of control; aches/pain and perceived loss of control; mouth, nails and hair changes and perceived loss of control; and anxiety and perceived loss of control.

Criterion validity

MSSI-38's anxiety subscale was highly related with DASS's anxiety factor ($r_p=.617$; $p<.001$).

In addition, MSSQ-38's depressive mood was also strongly associated with DASS's depression subscale ($r_p=.736$; $p<.001$).

The association between sexual quality of life and sexual symptoms was both negative and significant ($r_p=-.221$; $p<.001$) as expected.

Finally, MSSQ-38's body shape was also correlated with the total of BSQ ($r_p=.557$; $p<.001$).

Multi-group Analysis

Invariance Analysis

The model presents a good adjustment ($X^2/df=2.055$; $CFI=.895$; $GFI=.830$; $RMSEA=.039$, $p=1.000$, *C.I.* 90% [.037; .041]) in both groups (60% and 40% of the sample of peri- and post-menopausal women).

The unconstrained measurement model does not have a significantly better fit than the model with constrained factorial weights ($X^2(26)=27.229$; $p=0.397$), hence confirming the invariance of the measurement model. Therefore, there are no significant differences in the factorial measurement weights between both groups (60% of the sample versus 40%) confirming the assessment's stability of the twelve constructs comprised in the MSSI-38.

Pre- versus peri- versus post-menopausal participants

This measure also presented a good adjustment to the global sample, that is, 1,003 women in pre-, peri- and post-menopause ($X^2/df=3.415$; $CFI=.923$; $GFI=.901$; $RMSEA=.049$, $p=.735$ *C.I.* 90% [.047; .051]). As expected, when women in pre-menopause are included, the measurement weights are significantly different ($X^2(52)=82.208$; $p=.005$) supporting the variance of the measure in the groups.

However, and again as expected, if only peri- and post-menopausal women are considered, the constrained measurement model does not have a significantly better adjustment than the unconstrained one ($X^2(26)=30.448$; $p=.249$). These results support the inventory's stability as a measure for menopausal symptoms that are observed in peri- and post-menopausal women ($X^2/df=2.131$; $CFI=.888$; $GFI=.827$; $RMSEA=.040$, $p=1.000$ C.I. 90% [.038; .042]).

Reliability

The internal consistency of these twelve subscales was also explored. All subscales presented an acceptable Cronbach's alpha as shown in table 4.

Table 4 – Internal consistency of the twelve subscales

Subscales	Nr. of items	Cronbach's alpha for Severity
Anxiety	5	0.899
Depressive mood	5	0.870
Aches and pain	6	0.859
Cognitive impairment	3	0.815
Vasomotor symptoms	3	0.847
Mouth, nails and hair changes	3	0.701
Perceived loss of control	3	0.674
Numbness	2	0.793
Urinary symptoms	2	0.653
Sexual symptoms	2	0.716
Skin and facial hair changes	2	0.613
Body shape	2	0.737

Sensitivity

To address sensitivity, the range of the Likert-type scale was explored as well as the skewness and kurtosis values for the severity of all symptoms.

Table 5 – Minimum and maximum values, skewness and kurtosis for the 38 items

Item	Minimum	Maximum	Skewness	Kurtosis
1 – Feeling tense or nervous	0	4	.326	-.497
2 - Getting easily excited (that is, agitated, excited or startled)	0	4	.599	-.572
3 – Panic attacks	0	4	2.902	8.236
4 – Difficulty in concentrating	0	4	.696	-.224
5 – Feeling tired or with lack of energy	0	4	.324	-.762
6 – Loss of interest in most things	0	4	1.249	.620
7 – Crying spells	0	4	1.686	2.092
8 – Irritability	0	4	.625	-.165
9 – Being unhappy with your personal life	0	4	.976	.009
10 – Feeling anxious or nervous	0	4	.448	-.472
11 – Felling a loss or lack of memory	0	4	.575	-.594
12 – Overall decrease in the performance capacity (for example, doing less things than you are used to do)	0	4	.732	-.368
13 – Feeling depressed, down or sad	0	4	.696	-.350
14 – Wanting to be alone	0	4	.711	-.597
15 – Feeling dizzy or fainting	0	4	2.194	4.703
16 –Sense of tension and pressure on the head or body	0	4	.849	-.160
17 –Numbness or tingling in some body parts	0	4	.844	-.409
18 – Headache	0	4	.735	-.282
19 – Pain in the muscles and	0	4	.338	-.961

joints

20 – Loss of sensation on the hands or feet	0	4	1.464	1.050
21 – Difficulty in breathing or breathlessness	0	4	1.836	2.643
22 – Pain on the back of the neck or head	0	4	.455	-.882
23 – Decrease in physical strength	0	4	.640	-.580
24 – Weight gain	0	4	1.066	.122
25 – Increased facial hair	0	4	1.862	2.844
26 – Changes in the appearance, texture or tone of your skin	0	4	1.713	2.402
27 – Feeling bloated	0	4	.581	-.772
28 – Lower back pain	0	4	.189	-1.054
29 – Urine loss when laughing or coughing	0	4	1.257	.509
30 – Hot flashes	0	4	.955	-.453
31 – Night sweats	0	4	1.004	-.338
32 – Excessive sweating	0	4	1.573	1.516
33 – Loss of sexual interest	0	4	.580	-.893
34 – Excessive wish to urinate	0	4	1.610	1.782
35 – Vaginal dryness (feeling of dryness, burning and problems during sexual intercourse)	0	4	1.085	-.034
36 – Hair problems (for example, insufficient or excessive hair)	0	4	1.580	1.640
37 – Nail changes (changes in colour, thickness, appearance of the nail, etc.)	0	4	1.693	1.932
38 – Mouth and teeth problems (pain and burning feeling in the	0	4	1.475	1.430

gums, altered taste, increased sensitivity to hot and cold, dry mouth, etc.)

A structural model was built to explore if age was a confounding variable. The results showed that there is a negative and significant interaction in two sets of symptoms. This means that for both skin and facial hair changes ($\beta=-.183$; $p=.028$) and vasomotor symptoms ($\beta=-.228$; $p=.001$) age moderates the effect of menopausal status over these two sets of symptoms.

To evaluate the sensitivity of the subscales, minimum and maximum values, as well as skewness and kurtosis were explored for the severity of twelve sets of symptoms.

Table 6 - Minimum and maximum values, skewness and kurtosis for the twelve subscales

Subscales	Minimum	Maximum	Skewness	Kurtosis
Anxiety	0	4	.490	-.315
Depressive mood	0	4	1.050	.487
Aches and pain	0	4	.571	-.258
Cognitive impairment	0	4	.664	-.200
Vasomotor symptoms	0	4	1.134	.278
Mouth, nails and hair changes	0	4	1.616	2.449
Perceived loss of control	0	4	2.135	5.073
Numbness	0	4	1.134	.421
Urinary symptoms	0	4	1.502	1.851
Sexual symptoms	0	4	.790	-.411
Skin and facial hair changes	0	4	1.698	2.807
Body shape	0	4	.836	-.094

Peri- versus Post-menopausal participants regarding symptoms' severity

The mean severity was calculated for each subscale, for peri- and post-menopausal participants separately, and a t-Student test was used to analyse if both groups diverged significantly in the twelve groups of symptoms, as observed in table 7.

Table 7 – Mean severity scores and t-Student for peri- and post-menopause comparison

Symptoms	Peri- <i>M(SD)</i>	Post- <i>M(SD)</i>	T-test <i>t(df) sig[†]</i>
Depressive mood	1.0 (.909)	1.0 (.952)	-1.029(676) n.s.
Cognitive impairment	1.1 (.952)	1.2 (.962)	-1.352(674) n.s.
Aches and pain	1.2 (.873)	1.4 (.934)	-2.395(684) *
Vasomotor symptoms	0.7 (.979)	1.1 (1.186)	-4.456(660.440) ***
Numbness	0.8 (1.012)	1.0 (1.058)	-2.003(665) *
Mouth, nails and hair changes	0.6 (.846)	0.7 (.833)	-.946(655) n.s.
Anxiety	1.4 (.895)	1.4 (.926)	-.287(683) n.s.
Skin and facial hair changes	0.5 (.758)	0.7 (.830)	-3.433(627.359) ***
Urinary symptoms	0.6 (.876)	0.9 (1.021)	-3.133(648.911) **
Sexual symptoms	0.9 (1.018)	1.4 (1.208)	-5.634(649.321) ***
Body shape	1.1 (1.042)	1.1 (1.094)	-.195(667) n.s.
Perceived loss of control	0.4 (.624)	0.5 (.695)	-1.697(642.851) n.s.

[†]2-tailed; n.s. not significant; * $p \leq .05$; ** $p \leq .01$; *** $p \leq .001$

DISCUSSION

Patient-reported outcomes are useful not only in the context of research, but also in clinical settings, as they allow the identification of psychological and physical symptoms that might be unobserved, monitoring symptoms' evolution and exploring pertinent information regarding the implemented treatment [19]. Specifically for menopause, the literature evidences the importance of the availability of indexes that cover both menopausal symptoms and the potential side effects of hormone therapy [20].

Some of the nine excluded items have been receiving some attention in the menopause literature. Specifically, difficulty in sleeping has been associated with vasomotor symptoms and psychosocial factors [21,22]. This was not found in the present research, given that this particular item was never associated with the vasomotor symptoms scale. The low severity of vasomotor symptoms in this community sample might partially explain the absence of this association.

Dysuria (difficulty in urinating) was also excluded, although there was clearly a factor compiling urinary symptoms (which was kept due to its good psychometric characteristics and theoretical sustainability) with which this item was never related. This may evidence that dysuria is not an observed urinary symptom in this sample of peri and post-menopausal women.

The poor discriminant validity between some subscales, namely between perceived loss of control and depressive mood; anxiety, aches and pain; mouth, nails and hair changes, might evidence that some psychological and physical symptoms may enhance the perception of decreased control.

Breast tenderness and very strong and/or irregular vaginal bleeding, although being related with hormonal changes [23] and hormonal therapy side effects [24], and therefore important items to include in a menopausal symptoms scale, showed, in this study, a very low internal consistency. As a result, this factor was not included in the final version of the inventory.

The Menopause Symptoms' Severity Inventory provided data with good psychometric properties. Thus, the MSSSI-38 may be used to accurately measure the severity of menopause symptoms, considering both the frequency and intensity of each symptom. The inclusion of these two evaluation elements is important, given that the times a symptom occurs (frequency) and the intensity (how intense/strong) of the symptom are two significantly different ways of evaluating it, as shown above. As analysed, thirty of the thirty-eight symptoms presented statistically significant differences between their frequency and intensity measurements.

In addition, it is also shown that the symptoms' frequency assessment presents higher means when compared with intensity: except for item three, "panic attacks" (where frequency is lower than intensity) and items seven, "crying spells", and eighteen, "headache" (that present an equal mean frequency and intensity) all symptoms are more frequent than intense. Hence, studies considering only intensity may obtain lower levels of reported symptoms than those assessing the frequency of each symptom. This conclusion is supported by a prior study [25] regarding the vasomotor symptoms: although 57% of women in their study reported hot flashes, only 9% considered these to be bothersome; likewise, night sweats were manifested by 36% of participants however only 6% considered them to be troublesome.

This inventory allows the measurement of twelve types of symptoms, of both physical and psychological nature. Thus, it allows the calculation of twelve distinct indexes of symptoms severity, corresponding to the twelve subscales of this instrument.

Results show that the mean severity of symptoms is low (ranging from 0.6 to 1.4 in a scale from 0 to 4) in both peri- and post-menopausal women. This supports the idea that the great majority of women in this community sample do not present a high severity of menopausal symptoms. This is congruent with a previous study [26] which concluded that, although menopausal symptoms are common in middle-aged women, they are usually not perceived as problematic. Also, it has been concluded that a higher educational level is associated with less symptoms complaints [21,27]; given that a large number of participants has a university degree (specifically, 37% of the total sample), this might also explain the low severity of menopausal symptoms reported. However, there is also the possibility that the self-report methodology has resulted in an underreport of the symptoms; as examined elsewhere [28], highly symptomatic participants underreported the number of objective (physiological) hot flashes by 43%.

Nevertheless, the low severity of symptoms might be due to the fact that this is a community and not a clinical sample. That nature of the sample aims to overcome a limitation that is usually seen in menopausal research which is the fact that many studies use clinical samples, excluding the extrapolation to a non-clinical population [29].

Moreover, most women in this research were not taking hormonal therapy nor herbal/soy products to decrease menopausal symptoms (90 and 73.2% of peri- and post-menopausal women respectively did not take any medicine or supplement to manage menopausal symptoms), thus, the probability of the symptoms being under-reported due to medication is diminished. However, the possibility that the subgroup of women taking hormone therapy (or herbal/soy therapy) may have reported lower levels of symptoms than they would have if therapy was not being used, cannot be discarded.

An increase on symptom's reporting is usually expected during the menopausal stages' progression [27]. Melby, Lock and Kaufert [30] evidence that, although symptom reporting during pre-menopause is consistently lower, when compared with peri- and post-menopause phases, it is still not unanimous in which one of the two latter menopausal stages (peri- or post-menopause) higher rates of symptoms are reported. Regarding the hot flashes, its prevalence has been evidenced as higher in post than in peri-menopausal women: 37% of pre-, 48% of early peri-, 63% in late peri- and 79% in post-menopausal women have reported these vasomotor symptoms in a previous

research [31]. Guthrie et al. [32] have also concluded that the presence of higher rates of bothersome hot flushes is observed two years after the final menstrual period. However, this conclusion is not unanimous, since some authors have verified a decrease in menopausal symptoms from peri- to post-menopause [33], or found peri-menopausal women more prone than their counterparts in pre- and post-menopause to experience aches and pains (head, back or joint); however, vasomotor symptoms were more prevalent in post-menopause, remaining high in this stage [34].

In this research, although, no analysis was made in terms of comparing early with late peri-menopause; the differences between women in menopausal transition (peri-) and post-menopause are not significant in all symptoms. The symptoms that increase significantly are eminently physical (aches and pain, vasomotor symptoms, numbness, skin and facial hair changes, urinary and sexual symptoms). Psychological symptoms like depressive mood, anxiety and perceived loss of control, do not increase significantly from menopausal transition to post-menopause. This conclusion is congruent with a previous study which found that post-menopausal women do not present a higher prevalence of psychological symptoms, reporting only more hot flashes and night sweats [4].

The same research, when comparing women in pre- and post-menopause, did not find significant differences in the occurrence of the vast majority of symptoms (anxiety, depression, somatic and sexual symptoms did not diverge between the two groups) [4]. However, the present research evidences that when comparing women in pre- with participants in menopausal transition and post-menopause, differences in symptoms measurement are observed indicating different measurement weights according to the menopausal status.

Memory functioning has also been observed to be decreased in peri-menopausal women when compared with post-menopausal counterparts [35]. This was not observed in the present sample given that there are no significant differences in cognitive impairment (which encompasses a memory self-reported assessment) between peri- and post-menopausal women.

The results also evidence that age moderates the effect of menopausal status over two types of symptoms (vasomotor and skin and facial hair changes). Since the interaction is negative, the impact of menopausal status over the symptoms is suppressed by age. Therefore, as age progresses, vasomotor symptoms and changes in skin and facial hair become less influenced by menopausal status. Similar conclusions have been mentioned

in the literature, namely, that somatic symptoms of menopause are negatively and significantly related with age progression [36] and also that skin changes are observed in the aging process [37].

Although the inventory was applied to women from 42 to 60 years old, it is believed that this instrument will also be useful in assessing post-menopausal symptoms in women older than 60. Further research with this age group and other ethnicities and cultures is recommended, since this is a mostly Caucasian Portuguese sample.

In conclusion, the Menopausal Symptoms' Severity Inventory is an instrument with good psychometric properties, which assess menopausal symptoms, both in frequency and intensity, in order to obtain an accurate degree of symptoms' severity.

This inventory has been proven to have factorial, convergent and discriminant validity. Moreover, criterion validity for some scales as well as a good reliability and sensitivity for all scales has been shown.

More studies are needed to confirm this structure with other samples (for example, clinical ones, given that this inventory was generated in a community sample) and cultures (since there are evidences that cultural and ethnical differences may influence the menopause experience).

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CONFLICT OF INTERESTS

The authors report no conflicts of interest. The authors alone are responsible for the content and writing of the paper.

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**Perceived control, lifestyle, health, socio-demographic factors and menopause:
impact over hot flashes and night sweats**

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Abstract

Objective: To develop a model to predict hot flashes (HF) and night sweats' (NS) perceived severity in symptomatic women. *Methods:* Cross-sectional study encompassing a vasomotor symptomatic community-based sample, of 243 women. Menopausal status was asserted according to the 'Stages of Reproductive Aging Workshop' criteria and perceived control was measured by a validated Portuguese version of the Perceived Control over Hot Flushes Index. Structural equation modelling was used to investigate a causal model of the self-reported severity of both HF and NS comprising age, marital status, parity, professional status, educational level, family annual income, recent diseases and psychological problems, medical help-seeking behaviour to manage menopause, hormone therapy and herbal/soy products use, menopause status, alcohol, coffee and hot beverages intake, smoking, physical exercise, body mass index and perceived control. *Results:* Significant predictors are hormone therapy for both HF ($\beta=-.245;p=.022$) and NS' perceived severity ($\beta=-.298;p=.008$), coffee intake again for HF ($\beta=-.234;p=.039$) and NS ($\beta=-.258;p=.029$) and perceived control for HF ($\beta=-1.0;p<.001$) and NS ($\beta=-1.0;p<.001$). The variables explain respectively 67% and 72% of the variability of HF and NS' severity. Moreover, women with high perceived control had a significantly low frequency ($t(235)=2.022;p=.044$) and intensity of HF ($t(217)=3.582;p<.001$); similarly, participants with high perceived control presented a low frequency ($t(235)=3.267;p<.001$) and intensity

($t(210)=3.376;p<.001$) of NS. *Conclusion:* Perceived control is the strongest predictor of self-reported severity of both HF and NS. Other causal predictors are hormone therapy and caffeine intake. All three are associated with a lower severity of the two vasomotor symptoms.

Key-words: hot flashes; night sweats; predictors; perceived control; lifestyle; socio-demographic.

1. Introduction

Most women experience vasomotor symptoms during midlife, being common an increase in the reporting of these symptoms as women go from one menopausal stage to the next [1]. However, and although around 70% of women report vasomotor symptoms [2], only a few consider them bothersome. In a prior study just 9% considered hot flashes (HF) as bothersome, and 6% described night sweats (NS) as troublesome [3]. Moreover, it has been evidenced that these are considered problematic by 12-20% of women [2,4]. Regarding the menopausal stages, it has been shown that late perimenopause (during which amenorrhea periods of at least two months may occur) and post-menopause (which starts after the final menstrual period) [5] are strongly associated with bothersome HF reporting [1].

Despite its physiological nature, it has been evidenced that socio-demographic, lifestyle, health and menopause-related variables have an impact on the vasomotor symptoms' report. Specifically, using hormonal therapy decreases their bothersomeness [6,7], having a good health status diminishes both their frequency and distress [3], less medical help-search is associated with less frequent and less severe symptoms [8-10], low caffeine intake predicts a lower symptoms' severity [11,12], high perceived control is related with lower frequency and distress [13], higher educational level predicts lower prevalence and severity [4,8,14,15] and not being divorced is associated with lower bothersomeness [8] of vasomotor symptoms.

However, there are some characteristics that are not unanimous regarding their association with vasomotor symptoms. Alcohol [3,11,12,14,16], smoking [1,3,8,12,17], physical exercise [1,10,11,14,15], body mass index (BMI) [4,12,14,18-20], and educational level [3] present no consensus in literature given that they might predict

either an increase or a significant decrease in vasomotor symptoms' reporting. Some of these factors may also have an impact on both (HF and NS) or on only one symptom.

Moreover, the research developed with multiple health-related conditions has found that perceived control over symptoms is a strong predictor of less emotional distress [21], lower prevalence and severity of symptoms [22,23], and of health-protective behaviours [24].

This research has the objective of exploring if socio-demographic, health and menopause-related variables, as well as lifestyle and perceived control, are predictors of the vasomotor symptoms' severity (measured through frequency and intensity of HF and NS separately) in a symptomatic community sample of pre-, peri- and post-menopausal women.

2. Material and Methods

2.1 Participants

A community sample of 243 women, who reported hot flashes (HF) and/or night sweats (NS) in the previous month, filled in the self-report measures to assess the vasomotor symptoms' frequency and intensity, perceived control, socio-demographic, health and menopause-related variables, and lifestyle characteristics. Table 1 describes this study's sample.

Table 1 – Characterization of participants in relation to socio-demographic, health, menopause-related and lifestyle variables

Characteristics	Participants	
	n	%
Age (<i>M</i> ; <i>SD</i>)	51.8±4.501	
Marital status		
Married or in a relationship	171	70.7
Not married nor in a relationship	71	29.3
Parity		
0	25	10.6
1	84	35.6

2	99	41.9
3	21	8.9
>3	7	2.9
Education		
Primary school	34	14.3
Middle school	65	27.4
High school	60	25.3
University degree	78	32.9
Professional status		
Active	197	82.8
Inactive	41	17.2
Family annual income		
≤ 10.000 €	56	26.7
10.001 – 20.000 €	52	24.8
20.001 – 37.500 €	54	25.7
37.501– 70.000 €	34	16.2
≥ 70.001 €	14	6.7
Recent disease		
Yes	62	26.3
No	174	73.7
Recent psychological problem		
Yes	55	23.1
No	183	76.9
Search for medical help to deal with menopause		
Yes	155	70.8
No	64	29.2
HT, herbal/soy therapy or Nothing		
HT	23	10.5
Herbal/soy therapy	31	14.1
Nothing	166	75.5
Menopausal status		
Pre-	15	6.3

Peri-	75	31.5
Post-	148	62.2
Body mass index (kg/m ²) (<i>M,SD</i>)	26.3±4.826	
≤ 24,9	112	46.9
> 24,9	127	53.1
Physical activity		
Yes	105	43.8
No	135	56.3
Smoking behaviour		
Current smoker	58	24.2
Current non-smoker	182	75.8
Alcohol consumption		
Yes	129	53.5
No	112	46.5
Coffee consumption		
Yes	208	86.3
No	33	13.7
Hot beverages intake		
Daily	198	87.6
Occasionally or never	28	12.4

2.2 Procedure

A community sample was mainly recruited through schools and universities in the city of Lisbon. Questionnaires and informed consents were given to students, inside sealed envelopes, who would take them to their mothers. The American Psychological Association's standards on ethical treatment of participants were followed. A written informed consent form was delivered to all participants, explaining the aims of the study, emphasizing that the participation in this research was voluntary and that participants could interrupt their collaboration at any time, without any consequences. Each participant kept a copy of the informed consent form, where the contacts of the responsible researcher were included (so that women could contact her if any question emerged).

The inclusion criteria in this research were gender (female), age (between 42 and 60 years old) and having had some vasomotor symptoms in the last month (HF and/or NS).

The measures were filled in by 302 women. However, from these, 59 were excluded for not providing information regarding the HF and NS' frequency and intensity, or mentioned that in the previous month they had never experienced vasomotor symptoms. Two hundred and forty three women with vasomotor symptoms filled in the self-report measures mentioned above.

2.3 Measures

The instruments included the assessment of HF and NS during the previous month, both in frequency and intensity, using a five-point Likert scale (from 1 to 5) that ranged from “never” to “daily or almost every day”, and from “not intense” to “extreme intensity”, respectively. The perceived severity of HF and NS was given by the mean between the frequency and intensity values of each symptom.

To evaluate perceived control, the Portuguese validated version of the Perceived Control over Hot Flashes Index was applied [13]. This version excluded item 15 (“I want to learn as much as I can about hot flashes and the menopause”) given this item was not significantly correlated with the construct, presenting a negative standardized estimate ($\lambda=-.105$; $p=.134$), and only 1.1% of its variance was explained by the construct. Moreover, the modification index ($MI=33.785$) evidenced this item as the strongest negative influence on the quality of fit of the measurement model.

The 14-item instrument presented good psychometric properties. Confirmatory factor analysis of the instrument presented a good fit ($X^2/df=2.239$; $CFI=.888$; $GFI=.909$; $RMSEA=.072$, *I.C.* 90% [.057; .086] $p=.009$). The reliability (estimated by Cronbach's alpha) was also good (.78).

The menopausal status was defined according to the Stages of Reproductive Aging Workshop's criteria [5]. Pre-menopausal women were identified for not having any changes in their menstrual cycle. Peri-menopausal participants would report a variable cycle length (a difference of more than seven days, than usual) or had skipped two or more cycles and had an amenorrhea interval superior to sixty days. Post-menopausal women had, at least, a twelve-month period of amenorrhea.

Socio-demographic characteristics (age, marital status, parity, professional status, educational level, family's annual income), as well as health and menopause-related (recent diseases and psychological problems, medical help-seeking to manage menopause, hormone therapy and herbal/soy products), and lifestyle characteristics

(alcohol, coffee and hot beverages intake, smoking, physical exercise and body mass index) were assessed.

Lifestyle habits (namely, alcohol, coffee, hot beverages, smoking and physical exercise) were assessed in terms of presence/absence, amount and/or frequency. Hence, physical exercise was measured in terms of times per week, and during how many minutes, the participant exercised; a mean between weekly frequency and duration was used in the multivariate model. Coffee and hot beverages intake, when present, was assessed in a four-option scale, ranging from occasionally to more than five per day. Alcohol intake, when observed, was measured both in terms of frequency (daily, every weekend or rarely) and quantity (until I feel drunk, moderately or less than a glass per occasion); a mean value of both translates the alcohol consumption variable, in the causal model. Finally, for current smokers, smoking was quantified in a six-point Likert-type scale that ranged from less than 10 cigarettes per month, until more than 40 cigarettes per day; this quantification integrated the structural equation model to assert the influence of smoking on the vasomotor symptoms' perceived severity.

2.4 Statistical Analysis

Missing values were imputed for variables, where its frequency was lower than 10% of the sample. This was done using the mean interpolation method.

Multicollinearity between the independent variables was explored with the variance inflation factor given by SPSS Statistics (v. 19, IBM SPSS Inc, Chicago, IL). All variables presented a value below 5, indicating the absence of collinearity [25,26].

To test the causal model for vasomotor symptoms, a structural equation model was built relating the two dependent variables (HF and NS' perceived severity) with twenty independent variables (namely, perceived control, age, marital status, parity, professional status, family's annual income, educational level, transition from pre- to peri- and from peri- to post-menopause, medical help seeking behaviour, use of hormone therapy or herbal/soy products for menopausal symptoms, presence of a recent psychological problem or a disease, alcohol, coffee and hot beverages intake, smoking, physical exercise and body mass index). The model was evaluated with SPSS AMOS software (v. 18, IBM SPSS Inc, Chicago, IL). The quality of the fit of the structural model was given by chi-square statistics (X^2/df), comparative fit index (*CFI*), goodness of fit index (*GFI*) and root mean square error of approximation (*RMSEA*), and it were used the reference values currently practiced in structural equation modelling [26,27].

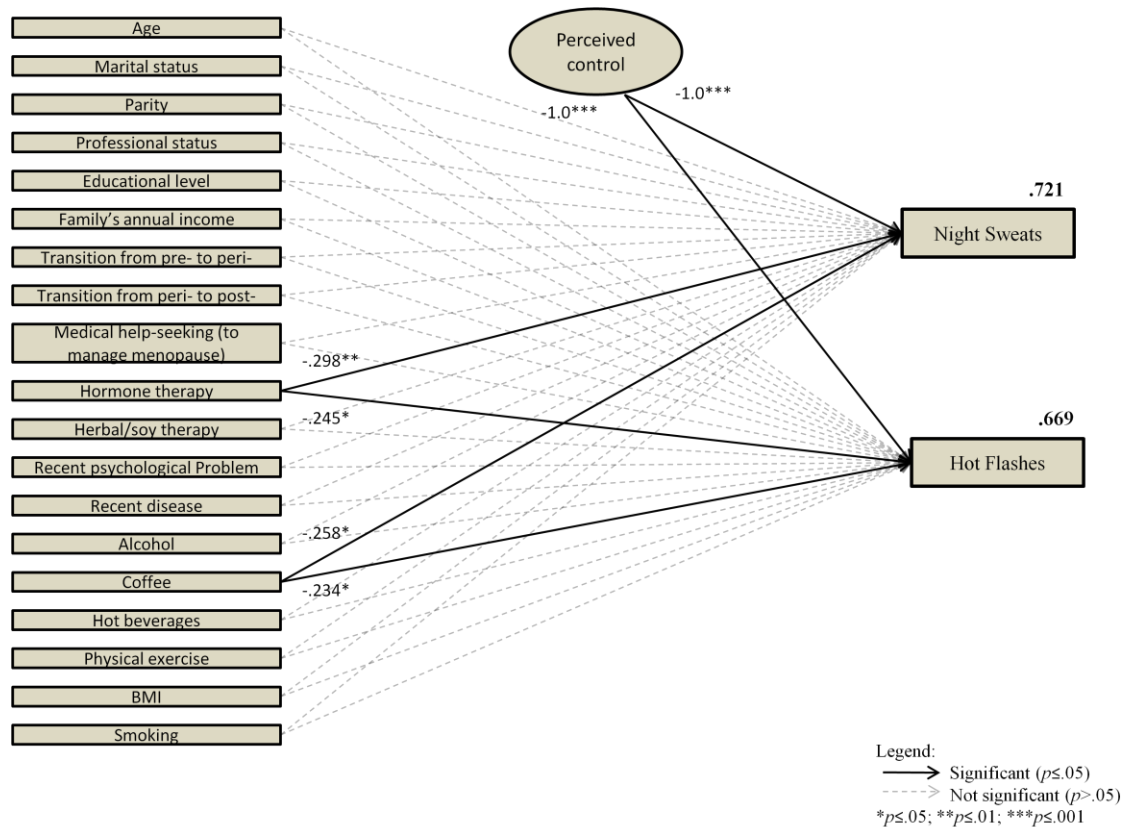
A two-step approach was employed to evaluate the causal structural model. First, the factor's measurement model was evaluated to demonstrate an acceptable fit. Thereafter, the structural causal model, encompassing the two dependent and the twenty independent variables, was adjusted and the significance of the causal trajectories was evaluated.

Group differences were evaluated with the one-way ANOVA (followed by post-hoc Tukey's test) and Student-t tests implemented in SPSS Statistics (v. 19, IBM SPSS Inc, Chicago, IL). The variances' homogeneity was confirmed prior to Student t-tests. To compare women with high perceived control (HPC) with participants with low perceived control (LPC), a median split was used.

3. Results

The measurement model ($X^2/df=2.786$; $CFI=.891$; $GFI=.910$; $RMSEA=.077$ C.I. 90% [.065;.090] $p<.001$), as well as the causal model ($X^2/df=1.593$; $CFI=.888$; $GFI=.890$; $RMSEA=.049$, C.I. 90% [.042; .057]; $p=.534$), showed a good fit. Significant predictors are highlighted in Figure 1.

Figure 1 – Causal Model for Vasomotor Symptoms' Severity: its relation with socio-demographics, health and menopause-related variables, lifestyle and perceived control



As shown, the causal model accounts for 72% and 67% of the variability of night sweats (NS) and hot flashes' (HF) perceived severity, respectively. Significant predictors are hormone therapy for both HF ($\beta = -.245$; $p = .022$) and NS' perceived severity ($\beta = -.298$; $p = .008$), coffee intake again for HF ($\beta = -.234$; $p = .039$) and NS ($\beta = -.258$; $p = .029$), and perceived control for HF ($\beta = -1.0$; $p < .001$) and NS' perceived severity ($\beta = -1.0$; $p < .001$).

The median value of perceived control was 34.1 (SD=5.977). This value was similar to the ones found in previous studies [23,25]. Low perceived control (LPC), that is, below 34.1, was evidenced by 104 women; 139 demonstrated a high perceived control (HPC), translated by scores above 34.1. In this symptomatic sample there are significant differences between women who have HPC and LPC, regarding both frequency and intensity of vasomotor symptoms (table 2).

Table 2 – Differences in frequency and intensity of hot flashes (HF) and night sweats (NS) between women with high (HPC) and low perceived control (LPC)

	LPC	HPC	t-Student HPC vs. LPC
	<i>M(SD)</i>	<i>M(SD)</i>	<i>t(df)p^a</i>
Frequency of HF	3.4(1.209)	3.1(1.172)	2.022(235)*
Intensity of HF	3.4(1.188)	2.8(1.110)	3.582(217)***
Frequency of NS	3.3(1.400)	2.7(1.279)	3.267(235)***
Intensity of NS	3.2(1.388)	2.6(1.172)	3.376(210)***

^a *p* (2-tailed); * *p* ≤ .05; *** *p* ≤ .001

Perceived control was not associated with age, as demonstrated by a low and not significant Pearson correlation ($r_p = -.040$; $p = .536$).

Regarding perceived control in women who use hormone therapy (HT), herbal/soy products or nothing, to manage the menopausal symptoms, there are significant differences between groups. Participants who do not take anything for the symptoms present a higher perceived control than those who take HT ($MD = .275$; $p = .009$). Women who use herbal/soy products also demonstrate higher perceived control than those who do HT ($MD = .297$; $p = .026$). No significant differences were observed between women who use herbal/soy therapy and those who do not use anything to manage the symptoms ($MD = .022$; $p = .960$).

To explore if these differences could be explained by different perceived severity scores, the three groups (women who used HT, who used herbal/soy products and who use nothing to manage their symptoms) were compared concerning the vasomotor symptoms' severity. The results show no differences between the three groups, not in relation to HF ($F(2) = 1.848$; $p = .160$) nor to NS' perceived severity ($F(2) = 1.491$; $p = .227$).

4. Discussion

Socio-demographic variables (such as age, marital status, professional status, parity, educational level, and annual income) and health-related variables were not significant predictors of hot flashes (HF) and night sweats' (NS) perceived severity. These results go against what has been evidenced in other studies [3,4,8-10,14,15] . Nevertheless, this absence of relation has been reported elsewhere [28].

Although alcohol [3,11,12,14,16], hot beverages [12], physical exercise [1,10,11,14,15], body mass index (BMI) [4,12,14,18-20] and smoking [1,3,8,12,17] have been considered predictors of vasomotor symptoms, the vast majority of lifestyle factors presented no causal associations with the perceived severity of these symptoms, in this sample of symptomatic women.

In a previous research, in which high BMI was associated with HF, participants had a higher mean BMI (29.8 kg/m²) [28] than the one found in this study ($M=26.3$; $SD=4.826$), which can partially explain the absence of a causal relation between both variables.

Hormone therapy (HT) significantly predicted a lower perceived severity of both HF and NS, which is congruent with prior studies [6,7]. Moreover, and as Reynolds [13] also found, perceived control varies significantly between women who use HT, herbal/soy products or nothing for menopausal symptoms: participants who have vasomotor symptoms, and use no medication or use herbal/soy products, have a higher perceived control than those who are taking HT. This result is not due to differences in the symptoms' severity since there are no significant differences between women who are taking HT, herbal/soy products and women who do not use any medication/supplements. Additionally, it has been shown that, in this symptomatic sample, women who present high perceived control (scores greater than 34) have a lower frequency and intensity of both vasomotor symptoms, than women who present a low perceived control. Although the construct of perceived control is oriented to HT, significant differences are also evidenced in terms of NS.

Congruently with Reynolds' [13,29] results, there was no association between age and perceived control. This was also supported by a previous study, which evidences that perceived control and health changes are strongly associated in older women (above 65 years old) but not in middle-aged participants [30].

Caffeine intake has been evidenced as a positive predictor of HF in other researches [11,12]. However, in this study, the amount of coffee consumed is a strong negative predictor of the vasomotor symptoms' perceived severity: women who drink more coffee have less severe vasomotor symptoms than the ones who drink less coffee.

Caffeine is a central nervous system stimulant [31] and produces a more rapid and clearer flow of thoughts, limits fatigue and drowsiness, increases concentration and allows a more sustained intellectual ability, increases motor activity and diminishes reaction's time [32]. Therefore, it is possible that these behavioural outcomes, of caffeine intake, are partially associated with effective coping strategies, which would eventually decrease vasomotor symptoms. Also, certain selective serotonin-reuptake inhibitors (SSRIs), which can be used in the treatment of HF [33], have in their metabolism the same isoenzyme that is involved in caffeine's metabolism [31]. Despite this high potential for pharmacokinetic interaction, due to the inhibition of SSRI's metabolism, coffee intake predicts a decrease in the self-reported severity of vasomotor symptoms, in this sample. It can be also hypothesized that this strong predictive effect is a reflex of the interaction of caffeine with other substances (other than SSRIs), that were not controlled in this research and could promote the reduction of the vasomotor symptoms' severity. Moreover, decreased estrone levels have been observed in women with vasomotor symptoms [34]. In this context, it has been confirmed that caffeine was positively associated with estrone levels [35]. These results might explain how coffee can be a strong negative predictor of HF and NS' severity. This conclusion needs further exploration and confirmation in other samples, controlling for other sources of caffeine intake (such as tea and soft drinks).

Perceived control has been reported to have significant associations with fewer symptoms' reporting in diverse areas [21-23], and also in relation to HF [13,36]. In this sample, this association was very strong and significant, after controlling for all the socio-demographic, health and menopause-related, and also for the lifestyle characteristics mentioned above. In fact, perceived control had the strongest negative impact on the vasomotor symptoms' perceived severity. It can also be hypothesized that, since perceived control has been associated with behavioural changes in other areas [24], this evidence might translate some behavioural adjustments (for example, dressing in layers, avoiding spicy foods, effective stress management, among others) strongly associated with a sense of control that may have led to the reduction of the vasomotor symptoms' severity. The fact that perceived control had the strongest

negative impact in predicting the vasomotor symptoms' self-reported severity emphasizes the importance of cognitive appraisal. Reynolds [13] also highlighted this when concluding that, although the distress associated with HF was higher in women who experienced this symptom more frequently, low levels of perceived control were even more predictive of the distress caused by these symptoms than frequency itself. Furthermore, cognitive appraisals have been identified as accounting for some of the individual variation regarding HF [37].

These conclusions can have an impact on how cognitive appraisals play an important role in the symptoms' reporting and experiencing. Additionally, they are supported by the fact that around 20 to 40% of the HF's frequency can decrease with placebo effects alone [38], which accentuates how psychological variables (in this case expectations) may play an important role on the vasomotor symptoms' severity.

However, regarding the present study it can also be hypothesized that a higher perceived control is a consequence of lower HF and NS' severity. Therefore, it is recommended that further investigation clarifies this, evidently strong, association.

The sample size (namely, 243 participants) was adequate for this type of statistical analysis given it was applied a rule of thumb of ten subjects per manifest variable, as is current practice in structural equation modelling [26,39]. Nevertheless, the fact that this research has a cross-sectional design, and uses a sample where a third of the women have a college degree, limits the generalization of these results.

5. Conclusions

Perceived control is the strongest negative predictor of vasomotor symptoms' severity: women with high levels of perceived control report lower symptoms' severity, than women with low perceived control; this result is independent of socio-demographic, health, menopause-related and lifestyle factors. The use of hormone therapy and coffee intake are also significant negative predictors of vasomotor symptoms' severity. The causal model explored in study accounts for 72% and 67% of the variability of night sweats and hot flashes' perceived severity, respectively.

This research emphasizes the importance of perceived control on vasomotor symptoms' management and contributes with new data about the impact of caffeine on these symptoms.

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Why some women have them and others don't? Predictors of hot flashes and night sweats occurrence in midlife women

Short title: Occurrence of vasomotor symptoms' predictors

Submitted to Menopause

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ABSTRACT

Objective: This study explores what predicts the occurrence of hot flashes (HF) and night sweats (NS) in middle-aged women.

Methods: A community sample of 992 women, aged between 42 and 60 years, answered a questionnaire to collect socio-demographic, health and menopause-related, and lifestyle information. The menopausal status was determined based on STRAW criteria. Anxiety, stress and depression were assessed with a validated instrument; HF and NS were evaluated in terms of presence, frequency and intensity. Structural

equation modeling was used to build a causal model to predict the occurrence of both symptoms, in a sample of pre-, peri- and post-menopausal women. Additionally, ANOVA and t-Student tests were also applied.

Results: Age was a significant predictor of HF ($\beta=.088;p=.030$); being married/in a relationship was correlated with HF ($\beta=.111;p<.001$) and NS ($\beta=.118;p<.001$); parity also predicted HF ($\beta=-.075;p=.011$) and NS ($\beta=-.081;p=.008$) occurrence. The presence of a disease predicted only NS ($\beta=.080;p=.010$). Contrary to expectations, the use of herbal/soy therapy predicted the manifestation of HF ($\beta=.087;p=.004$) and NS ($\beta=.086;p=.006$). Alcohol was associated with NS' presence ($\beta=.120;p<.001$). Stress predicted NS ($\beta=.154;p=.006$), whereas depression was linked to HF's ($\beta=.149;p=.006$) occurrence. Being peri-menopausal and post-menopausal, as well as having searched for medical help, were also significant predictors of both HF and NS. Higher depression, stress and anxiety were observed in women with HF and NS.

Conclusions: The use of herbal/soy products predicted the presence of vasomotor symptoms. It is hypothesized that the differentiated influence of stress and depression in vasomotor symptoms is due to the psychological symptoms' nature.

Keywords: hot flashes; night sweats; occurrence; stress; depression; structural equation modelling.

INTRODUCTION

Most women experience hot flashes during midlife¹ and these tend to increase as women pass from one menopausal status to the following one². However, the prevalence of vasomotor symptoms does not have a similar distribution between menopausal stages and even in a given stage, in the population of menopausal women³. Vasomotor symptoms prevalence, which vary from 14% to 51% in pre-, from 35% to 50% in peri- and from 30% to 80% in post-menopause⁴, are frequently identified as the menopausal symptoms that lead to the search for medical advice during the menopausal transition⁵.

It has been suggested that vasomotor symptoms are the only ones having hypoestrogenism as their origin⁶. Additionally, although these symptoms, which reflect an actual increase of the core body temperature, are likely due to the decline in the

estradiol levels, there is still some debate around their mechanisms^{1,7}. While around 70% of women experience them, only 15-20% perceive them as problematic due its particular consequences (such as, social embarrassment, distress and physical discomfort)⁸.

Menopause and health-related variables

The literature evidences that the menopausal status influences the occurrence of vasomotor symptoms⁹. Also, a seeking for medical help behaviour has been predicted by a higher frequency, and bothersomeness, of vasomotor symptoms¹⁰⁻¹².

In a prior study, health status (namely, an excellent self-rated health) was found to have a positive and strong relation with night sweats' decrease, but not with hot flashes¹³.

The efficacy of treatments for vasomotor symptomatology has also been explored in the last decades. Hormone therapy can decrease successfully vasomotor symptoms^{14,15}; however, isoflavones and other herbal therapies' efficacy in decreasing hot flashes, remains unconfirmed given the disparity of controlled trials available¹⁵. There is also the evidence that many times women try several herbal extracts to deal with menopausal symptoms before searching for medical help⁵.

Stress, Depression and Anxiety

It has been observed in a small sample that, among several variables that included environmental temperature, levels of stress, coffee, alcohol and cigarette consumption, stress was the only factor that was strongly correlated with hot flashes¹⁶. Similarly, other studies have documented a positive relation between stress and hot flashes¹⁷, also demonstrating that a stress reduction intervention can decrease their severity¹⁸.

Depressed mood has, too, been associated with the presence of vasomotor symptoms^{19,20}, and depression is significantly higher in peri- and post-menopausal women with hot flashes than in their counterparts without this vasomotor symptom²¹.

Similarly, anxiety is strongly linked to hot flashes, independently of the menopausal status, estradiol levels and smoking²². However, it is suggested that this association is due to the overlapping of anxiety's somatic symptoms and hot flashes' physical manifestations, given that these vasomotor symptoms are connected with the somatic dimension of anxiety, but not with the affective one²³.

Lifestyle

Lifestyle habits can also contribute to hot flashes' manifestation⁹. Alcohol intake has also been identified as a strong predictor of vasomotor symptoms, increasing their risk^{13,17,24,25}. Nonetheless, another research concludes that alcohol intake is strongly associated with a decreased risk for hot flashes' occurrence, independently of the age and smoking behavior, and with alcohol users and non-users presenting similar hormonal profiles²⁶. A more frequent occurrence of hot flashes has also been connected with cigarette consumption^{10,17,27,28}; however, this was not true for night sweats¹³.

Strategies to decrease body temperature may be helpful in hot flashes' control²⁹. Hence, the ingestion of cold drinks and avoidance of coffee may be effective to some degree. In this context, caffeine intake has been identified as a predictor of hot flashes^{17,24}.

Frequent physical activity in midlife is connected with increased risk for hot flashes^{12,24,30}. However, in other studies, as physical exercise levels increased, hot flashes and night sweats' reporting decreased^{25,28}.

Body weight can also have an important role in the manifestation of vasomotor symptoms. The "thin" hypothesis suggests that an increase in adiposity is related with higher circulation of estrogens (due to the aromatization of androstenedione to estrone, which represents a supplemental source of estrogen promoted by the adipose tissue, among other reasons); hence, women with higher body mass index (BMI) would present a lower risk for hot flashes. On the contrary, thermoregulatory models – which see hot flashes as an attempt to dissipate heat and reduce body core temperature, and symptomatic menopausal women has having a narrowed thermoneutral zone – evidence that adipose tissue can restrain heat dissipation, therefore increasing hot flashes' occurrence³¹. BMI has been presented in studies as having both positive and negative correlations with vasomotor symptoms³. Specifically, research has evidenced that women with lower BMI tend to have more hot flashes than women with higher adiposity¹⁷. Contrary to this conclusion, other studies have documented that a higher BMI presents an increased risk for hot flashes occurrence^{25,31-33}. Differently from the previous conclusions, no association between body weight and hot flashes has also been evidenced³⁴.

Socio-demographics characteristics

Literature is not unanimous in the conclusions regarding the relation between socio-demographic variables and vasomotor symptoms. Socio-economic factors have been

associated with menopause-related symptoms⁹. However, the absence of a link was also found between hot flashes and socio-demographic factors³⁴.

Having an unskilled or no occupation and smoking were related elsewhere with the onset of hot flashes⁷. Frequency and bothersomeness of vasomotor symptoms were also linked with a lower education level and marital status (being divorced)¹⁰. A higher level of education has been also found to be associated with a decreased risk of night sweats, but not of hot flashes¹³. In a similar way, it was observed that more schooling years was strongly related with lower prevalence of hot flashes^{25,30,33}.

Many studies about menopause use clinical populations, which represents samples that will report more symptoms and complaints^{35,36}.

Because hot flashes may persist in some women, even concomitantly with hormone therapy⁵, and because for a minority of women these may endure into the late post-menopause³³, it is important to explore which factors are significant predictors of vasomotor symptoms' incidence.

Therefore, the aim of this study is to build a causal model for hot flashes and night sweats' occurrence, using a sample of pre-, peri- and post-menopausal women with and without vasomotor symptoms. Specifically, we will explore if psychological variables (namely, depression, anxiety and stress), health and menopause-related factors, lifestyle and socio-demographic characteristics, can predict the presence of these two vasomotor symptoms. Moreover, it is also our objective to demonstrate if there are significant differences between participants in different menopausal statuses, regarding hot flashes and night sweats' severity, and frequency of anxiety, depression and stress symptoms. Finally, we will analyze if women with vasomotor symptoms differ significantly from women without them in terms of psychological symptoms (anxiety, stress and depression).

METHODS

Participants

A community sample of 992 women in pre-, peri- and post-menopause was included in the present study. Table 1 describes the participants.

Table 1 – Characterization of the participants in relation to socio-demographic, health and menopause-related and lifestyle variables

Characteristics	Pre-menopausal		Peri-menopausal		Post-menopausal	
	n	%	n	%	n	%
n	282	28.4	298	30.1	412	41.5
Age (<i>M; SD</i>)	45.7 (3.230)		47.6 (3.787)		53.9 (4.207)	
Marital status						
Married or in a relationship	202	71.9	218	73.2	277	67.4
Not married or in a relationship	79	28.1	80	26.8	134	32.6
Parity						
0	21	7.6	22	7.5	42	10.4
1	83	30.0	97	33.1	104	25.9
2	123	44.4	136	46.4	186	46.3
3	36	13.0	32	10.9	49	12.2
>3	14	5.1	6	2.0	21	5.1
Education						
Primary school	19	6.9	28	9.5	62	15.4
Middle school	51	18.5	68	23.1	98	24.4
High school	79	28.6	91	31.0	109	27.1
University degree or higher	127	46.0	107	36.4	133	33.0
Professional status						
Active	259	92.5	262	89.7	317	78.7
Inactive	21	7.5	30	10.3	86	21.3
Family annual income						
≤ 10.000 €	47	19.5	60	23.9	91	26.1
10.001 – 20.000 €	66	27.4	66	26.3	85	24.4
20.001 – 37.500 €	63	26.1	65	25.9	79	22.6
37.501– 70.000 €	44	18.3	42	16.7	68	19.5
≥ 70.001 €	21	8.7	18	7.2	26	7.4

Recent disease						
Yes	35	12.5	51	18.0	95	23.8
No	245	87.5	233	82.0	304	76.2
Recent psychological problem						
Yes	33	12.0	43	14.8	76	18.9
No	243	88.0	247	85.2	327	81.1
Search for medical help to deal with menopause						
Yes	35	13.5	136	46.7	257	71.6
No	224	86.5	155	53.3	102	28.4
HT, herbal/soy therapy or Nothing						
HT	4	1.5	13	4.5	49	13.5
Herbal/soy therapy	0	0	16	5.5	48	13.3
Nothing	273	98.5	262	90.0	265	73.2
Hot flashes						
Yes	31	11.6	102	36.8	206	55.1
No	237	88.4	175	63.2	168	44.9
Night sweats						
Yes	57	21.0	115	40.9	200	51.7
No	214	79.0	166	59.1	182	48.3
Body mass index (kg/m ²)						
≤ 24,9	166	59.1	157	53.0	205	50.6
> 24,9	115	40.9	139	47.0	200	49.4
Physical activity						
Yes	118	41.8	127	43.1	197	48.8
No	162	57.9	168	56.9	207	51.2
Smoking behavior						
Current smoker	73	26.4	87	29.7	82	20.5
Current non-smoker	204	73.6	206	70.3	318	79.5
Alcohol consumption						
Yes	137	49.1	157	53.0	192	47.2

No	142	50.9	139	47.0	215	52.8
Coffee consumption						
Yes	242	86.4	266	89.6	344	84.3
No	38	13.6	31	10.4	64	15.7
Hot beverages intake						
Daily	244	89.7	260	92.2	333	87.6
Occasionally or never	28	10.3	22	7.8	47	12.4

Procedure

This cross-sectional study encompasses a community sample, which was mainly recruited through schools and universities in the city of Lisbon. The inclusion criteria in this research were gender (women), literacy and age (between 42 and 60 years). The American Psychological Association's standards on the ethical treatment of participants were followed. A written informed consent form was delivered to all participants, explaining the aims of the study, emphasizing that the participation in this research was voluntary and that participants could interrupt their collaboration at any time, without any consequences.

After receiving the informed consent and agreeing to participate in the research, a sample of 1,003 Portuguese women answered to all instruments adequately (45 were excluded due to lack of sufficient information). Of these, 992 gave sufficient information to be classified in one of the three menopausal statuses and were included in the present study.

Measures

Vasomotor symptoms

The instruments included the hot flashes and night sweats' items from the Menopause Symptoms' Severity Inventory, MSSSI-38³⁷, which evaluates the two symptoms, both in terms of frequency and intensity, in a five-point Likert-type scale (from 0 to 4) that range from "never" to "daily or almost every day" and from "not intense" to "extreme intensity", respectively. Hot flashes and night sweats' absence was defined as a "never" (0) and "not intense" (0) answer, regarding the assessment of both frequency and intensity. Women who reported in frequency scale an answer above 0 (that is, 1, 2, 3 or 4), independent of intensity, were classified as having hot flashes (or night sweats).

Depression, Anxiety and Stress

To evaluate stress, anxiety and depression a Portuguese adaptation of the Depression, Anxiety and Stress Scales^{38,39} was applied. Each subscale encompasses seven items which are evaluated in a 4-point Lykert-type scale, ranging from 1 (“did not apply to me”) to 4 (“it applied to me most of the time”), and the instrument presented good psychometric properties³⁹.

Menopausal and Health-related variables

The menopausal status was defined according to the Stages of Reproductive Aging Workshop’s criteria⁴⁰. Women in pre-menopause presented an absence of changes in their menstrual cycle. Peri-menopausal participants would report variable cycle length (a difference of more than seven days, than usual) or had skipped two or more cycles, having an amenorrhea interval superior to sixty days. Post-menopausal women had at least a twelve-month period of amenorrhea.

Besides menopausal status, the use of hormone therapy, herbal/soy products or nothing to manage menopause symptoms was also asserted. In addition, the search for medical help to manage these symptoms was also controlled.

Health status (both physical and psychological), as menopausal status, was self-reported. The participants were inquired about presence of a recent disease and of a psychological problem.

Lifestyle

Alcohol, hot beverages and coffee intake, smoking, physical exercise and BMI were assessed.

Lifestyle habits were explored in terms of presence/absence, amount and/or frequency. Hence, physical exercise was measured in terms of times per week, and during how many minutes, the participant exercised; a mean value of weekly frequency and duration was used in the multivariate model. Coffee intake, when present, was assessed in a four-option scale, ranging from “occasionally” to “more than five per day”. Alcohol intake, when observed, was measured both in terms of frequency (“daily”, “every weekend” or “rarely”) and quantity (“until I feel drunk”, “moderately” or “less than a glass per occasion”); a mean value of both translates the alcohol consumption variable, in the causal model. Finally, for current smokers, smoking was quantified in a 6-point Likert-type scale that ranged from “less than 10 cigarettes per

month”, until “more than 40 cigarettes per day”; this quantification integrated the structural equation model to assert the influence of smoking on the occurrence of hot flashes and night sweats.

Socio-demographic characteristics

Socio-demographic factors such as age, marital status, parity, professional status, educational level and family annual income were explored.

Statistical Analysis

Missing values were imputed for variables, where its frequency was lower than 10% of the sample. This was done using the mean interpolation method.

The distribution of the variables studied was explored with SPSS Statistics (v. 19, IBM SPSS Inc, Chicago, IL).

To explore if there were differences between the three menopausal statuses, regarding stress, anxiety and depressive symptoms' frequency, as well as hot flashes and night sweats' severity, a one-way ANOVA followed by post-hoc Tukey's test were used. Variances' homogeneity was confirmed and a Student t-test was implemented to evaluate the differences regarding stress, anxiety and depression levels between participants with and without vasomotor symptoms (hot flashes and night sweats) using SPSS Statistics (v. 19, IBM SPSS Inc, Chicago, IL).

Multicollinearity between the independent variables was explored with the variance inflation factor (VIF) given by SPSS Statistics (v. 19, IBM SPSS Inc, Chicago, IL). All variables should present a value below 5, indicating the absence of collinearity^{41,42}. Because in the structural model anxiety evidenced a VIF above this value (that is, equal to 66), this variable was excluded from the causal model, since it showed multicollinearity with other independent variables.

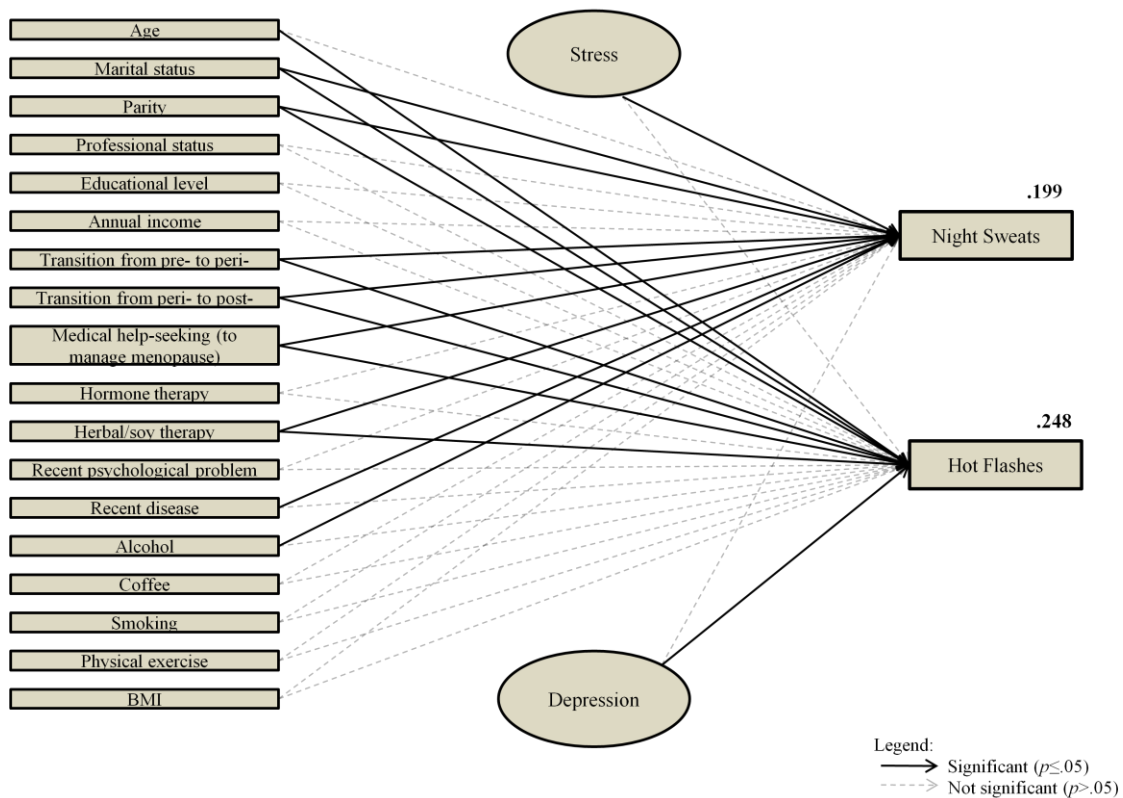
To test the causal model for the occurrence of hot flashes and night sweats, a structural equation model was built relating the dependent variable (the two vasomotor symptoms in terms of presence/absence) with the twenty independent variables (namely, age, parity, marital and professional status, income, education, presence of a recent psychological problem or a disease, transition from pre- to peri-menopause and from peri- to post-menopause, use of hormone therapy or herbal/soy products to manage menopause symptomatology, search for medical help to deal with menopause, alcohol and coffee intake, smoking, physical exercise, body mass index, stress and depression).

The model was evaluated with SPSS AMOS software (v. 18, IBM SPSS Inc, Chicago, IL). The quality of the fit of the structural model was given by chi-square statistics (X^2/df), comparative fit index (*CFI*), goodness of fit index (*GFI*) and root mean square error of approximation (*RMSEA*), using the reference values indicative of good fit currently practiced in structural equation modelling^{42,43}. A two-step approach was employed to evaluate the causal structural model. First, the factor's measurement model was evaluated to demonstrate an acceptable fit. Thereafter, the structural causal model, encompassing the two dependent and the twenty independent variables, was adjusted and the significance of the causal trajectories was evaluated.

RESULTS

The measurement model presented an acceptable fit ($X^2/df=5.454$; *CFI*=.955; *GFI*=.946; *RMSEA*=.070; $p<.001$; *C.I.* 90%=[.063;.077]) and the causal model had a good fit ($X^2/df=3.423$; *CFI*=.924; *GFI*=.941; *RMSEA*=.051; $p=.248$; *C.I.* 90%=[.048;.055]) . The structural (causal) model is shown in Figure 1.

Figure 1 – Causal model of hot flushes and night sweats' occurrence



As shown, the assessed variables account for 20% and 25% of the occurrence of night sweats and hot flushes variability, respectively.

The structural weights and significance of each variable as a possible predictor of hot flushes and night sweats presence are shown in table 2.

Table 2: Structural weights of independent variables (socio-demographics, health and menopause-related, lifestyle, stress and depression) in relation to the dependent variables (presence of vasomotor symptoms)

Trajectories	$\beta(SE)p$
Hot Flashes ← Age	.088(.004). 030
Night Sweats ← Age	.059(.004).158
Hot Flashes ← Marital status	.111(.033) ***
Night Sweats ← Marital status	.118(.034) ***
Hot Flashes ← N.º children	-.075(.013). 011
Night Sweats ← N.º children	-.081(.014). 008
Hot Flashes ← Professional status	-.009(.044).776

Night Sweats ← Professional status	-.019(.046).558
Hot Flashes ← Educational level	.007(.010).844
Night Sweats ← Educational level	.029(.010).442
Hot Flashes ← Household annual income	.003(.015).940
Night Sweats ← Household annual income	-.021(.016).575
Hot Flashes ← Transition from pre- to peri-menopause	.143(.038)***
Night Sweats ← Transition from pre- to peri-menopause	.096(.040).011
Hot Flashes ← Transition from peri- to post-menopause	.221(.047)***
Night Sweats ← Transition from peri- to post-menopause	.108(.049).028
Hot Flashes ← Medical help seeking (to manage menopause)	.178(.032)***
Night Sweats ← Medical help seeking (to manage menopause)	.161(.034)***
Hot Flashes ← Hormone therapy	-.046(.058).131
Night Sweats ← Hormone therapy	.018(.061).572
Hot Flashes ← Herbal/soy therapy	.087(.058).004
Night Sweats ← Herbal/soy therapy	.086(.061).006
Hot Flashes ← Recent psychological problem	-.031(.043).333
Night Sweats ← Recent psychological problem	-.032(.045).328
Hot Flashes ← Recent disease	.053(.038).074
Night Sweats ← Recent disease	.080(.039).010
Hot Flashes ← Alcohol intake	.049(.019).107
Night Sweats ← Alcohol intake	.120(.019)***
Hot Flashes ← Coffee intake	.010(.017).751
Night Sweats ← Coffee intake	.023(.018).488
Hot Flashes ← Hot beverages intake	-.033(.020).298
Night Sweats ← Hot beverages intake	-.044(.021).180
Hot Flashes ← Physical exercise	-.037(.000).210
Night Sweats ← Physical exercise	-.031(.000).299
Hot Flashes ← BMI	.057(.004).069
Night Sweats ← BMI	.047(.004).148
Hot Flashes ← Smoking	-.023(.009).454
Night Sweats ← Smoking	-.021(.009).514

Hot Flashes ← Stress	.091(.041).093
Night Sweats ← Stress	.154(.043). 006
Hot Flashes ← Depression	.149(.051). 006
Night Sweats ← Depression	.086(.053).121

β =standardized estimates; SE =standard error; *** $p \leq .001$

Table 3 evidences the mean levels of vasomotor symptoms' severity, and of stress, anxiety and depression symptoms' frequency, as well as, the differences between the three menopausal statuses.

Table 3 – Mean scores for vasomotor and psychological variables and differences between the three menopausal statuses

Variables	Pre- <i>M(SD)</i>	Peri- <i>M(SD)</i>	Post- <i>M(SD)</i>	one-way ANOVA		
						<i>MD(SE)p</i>
Hot Flashes severity	0.2(.566)	0.8(1.197)	1.2(1.366)	Pre- Peri-		-.591(.097)***
				Pre- Post-		-1.056(.091)***
				Peri- Post-		-.464(.090)***
Night Sweats severity	0.3(.677)	0.8(1.204)	1.2(1.365)	Pre- Peri-		-.518(.098)***
				Pre- Post-		-.869(.092)***
				Peri- Post-		-.350(.090)***
Depression	1.3(.478)	1.4(.535)	1.5(.644)	Pre- Peri-		-.081(.047).199
				Pre- Post-		-.173(.044)***
				Peri- Post-		-.091(.043).090
Stress	1.6(.500)	1.7(.559)	1.8(.606)	Pre- Peri-		-.133(.047).012
				Pre- Post-		-.168(.044)***
				Peri- Post-		-.035(.043).694
Anxiety	1.2(.307)	1.4(.467)	1.4(.545)	Pre- Peri-		-.150(.039)***
				Pre- Post-		-.228(.036)***
				Peri- Post-		-.078(.035).071

MD =mean difference; SE =standard error; *** $p \leq .001$

To explore if there are significant differences between women who have and those who do not have vasomotor symptoms in relation to depression, anxiety and stress, the two groups were compared. The results are presented in the table 4.

Table 4 – Comparison of women with and without hot flashes (HF) and night sweats (NS) regarding levels of stress, anxiety and depression

Psychol. Variables	With HF <i>M(SD)</i>	Without HF <i>M(SD)</i>	t-student <i>t(df)p</i>	With NS <i>M(SD)</i>	Without NS <i>M(SD)</i>	t-student <i>t(df)p</i>
Anxiety	1.6(.577)	1.2(.332)	-9.249(471.816)***	1.5(.556)	1.2(.336)	-9.429(542.012)***
Stress	1.9(.577)	1.6(.517)	-6.357(622.301)***	1.9(.602)	1.6(.504)	-6.837(686.538)***
Depression	1.6(.677)	1.3(.464)	-6.851(528.208)***	1.6(.665)	1.3(.469)	-6.246(603.198)***

*** $p \leq .001$

DISCUSSION

In this community sample, women with hot flashes and night sweats presented significantly higher levels of stress, anxiety and depression. Regarding the menopausal status, post-menopausal women presented always more severe hot flashes and night sweats compared with their peri-menopausal counterparts. However, these two menopausal statuses did not differ significantly in terms of depression, stress and anxiety. Therefore, given the results of the univariate analysis, the frequency of anxiety, depression and stress' symptoms is only statistically different when considering the presence of vasomotor symptoms (instead of taking into account the menopausal status) in peri- and post-menopausal women (although in the first analysis – regarding the absence/presence of vasomotor symptoms – pre-menopausal women are included, they are a small part of this sample; that is, 31 participants and 57 women in pre-menopause reported hot flashes and night sweats, respectively).

Although there are strong evidences that vasomotor symptoms are one of the few clinical manifestations strongly associated with the hormonal fluctuation observed in the peri-menopause⁴⁴, these symptoms have been reported in some studies by pre-menopausal women²². In the present study this was observed: as mentioned before, 12% and 21% of women in pre-menopause reported hot flashes and night sweats, respectively.

It could be hypothesized that this translates a limitation on menopausal status' assessment (in this study a self-report method based on STRAW criteria⁴⁰ was used) which could evidence that, although the menstrual period of these participants did not evidence alterations, minimal hormonal changes (not translated in manifest menstrual alterations) might promote these reported vasomotor symptoms. Also, it can be thought that socio-cultural factors (such as the identification with menopausal-peers), as well as the perception of age progressing towards an age interpreted as "menopausal", might influence the interpretation of elevated body temperature (for reasons other than hormonal) as vasomotor symptoms. Despite these hypotheses, the assessment of menopausal status through age and self-assessment of menstrual history, as done on the present research, has been evidence as a more accurate way of determining menopausal status than using the presence of particular symptoms (such as vasomotor symptoms) or hormone levels given by laboratory tests⁴⁵.

The causal model encompassing socio-demographic, health, menopause-related, lifestyle and psychological variables (stress and depression), demonstrates that there are several factors that can predict the presence of vasomotor symptoms in midlife women. Age progression was a significant variable in relation to hot flashes' appearance. Also, being married (or in a relationship) and having less children (or no children) predicted the presence of both vasomotor symptoms. In other studies, being divorced was associated with bothersomeness of vasomotor symptoms¹⁰ and parous women evidenced a higher frequency of vasomotor symptoms²⁵.

Menopausal status (namely, being peri- and post-menopausal), as well as medical help sought to manage menopause, significantly predicted the occurrence of both hot flashes and night sweats. This is congruent with researches which evidence that the vasomotor symptoms result from the decrease in endogenous estrogens⁶ and are the reason which precipitates more frequently the medical help search to deal with menopause^{5,10-12}.

The use of herbal/soy products, contrary to what was expected, predicted the occurrence of both vasomotor symptoms. A review on herbal products efficacy for the treatment of menopausal symptoms has concluded that there is no convincing evidence and that the data on these products is doubtful given the poor methodology used in studies that document benefits of the herbal therapies and safety concerns (namely, regarding the use of kava)⁴⁶. Therefore, the use of natural products for the treatment of hot flashes and night sweats should receive further attention and be thoroughly investigated.

Physical health status (specifically, the presence of a recent disease) was also significant in the prediction of night sweats only. This outcome supports a previous study where a health status qualified as excellent was linked to a decrease in night sweats, but not in hot flashes¹³.

Lifestyle factors can influence significantly the degree of vasomotor symptoms' reporting¹⁰. In particular, daily alcohol consumption has been described as a habit that increases the probability of incidence and bothersomeness of night sweats¹³. In this study, only alcohol intake predicted one of the vasomotor symptoms. Therefore, higher alcohol intake was linked to the presence of night sweats. This emphasizes a conclusion drawn in prior researches which identify alcohol as a risk factor for vasomotor symptoms^{13,17,24,25}. Smoking, coffee, physical exercise and BMI were not significant predictors of the occurrence of night sweats or hot flashes, in this sample.

The different influences of the two psychological variables in the vasomotor symptoms, namely stress predicting night sweats (but no hot flashes) and depression predicting hot flashes (and not night sweats) might be related with the nature of the psychological symptoms itself.

Individuals with higher stress levels have been identified as having lower sleep efficiency, higher latency on the first stage of sleep and increased arousal⁴⁷. Since higher levels of stress predicted the occurrence of night sweats, this relation can be mediated by the sleep disturbance that results from higher levels of stress.

Furthermore, it has been found that in a non-clinical sample of women with varying degrees of depressed mood, in women with higher scores of depressed mood, the negative affect was observed more significant during the morning; additionally, an improvement in depressive mood was evidenced in the evening⁴⁸. It is hypothesized that this diurnal nature of the depressed mood might partially explain the connection of depression with hot flashes' occurrence, but not with night sweats. Moreover, it had already been highlighted that menopausal women were more likely to experience hot flashes if they were depressed²¹. Furthermore, this study has also demonstrated that women with hot flashes present a significantly higher depressive mood than their counterparts without hot flashes.

The variables assessed account for 20% and 25% of the occurrence of night sweats and hot flashes' variability, respectively. Hence, variables, other than the included in this study, may have an impact in the emergence of vasomotor symptoms. For example, a causal model predicting the severity of both hot flashes and night sweats' severity in a

sample of symptomatic women (that is, who evidenced vasomotor symptoms in the previous month) showed that perceived control over vasomotor symptoms was the strongest and most significant predictor of the symptoms' severity; moreover, that causal model explained 67% and 72% of the variability of hot flashes and night sweats' severity, respectively⁴⁹. And although vasomotor symptoms are strongly associated with hormonal variations⁷ there might be other non-hormonal variables that account for the presence of vasomotor symptoms in midlife women.

The sample size (992 participants) was adequate for this type of statistical analysis given it was applied a rule of thumb of ten subjects per manifest variable, as is current practice in structural equation modelling^{42,50}. Nevertheless, the fact that this research has a cross-sectional design, and that it uses a sample where a significant part of the participants has a college degree, limits the generalization of these results.

CONCLUSIONS

This research presents a causal model, which evidences significant predictors of vasomotor symptoms' occurrence. Socio-demographic and menopause-related variables are significantly linked to the presence of both hot flashes and night sweats. In this sample the use of herbal/soy therapies predicted the occurrence of both vasomotor symptoms; this outcome was unexpected given the objective of the natural products for menopause is, among other, symptoms' alleviation. Therefore, it is suggested further research on the subject.

Stress and depression also predicted vasomotor symptoms: the first predicted only night sweats and the latter hot flashes; it is hypothesized that the differentiated prediction of these two psychological variables regarding both vasomotor symptoms is related with the nature of stress and depression's symptoms.

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Menopause Symptoms' Predictors: lifestyle, health and menopause-related variables and socio-demographic characteristics

Short title: Menopause symptoms' predictors

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ABSTRACT

Objectives: This research explores a causal model of menopausal symptoms in peri- and post-menopause women, having as predictors socio-demographic, health and menopause-related, and lifestyle variables.

Methods: A community sample of 710 peri- and post-menopausal women (42-60 years old) answered to a validated inventory which assesses, in frequency and intensity, twelve sets of menopausal symptoms; socio-demographic (age, marital status, parity, education, household income, professional status), health and menopause-related (presence of recent disease and psychological problem, use of hormone therapy and herbal/soy products), and lifestyle characteristics (coffee, alcohol and hot beverages

intake, smoking, physical exercise and body mass index) were also evaluated. Structural equation modelling was used to explore the causal associations between menopausal symptoms and the independent variables.

Results: Menopausal status predicted skin and facial hair changes ($\beta=.156;p<.001$), vasomotor ($\beta=.122;p<.001$) and sexual symptoms ($\beta=.158;p<.001$). Age was significantly associated with cognitive impairment ($\beta=.087;p=.003$), aches and pain ($\beta=.072;p=.006$), urinary ($\beta=.115;p=.004$) and also with sexual symptoms ($\beta=.107;p=.021$). Education and health status (specifically, psychological health status) were significant predictors for most of the symptoms.

Conclusions: Several menopausal symptoms are predicted, not only by menopausal status, but also by socio-demographic, health and lifestyle variables. Significant predictors, especially lifestyle-related, should be considered in a context of a well-adapted menopausal transition given that changes at this level might promote a symptoms' attenuation. Moreover, the aging process explains some symptoms usually associated with menopause; this emphasises the need for further research and discussion on what is specifically due to hormones decline and what is influenced by aging.

Key-words: menopausal symptoms, predictors, structure equation modelling, health status, lifestyle

INTRODUCTION

The menopausal transition in women is one more change, added to the effects of the aging process, given that the hormonal changes can induce the appearance of symptoms which will have an impact on the quality of life¹. However, it is still uncertain which symptoms are directly related to menopausal status: there is an identified set of symptoms that are reported in this transitional phase, but there is also a culture-specific influence in the experience of menopause^{2,3}. Moreover, certain occurrences during the menopausal period may be considered part of the aging process⁴ (Sowers, 2000).

There are evidences that health-related characteristics like body mass index (BMI), smoking and physical exercise, as well as socio-demographic and economic factors, may influence the prevalence of menopausal symptoms⁵⁻⁸.

Given that health behaviours may have an impact on the occurrence of menopausal symptoms⁹, interventions combining pharmacology and lifestyle changes can be the most effective in preventing the emergence of clinical occurrences¹⁰. Adding to this, the exploration of menopause in non-clinical samples, allows clinicians and researchers to have a better understanding of the specificities of the menopausal transition and to deconstruct misconceptions due to biased sampling¹¹.

Furthermore, since the studies exploring the correlates of menopausal symptoms are still scarce⁷, this study has the aim of exploring, in a community sample of peri- and post-menopausal women, if socio-demographic, health and menopause-related, and lifestyle variables can predict the severity of menopausal symptoms.

MATERIALS AND METHODS

Procedure

This cross-sectional study on menopause with Portuguese women encompasses a community sample, which was mainly recruited through schools and universities in the city of Lisbon. The inclusion criteria in this research were gender (female) and age (between 42 and 60 years). The American Psychological Association's standards on the ethical treatment of participants were followed. A written informed consent form was delivered to all participants, explaining the aims of the study, emphasizing that the participation in this research was voluntary and that participants could interrupt their collaboration at any time, without any consequences.

After receiving the informed consent and agreeing to participate in the research, a sample of 1,003 Portuguese women between the ages of 42 and 60 filled in all the instruments adequately (45 were excluded due to insufficient information).

The present research includes 710 of those women, namely, participants in peri- and post-menopause.

Subjects

The 710 participants in peri- and post-menopause answered to a validated inventory for menopausal symptoms, as well as a questionnaire to identify the menopausal status and to explore socio-demographic, health and menopause-related, and lifestyle characteristics. Table 1 describes the participants regarding the assessed variables.

Table 1 - Distribution of the study's participants according to socio-demographic, health and menopause-related and lifestyle characteristics

Characteristics	Peri-menopause		Post-menopause	
	n	%	n	%
n	298	42.0	412	58.0
Age (<i>M; SD</i>)	47.6 (3.787)		53.9 (4.207)	
Education				
Primary school	28	9.5	62	15.4
Middle school	68	23.1	98	24.4
High school	91	31.0	109	27.1
University degree or higher	107	36.4	133	33.0
Marital status				
Married or in a relationship	218	73.2	277	67.4
Not married or in a relationship	80	26.8	134	32.6
Parity				
0	22	7.5	42	10.4
1	97	33.1	104	25.9
2	136	46.4	186	46.3
3	32	10.9	49	12.2
>3	6	2.0	21	5.1
Professional status				
Active	262	89.7	317	78.7
Inactive	30	10.3	86	21.3
Family annual income				
≤ 10.000 €	60	23.9	91	26.1
10.001 – 20.000 €	66	26.3	85	24.4
20.001 – 37.500 €	65	25.9	79	22.6
37.501– 70.000 €	42	16.7	68	19.5
≥ 70.001 €	18	7.2	26	7.4

HT, herbal/soy therapy or

Nothing				
HT	13	4.5	49	13.5
Herbal/soy therapy	16	5.5	48	13.3
Nothing	262	90.0	265	73.2
Recent disease				
Yes	51	18.0	95	23.8
No	233	82.0	304	76.2
Recent psychological problem				
Yes	43	14.8	76	18.9
No	247	85.2	327	81.1
Smoking behaviour				
Current smoker	87	29.7	82	20.5
Current non-smoker	206	70.3	318	79.5
Alcohol consumption				
Yes	157	53.0	192	47.2
No	139	47.0	215	52.8
Coffee consumption				
Yes	266	89.6	344	84.3
No	31	10.4	64	15.7
Hot beverages intake				
Daily	260	92.3	333	87.7
Occasionally or never	22	7.8	47	12.3
Physical activity				
Yes	127	43.1	197	48.8
No	168	56.9	207	51.2
Body mass index (kg/m ²)				
≤ 24,9	157	53.0	205	50.6
> 24,9	139	47.0	200	49.4

Measures

The instruments included the Menopause Symptoms' Severity Inventory, MSSSI-38¹², which assesses menopausal symptoms in thirty-eight items, organized in twelve sets (depressive mood; anxiety; cognitive impairment; aches and pain; skin and facial hair changes; numbness; perceived loss of control; mouth, nails and hair changes; vasomotor, urinary and sexual symptoms). Both the frequency and intensity of the symptoms are measured in reference to the previous month, using a five-point Likert-type scale, which ranges from "never" to "daily or almost every day" and from "not intense" to "extreme intensity", respectively. The severity of each symptom is calculated using the mean between the values of frequency and intensity for each of the symptoms.

The menopausal status was defined according to the Stages of Reproductive Aging Workshop's criteria¹³. Peri-menopausal participants would report a variable cycle length (a difference of more than seven days, than usual), or had skipped two or more cycles and had an amenorrhea interval superior to sixty days. Post-menopausal women had at least a twelve-month period of amenorrhea. Besides menopausal status, the medical help search to manage these symptoms was explored.

Socio-demographic characteristics (age, marital status, parity, professional status, educational level, family annual income), as well as health and menopause-related (presence of a recent disease or of a psychological problem, use of hormone therapy or herbal/soy products to manage menopausal symptoms), and lifestyle characteristics (alcohol, coffee and hot beverages intake, smoking, physical exercise and body mass index – BMI), were assessed. Lifestyle habits (namely, alcohol, coffee and hot beverages intake, smoking and physical exercise) were assessed in terms of presence/absence, amount and/or frequency. Hence, physical exercise, when present, was measured in terms of times per week, and during how many minutes, the participant exercised; a mean between weekly frequency and duration was used in the multivariate model. Coffee and hot beverages intake, when present, was assessed in a four-option scale, ranging from "occasionally" to "more than five per day". Alcohol intake, when observed, was measured both in terms of frequency (daily, every weekend or rarely) and quantity (until I feel drunk, moderately or less than a glass per occasion); a mean value of both translates the alcohol consumption variable, in the causal model.

Finally, for current smokers, smoking was quantified in a 6-point Likert-type scale that ranged from “less than 10 cigarettes per month”, until “more than 40 cigarettes per day”; this quantification integrated the structural equation model to assert the influence of smoking on the menopausal symptoms’ severity.

Statistical Analysis

Missing values were imputed for variables, where their frequency was lower than 10% of the sample. This was done using the mean interpolation method. Multicollinearity between the independent variables was evaluated with the variance inflation factor (VIF) given by SPSS Statistics (v. 19, IBM SPSS Inc, Chicago, IL). All variables presented a value below 5, indicating the absence of collinearity¹⁴.

The distributions of the studied variables were explored with SPSS Statistics (v. 19, IBM SPSS Inc, Chicago, IL).

To test the causal model for menopausal symptoms, a structural equation model was built relating the dependent variables (the twelve menopausal symptoms) with the 18 independent variables (age, parity, marital and professional status, income, education, presence of a recent psychological problem or a disease, transition from peri- to post-menopause, use of hormone therapy or herbal/soy products to manage menopause symptomatology, medical help search do deal with menopause, alcohol, coffee and hot beverages intake, smoking, physical exercise and body mass index), through AMOS software (v. 18, IBM SPSS Inc, Chicago, IL). The quality of adjustment of the structural model was given by chi-square statistics (X^2/df), comparative fit index (*CFI*), goodness of fit index (*GFI*) and root mean square error of approximation (*RMSEA*). A two-step approach was used to evaluate the causal structural model. First, the factor’s measurement model was evaluated to demonstrate an acceptable fit. Thereafter, the structural causal model, encompassing the twelve dependent and the eighteen independent variables, was adjusted and the significances of the causal trajectories were evaluated.

RESULTS

There is no multicollinearity between the independent variables. The fit of the measurement model was very good ($X^2/df=2.855$; *CFI*=.915; *GFI*=.885; *RMSEA*=.051

.049; .054[*C.I.* 90% $p=.212$) as it was the one of the causal model ($X^2/df=2.149$; $CFI=.908$; $GFI=.884$; $RMSEA=.040$].038; .043[*C.I.* 90% $p=1.000$).

The following table evidences the significant structural weights (standardized estimates, standard error and significance level).

Table 2 – Significant structural weights of the independent variables (socio-demographic, health, menopause-related and lifestyle characteristics) regarding the dependent variables (menopausal symptoms)

Trajectories	$\beta(SE)p$
Cognitive impairment ← Age	.087(.005)**
Aches and pain ← Age	.072(.004)**
Urinary symptoms ← Age	.115(.006)**
Sexual symptoms ← Age	.107(.008)*
Depressive mood ← Marital status	-.060(.040)**
Sexual symptoms ← Marital status	.165(.070)***
Vasomotor symptoms ← Marital status	.079(.051)*
Numbness ← Professional status	-.073(.072)*
Depressive mood ← Educational level	-.163(.014)***
Aches and pain ← Educational level	-.161(.016)***
Vasomotor symptoms ← Educational level	-.112(.014)**
Perceived loss of control ← Educational level	-.189(.011)***
Numbness ← Educational level	-.187(.018)***
Mouth, nails and hair changes ← Educational level	-.153(.016)***
Anxiety ← Educational level	-.093(.015)***
Urinary symptoms ← Educational level	-.091(.020)*
Sexual symptoms ← Educational level	-.149 (.020)***
Skin and facial hair changes ← Household annual income	.111(.023)**
Vasomotor symptoms ← Parity	-.116(.024)***
Mouth, nails and hair changes ← Parity	.084(.027)*
Vasomotor symptoms ← Menopausal status	.122(.048)***
Skin and facial hair changes ← Menopausal status	.156(.054)***
Sexual symptoms ← Menopausal status	.158(.081)***

Vasomotor symptoms ← Herbal/soy products	.143(.082)***
Numbness ← Herbal/soy products	.071(.089)*
Sexual symptoms ← Herbal/soy products	.111(.111)**
Body shape changes ← Herbal/soy products	.100(.095)**
Vasomotor symptoms ← Recent disease	.071(.057)*
Mouth, nails and hair changes ← Recent disease	.141(.066)***
Depressive mood ← Recent psychological problem	.357(.087)***
Cognitive impairment ← Recent psychological problem	.346(.092)***
Aches and pain ← Recent psychological problem	.228(.094)***
Vasomotor symptoms ← Recent psychological problem	.124(.071)**
Perceived loss of control ← Recent psychological problem	.336(.062)***
Numbness ← Recent psychological problem	.145(.091)***
Mouth, nails and hair changes ← Recent psychological problem	.238(.087)***
Anxiety ← Recent psychological problem	.331(.093)***
Skin and facial hair changes ← Recent psychological problem	.234(.087)***
Urinary symptoms ← Recent psychological problem	.261(.098)***
Sexual symptoms ← Recent psychological problem	.243(.104)***
Body shape changes ← Recent psychological problem	.203(.092)***
Aches and pain ← BMI	.074(.006)**
Numbness ← BMI	.103(.007)**
Urinary symptoms ← BMI	.222(.008)***
Body shape changes ← BMI	.337(.007)***
Perceived loss of control ← Smoking	-.091(.011)*
Numbness ← Coffee intake	.067(.029)*
Vasomotor symptoms ← Hot beverages intake	-.075(.030)*

* $p \leq .05$; ** $p \leq .01$; *** $p \leq .001$

The following table presents the results of the squared multiple correlations, that is, the percentage of the variability accounted for by the socio-demographic, menopause, health-related and lifestyle variables in the proposed causal model for each set of symptoms.

Table 3 – Variability of menopausal symptoms explained by the independent variables accounted

Menopausal Symptoms	% of the symptoms variability accounted for by the independent variables
Depressive mood	16.6
Cognitive impairment	12.9
Aches and pain	10.7
Vasomotor symptoms	10.1
Perceived loss of control	16.5
Numbness	9.8
Mouth, nails and hair changes	12.6
Anxiety	12.2
Skin and facial hair changes	9.1
Urinary symptoms	17.2
Sexual symptoms	19.3
Body shape changes	16.8

DISCUSSION

Body shape changes, perceived loss of control, depressive mood, sexual and urinary symptoms are the menopausal symptoms which variability was explained to a greater extend by the socio-demographic, health, menopause-related and lifestyle characteristics included in this research. The most frequent predictors of menopausal symptoms were educational level and the presence of a psychological problem.

The menopausal status predicted significantly skin and facial hair changes, vasomotor and sexual symptoms.

Although facial hair and skin modifications are usually indentified as hormone therapy's secondary effects¹⁵, in this group of peri- and post-menopausal women, these symptoms were not related with the use of that therapy but, instead, they were associated with the menopausal status. Hypoestrogenia as consequence of menopause is known for having an impact on skin; however, so does the aging process¹⁶. In the present research the changes in skin were significantly associated with the menopausal

status, but not with age, supporting the fact that estrogens decline have a stronger impact on the skin's conservation, than the age progression does.

The menopause status has been identified as a robust predictor of vasomotor symptoms' occurrence in prior researches^{17,18}. Moreover, and because hormone therapy is efficient in the decrease of these symptoms, a biological aetiology has been suggested for hot flashes and night sweats¹⁹. In this sample, the menopausal status predicted vasomotor symptoms, supporting a strong association between endogenous estrogens decrease and vasomotor symptoms. However, other non-hormonal variables, specifically marital status, educational level and parity, were also significantly associated with these symptoms.

Sexual response has been associated to the menopause status^{1,20} and some authors support that only vasomotor symptoms and decrease in sexual interest are related with menopausal status²¹. As expected, the menopausal status significantly predicted sexual symptoms in this sample. However, so did age progressing, marital status, educational level and the presence of a psychological problem. These outcomes emphasize that, not only hormonal variations influence significantly the severity of vasomotor and of sexual symptoms in peri- and post-menopause.

Besides sexual symptoms, there were other symptoms significantly predicted by age, namely, cognitive impairment, aches and pain and urinary symptoms.

The occurrence of cognitive difficulties during peri-menopause were described previously; however, the authors suggest that these problems are transitory since there are no differences when comparing women in pre- and in post-menopause²². Contrary to this, a decline in cognitive function (namely, working memory and perceptual speed) was not observed across the different menopausal stages in another study²³. Moreover, it has also been concluded that women attribute their memory changes, during the menopausal transition, to physical health status, levels of stress and aging process rather than to the menstrual cycle and hormone use²⁴.

Our causal model supports the two latter researches: cognitive impairment was not predicted by the menopausal status; instead, age progression and the presence of a psychological problem were strongly associated with more severe levels of cognitive difficulties.

Joint pain has been referred as related with menopause¹⁸; however this was not the case in this sample, which evidences aches and pain (including joint pain) as a consequence of aging.

Age also predicted positively urinary symptoms. Lower urinary tract symptoms have been associated with marital status, presence of a disease, menopausal status and parity²⁵. In this sample, besides age, only the presence of a psychological problem and lower educational level predicted more severe urinary symptoms.

Surprisingly, hot beverages intake was a negative predictor of vasomotor symptoms. Given that it was expected for hot beverages to have a positive relation with vasomotor symptoms²⁶, it is hypothesized that women who drank hot beverages more frequently would be the ones who had less severe (or absent) vasomotor symptoms; this would allow the maintenance of a high frequency intake of hot beverages, given that this would not promote a vasomotor exacerbation. Another concomitant conjecture was the possibility that, prior to the present investigation, women with severe vasomotor symptoms had learned by experience, or had been informed that a frequent ingestion of hot liquids triggers hot flashes and for that reason they had decreased hot beverages to a less frequent intake or had stopped consuming hot beverages altogether.

The use of herbal/soy products to manage menopausal symptoms was significantly associated with more severe vasomotor and sexual symptoms, as well as, numbness and body shape modifications. Therefore, the use of these natural products was not significant in the attenuation of any of the menopausal symptoms and it is related with the exacerbation of the mentioned ones. This might translate an insufficient clinical supervision and a mismatching between personal needs of the symptomatic women and products use. Given that clinical prescription is not mandatory and pharmaceutical recommendations are only given if women ask for them directly, there can be an erroneous use of these products, based on an absence of adequate counselling. As evidenced in a recent research on the decision-making process regarding the use of natural products for menopausal symptoms, women present several difficulties, namely, deciding for the adequate product, the adequate dosage and the use of this kind of therapy specifically for menopausal symptoms. Unrealistic expectations about the efficacy of the natural products, inaccurate information about them, and the interference of menopausal symptoms are strongly related with these difficulties²⁷.

The absence of an effect between hormone therapy and menopausal symptoms might be due to the fact that this is a community sample and, thus, participants might evidence less severe symptomatology than clinical ones, making the effect of hormone therapy undetectable when comparing with counterparts not using it.

CONCLUSION

The causal model proposed in this study evidences that there are several symptoms, recognized as menopausal, that are predicted by the menopausal status (like skin and facial hair changes, vasomotor and sexual symptoms), but by socio-demographic characteristics as well. Others are strongly associated with the age progression, leading to the questioning of whether these symptoms are resultant from actual hormonal changes.

This research also highlights that several socio-demographic, health-related and lifestyle characteristics play an important role in menopausal symptoms' prediction; this conclusion allows the promotion of strategies, specifically related with certain lifestyle changes, that might lead to the reduction of the menopausal symptoms' severity.

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DISCLOSURE STATEMENT

No competing financial interests exist.

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Menopause Symptoms: does Spirituality predict the severity of the symptoms?

Short title: Menopause and Spirituality

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Abstract

The aim of this study was to explore if spirituality could predict menopausal symptoms. Menopausal symptoms, spirituality, self-reported health and menopausal status, and socio-demographic variables were assessed in a community sample of 710 peri- and post-menopausal women. Structural equation modelling was used to explore a causal model relating menopausal symptoms to the other variables. The results evidence spirituality as a negative and significant predictor for the majority of menopausal symptoms' severity, independently of socio-demographic factors, health and menopausal statuses. Spirituality predicted depressive mood ($\beta=-.414$; $p<.001$), anxiety

($\beta=-.308$; $p<.001$), cognitive impairment ($\beta=-.287$; $p<.001$), perceived loss of control ($\beta=-.177$; $p<.001$), aches and pain ($\beta=-.148$; $p<.001$), vasomotor ($\beta=-.125$; $p=.005$) and sexual symptoms ($\beta=-.211$; $p<.001$), and physical changes such as mouth, nails and hair modifications ($\beta=-.152$; $p=.002$), and skin and facial hair changes ($\beta=-.184$; $p<.001$). Moreover, socio-demographic variables such as marital status, education, income and parity were also significant predictors of various menopausal symptoms. Similarly, self-reported physical and psychological health status, as well as menopausal status, predicted the menopausal symptoms' severity. Therefore, spirituality can have a positive impact on the menopausal symptoms' reporting. In addition, several socio-demographic and health and menopause-related variables have demonstrated also to predict significantly the severity of menopausal symptoms.

Key-words: menopause symptoms, spirituality, predictors, structural equation modelling.

Introduction

According to the World Health Organization, a good quality of life incorporates several dimensions, among them physical and psychological health, level of independence, and spirituality (or religion/personal beliefs) [1].

During menopause, physical and psychological symptoms may emerge, being the most prevalent depressive mood, irritability, joint pain, tiredness, and vasomotor and sexual symptoms [2-6].

It is known that both the intensity and frequency of these symptoms are affected by bio-psycho-social factors, such as health and menopausal status, age, race, income and level of education [7,8]. In addition to the influence of these variables, spirituality has been associated with less menopausal symptoms' reporting in a previous research [9].

Numerous studies with clinical samples have evidenced spirituality as being strongly and negatively associated with depressive mood [10-16], anxiety [10,12,17], pain [18], fatigue and memory disruption [10]. But the absence of association has also been documented [19,20].

Therefore, the influence of spirituality is still unclear [21] and the relation between aging well and this dimension is lacking comprehensive research [22]. This is true in the

research on aging, despite the strong connection between the spirituality's development (and the importance given to personal beliefs) and age progression [23-25], and the evidence that the spirituality can be a well-being resource, in later life [23,26].

To understand the menopause experience it is crucial to consider the psychological aspects that might influence women's interpretation of this phase of life [27]. Research conducted on menopause has paid very little attention to the positive psychological and well-being outcomes associated to this period of women's life [27]. In addition, since menopause has been described as a positive phase during which women develop a stronger personal identity and an expanded self-awareness [28], the role of spirituality in this period should be considered.

Therefore, in this study, we investigated if spirituality can predict menopause symptoms' severity, controlling for socio-demographic variables and health status, in a community sample of peri- (during which changes in menstrual cycle start to occur) and post-menopause (which starts after the final menstrual period), since menopausal symptoms are more prevalent during these two menopause stages [29].

Method

Participants

The 710 participants in peri- and post-menopause filled in the validated versions of two instruments, to assess menopausal symptoms and spirituality, as well as a questionnaire to identify menopause and health status, and to explore socio-demographic characteristics. Table I describes the participants.

Table I - Distribution of the study's peri- and post-menopausal participants according to socio-demographic characteristics

Characteristics	Peri-menopause		Post-menopause	
	n	%	n	%
n	298	42.0	412	58.0
Age (<i>M; SD</i>)	47.6(3.787)		53.9(4.207)	
Education				
Primary school	28	9.5	62	15.4

Middle school	68	23.1	98	24.4
High school	91	31.0	109	27.1
University degree or higher	107	36.4	133	33.0
Marital status				
Married or in a relationship	218	73.2	277	67.4
Not married nor in a relationship	80	26.8	134	32.6
Parity				
0	22	7.5	42	10.4
1	97	33.1	104	25.9
2	136	46.4	186	46.3
3	32	10.9	49	12.2
>3	6	2.0	21	5.1
Professional status				
Active	262	89.7	317	78.7
Inactive	30	10.3	86	21.3
Family's annual income				
≤ 10.000 €	60	23.9	91	26.1
10.001 – 20.000 €	66	26.3	85	24.4
20.001 – 37.500 €	65	25.9	79	22.6
37.501– 70.000 €	42	16.7	68	19.5
≥ 70.001 €	18	7.2	26	7.4
Recent disease				
Yes	51	18.0	95	23.8
No	233	82	304	76.2
Recent psychological problem				
Yes	43	14.8	327	81.1
No	247	85.2	76	18.9

Procedure

This cross-sectional study on menopause encompasses a community sample which was mainly recruited through schools and universities, in the city of Lisbon. The inclusion

criteria in this research were gender (women) and age (between 42 and 60 years). The American Psychological Association's standards on the ethical treatment of participants were followed. A written informed consent form was delivered to all participants, explaining the aims of the study, emphasizing that the participation in this research was voluntary and that participants could interrupt their collaboration at any time, without any consequences.

After receiving the informed consent and agreeing to participate in the research, a sample of 1,003 Portuguese women, in pre-, peri- and post-menopause, answered all the questionnaires and measuring scales adequately (45 were excluded due to lack of sufficient information).

The present research includes 710 of those women, namely, participants in peri- and post-menopause.

Measures

Menopause Symptoms

A validated version of the Menopause Symptoms' Severity Inventory, MSSSI-38 [30] was used. This inventory includes thirty-eight items, organized in twelve sets of menopausal symptoms (depressive mood; anxiety; cognitive impairment; body shape changes; aches and pain; skin and facial hair changes; numbness; perceived loss of control; mouth, nails and hair changes; vasomotor, urinary and sexual symptoms). Both frequency and intensity of the symptoms are measured in reference to the previous month, using a five-point Likert-type scale which range from "never" to "daily or almost every day" and from "not intense" to "extreme intensity", respectively. The severity of each symptom is calculated afterwards using the mean values of frequency and intensity for each one of the symptoms.

This instrument presented good psychometric properties, including construct and criterion validity, reliability and sensitivity [30].

Spirituality

Spirituality was assessed through the Portuguese version of the Spiritual Well-being Questionnaire [31,32]. This questionnaire is composed of 20 items, measured in a five-point Likert-type ranging from "very low" to "very high", which define four dimensions (personal, communal, environmental and transcendental spiritual well-being). Data gathered showed good psychometric properties [31,32].

Menopausal and Health Status

The menopausal status was defined according to the Stages of Reproductive Aging Workshop's criteria [33]. Women in pre-menopause presented an absence of changes in their menstrual cycle. Peri-menopausal participants would report variable cycle length (a difference of more than seven days, than usual), or having skipped two or more cycles and had an amenorrhea interval superior to sixty days. Post-menopausal women had at least a twelve-month period of amenorrhea.

Health status (both physical and psychological), as menopausal status, was self-reported. The presence and the nature of a recent disease and of a psychological problem were asked to all participants.

Socio-demographic characteristics (age, marital status, parity, professional status, educational level and family annual income) were also assessed.

Statistical Analysis

Missing values were imputed for variables, where their frequency was lower than 10% of the sample. This was done using the mean interpolation method. Multicollinearity between the independent variables was evaluated with the variance inflation factor (VIF) given by SPSS Statistics (v. 19, IBM SPSS Inc, Chicago, IL). All variables presented a value below 5, indicating the absence of collinearity [34,35].

The distribution of the variables studied was checked for extreme skewness and kurtosis with SPSS Statistics (v. 19, IBM SPSS Inc, Chicago, IL).

To test the causal model for menopausal symptoms, a structural equation model was built relating the twelve dependent variables (depressive mood; anxiety; cognitive impairment; body shape changes; aches and pain; skin and facial hair changes; numbness; perceived loss of control; mouth, nails and hair changes; vasomotor, urinary and sexual symptoms) with twenty independent variables (namely, age, marital status, parity, professional status, family's annual income, educational level, presence of a recent psychological problem or a disease, menopausal status and spirituality). The model was evaluated with SPSS AMOS software (v. 18, IBM SPSS Inc, Chicago, IL). The quality of the fit of the structural model was evaluated by the chi-square statistic over degrees of freedom (X^2/df), comparative fit index (*CFI*), goodness of fit index (*GFI*) and root mean square error of approximation (*RMSEA*). Reference values indicative of a good model fit were those values currently practiced in structural equation modelling [35,36]. A two-step modelling approach was employed to evaluate

the causal structural model. First, the factor's measurement model was evaluated to demonstrate a good fit. Thereafter, the structural causal model, encompassing the twelve dependent and the twenty independent variables, was adjusted and the significance of the causal trajectories was evaluated.

Results

There was no multicollinearity between the independent variables. The fit of the measurement model was very good ($X^2/df=2.475$; $CFI=.897$; $GFI=.842$; $RMSEA=.046$ $p=1.000$; $C.I.$ 90%= $].044; .048[$), as was the one of the causal model ($X^2/df=2.339$; $CFI=.893$; $GFI=.841$; $RMSEA=.044$; $p=1.000$; $C.I.$ 90%= $].042; .045[$). Table II shows the significant structural weights.

Table II – Significant structural weights of the independent variables (socio-demographic, health and menopausal status, and spirituality) regarding the dependent variables (menopausal symptoms)

Trajectories	$\beta(SE)p$
Vasomotor symptoms ← Marital status	.093(.060)*
Sexual symptoms ← Marital status	.167(.087)***
Depressive mood ← Educational level	-.111(.020)*
Aches and pain ← Educational level	-.115(.024)*
Numbness ← Educational level	-.101(.024)*
Sexual symptoms ← Educational level	-.107(.027)*
Depressive mood ← Annual income	-.084(.029)*
Perceived loss of control ← Annual income	-.139(.023)*
Numbness ← Annual income	-.134(.036)**
Vasomotor symptoms ← Parity	-.099(.027)*
Mouth, nails and hair changes ← Parity	.118(.033)**
Vasomotor symptoms ← Menopausal status	.141(.067)**
Skin and facial hair changes ← Menopausal status	.169(.081)**
Sexual symptoms ← Menopausal status	.198(.098)***
Depressive mood ← Recent psychological problem	.281(.081)***

Cognitive impairment ← Recent psychological problem	.277(.091)***
Aches and pain ← Recent psychological problem	.185(.095)***
Vasomotor symptoms ← Recent psychological problem	.086(.072)*
Perceived loss of control ← Recent psychological problem	.289(.061)***
Numbness ← Recent psychological problem	.109(.093)**
Mouth, nails and hair changes ← Recent psychological problem	.197(.087)***
Anxiety ← Recent psychological problem	.273(.091)***
Skin and facial hair changes ← Recent psychological problem	.201(.088)***
Urinary ← Recent psychological problem	.242(.101)***
Sexual symptoms ← Recent psychological problem	.192(.106)***
Body shape ← Recent psychological problem	.184(.094)***
Cognitive impairment ← Recent disease	.122(.081)**
Aches and pain ← Recent disease	.120(.086)**
Vasomotor symptoms ← Recent disease	.130(.066)***
Numbness ← Recent disease	.122(.085)**
Mouth, nails and hair changes ← Recent disease	.220(.080)***
Sexual symptoms ← Recent disease	.112(.096)**
Body shape ← Recent disease	.126(.085)**
Depressive mood ← Spirituality	-.414 (.074)***
Cognitive impairment ← Spirituality	-.287(.075)***
Aches and pain ← Spirituality	-.148(.075)***
Vasomotor symptoms ← Spirituality	-.125(.057)**
Perceived loss of control ← Spirituality	-.177(.047)***
Mouth, nails and hair changes ← Spirituality	-.152(.069)**
Anxiety ← Spirituality	-.308(.077)***
Skin and facial hair changes ← Spirituality	-.184(.070)***
Sexual symptoms ← Spirituality	-.211(.085)***

β =standardized estimates; SE =standard error; p =significance level

* $p < .05$; ** $p < .01$; *** $p < .001$

Squared multiple correlations evidenced that 25.7% of depressive mood, 14.5% of anxiety and 1.5% of perceived loss of control, was explained by the socio-demographic variables, health and menopause status, and spirituality.

Similarly, 18.2%, 7.5% and again 7.5% of the variability of sexual, vasomotor and urinary symptoms' severity were explained by the variables assessed.

Finally, 13.5% of cognitive impairment, 9.0% of aches and pain, 9.0% of numbness, 8.4% of mouth, nails and hair changes, 8.2% of skin and facial hair changes, and 1.7% of body shape's variability were explained by the spirituality, socio-demographic variables, perceived health and menopause status.

Discussion

Depressive mood, anxiety and sexual symptoms have been identified as negative psychological experiences during the climacteric period. However, it has been emphasised that these are not exclusively associated with hormonal changes, but also with socio-demographic variables and negative psychosocial events [37]. These observations are confirmed in the present study, as the educational level, marital status, household's annual income, parity, as well as menopausal status and health status (having a recent disease and a psychological problem), are significant predictors of the menopausal symptoms' severity.

Menopause status (namely, the transition from peri- to post-menopause) has been identified as a robust predictor of vasomotor symptoms' occurrence, as well as of sexual problems in prior researches [28,38-40]. In this sample, menopausal status predicted not only the sexual symptoms and skin and facial hair changes, but also vasomotor symptoms, hence supporting a strong association between endogenous estrogens decrease and vasomotor symptomatology. However, socio-demographic variables, specifically marital status and parity, were also significantly associated with these symptoms: married women (or participants in a relationship) and women with less (or without) children, presented a higher severity of vasomotor symptoms than their counterparts not married (nor in a relationship) and with more children.

Moreover, being married or in a relationship predicted significantly a higher severity of sexual symptoms. This might express that married women and participants with a partner are more sexuality active (having a higher prevalence of symptoms in the context of their active sexual life), than their counterparts with another marital status (as divorced, separated, widowed or single); also, it cannot be excluded that this higher prevalence of sexual symptoms might also be associated with the partners' sexual or

health problems. In a previous study with menopausal women and partners, data regarding the latter evidenced the presence of erectile dysfunction (23.8%), premature ejaculation (21.2%) and alcohol abuse (43.5%); adding to this, male sexual dysfunction increased the risk of more exacerbated menopause symptoms in women [41]. Other authors have documented that the partners' health problems were associated with lower regularity of sexual intercourse and satisfaction [42].

Low income has been related to depressive symptoms elsewhere regarding women in climacteric period [43]. In this sample of peri- and post-menopausal women, participants with higher family's annual income had less severe depressive symptoms than participants with lower household income. Equally, a perceived loss of control was also negatively predicted by income.

A higher level of education has been strongly associated with lower prevalence of depression [44]. This tendency is supported in the present research, since the educational level is a significant and negative predictor of depressive mood (that is, women with more schooling years have a less severe depressive mood than participants with less schooling years), as well as for numbness, aches and pain, and sexual symptoms (similarly, women with higher educational levels present less severe symptoms). Likewise, menopausal women in another study with lower educational level manifested higher physical and psychological scores than participants with more schooling years [41].

It has been evidenced that high scores in physical and mental health components are associated with more sexual symptoms around menopause [42]. This conclusion is reinforced by our results: women with a self-reported disease evidence a higher severity of menopausal symptoms than participants without the presence of a recent disease. The same tendency was observed regarding a perceived psychological problem, which was also a positive and significant predictor for all menopausal symptoms' severity. Similarly, it has been concluded that a good perceived health status decreases the risk for severe menopausal symptoms [41] and, depending on the self-assessed health status, women will present differences in the prevalence of menopausal symptoms [45].

Although spirituality has been associated with better health outcomes [46-48] as well as health-related behaviours [49], evidence about the connection between spirituality and health outcomes is still under debate [50]. Our results showed that spirituality was a negative and significant predictor of menopausal symptoms' severity, namely, of depressive mood, cognitive impairment, aches and pain, perceived loss of control,

mouth, nails and hair changes, anxiety, skin and facial hair changes, vasomotor and sexual symptoms (the only symptoms which did not show a significant association with spirituality were numbness, urinary symptoms and body shape changes). Hence, women with higher levels of spirituality present lower severity of the mentioned menopausal symptoms, comparing with their counterparts who have lower levels or an absence of spirituality.

Therefore, spirituality predicted lower levels of very similar symptoms in peri- and post-menopausal women, as those observed previously for different and mainly clinical populations, specifically pain [18], anxiety [10,12,17], depressive mood [10-16], fatigue and memory problems [10]. It is possible that there are other variables mediating the strong predictive effect of spirituality on the severity of symptoms. Indeed, Williams and Sternthal [51] mentioned that the positive effect of spirituality in health can be mediated by health practices and social relationships.

Regarding the menopause experience, it has been concluded elsewhere that, as women move towards the menopausal transition, they become less positive regarding the evaluation of their role(s) in life, when compared with women in pre-menopause [27]. This might be associated with the fact that the most important and consistently mentioned role was being a mother [27]. In a developmental perspective, it is assumed that this role will be subjected to transformations as children grow up and become independent. Furthermore, this developmental task, which is observed as women go through midlife (and, concomitantly, through the menopausal transition), might be associated with the negative assessments of women's role(s) in life. Given that spirituality encompasses the determination and pursuing of existential goals (like inner potential, meaning, feeling whole and connected with others), and it is based on values regarding the self, others, nature and life, also reflecting the awareness of a transcendent dimension [52], it might function as protective experience in this stage of a women's life.

It has been evidenced that characteristics such as age, education, socio-economic and health status should be considered when exploring the associations between health outcomes and spirituality, since they can be confounding variables. In addition, multivariate methods are recommended in estimating the magnitude of these associations and often fail to be used [50]. Our study intended to overcome this gap in the spirituality's research by using structural equation modelling and attaining a multivariate causal model, hence strengthening the conclusions drawn. However,

regarding spirituality, the hypothesis that less severe symptoms predict higher levels of spirituality cannot be disregarded. Thus, it would be important to explore further relations involving spirituality in future studies.

Research focusing on this variable is also important given the benefits that it appears to have on health and on symptoms' reporting. In the present study, higher scores of spirituality have predicted a lower severity of menopausal symptoms, but other researchers have supported the benefits of this component to health. A higher spirituality was associated with lower levels of smoking, higher self-esteem and satisfaction with social support [53], and with psychosocial adjustment [54]. Additionally, spirituality has also been evidenced as buffering the effects of negative life events during middle-age [55], and as a moderator between the negative effect of aging-related frailty and psychological well-being [56]. Moreover, spirituality provides a sense of wholeness, particularly important in the presence of health complications [57].

Gender differences have been noticed in relation to this variable. The existent, but scarce, literature on the subject identifies women as presenting stronger association with spirituality. Religious involvement has predicted significantly lower mortality rates at follow-up [58,59] and this association was stronger in women [59,60]. Similarly, in a normative sample of college students, it was found that female participants presented higher levels of spirituality when compared with their male counterparts [61]. A possible explanation is a greater socialisation for emotional expression and the need for support given women's typical caregiving role [24]. However, further research is needed to confirm these results in other samples, in an aging population, comparing genders.

Conclusions

This study evidences spirituality as a predictor of lower severity of menopausal symptoms during peri- and post-menopause. This result, obtained through structural equation modelling, is independent of socio-demographic characteristics and perceived health and menopausal status.

Therefore, spirituality can be a protective characteristic regarding the development and report of several symptoms. Given these results and since the existent literature is still

scarce, further research is recommended, especially in the aging population which is more prone to evidence physical frailty or a disease diagnosis.

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Current knowledge on this subject:

- There are some evidences about an association between spirituality's development and age progression.
- The impact of spirituality on health variables, specifically on menopausal symptoms is still poorly understood.

What this study adds:

- Spirituality is a significant predictor of menopausal symptoms' severity.
- Independently of socio-demographic, and health and menopausal status, women with higher levels of spirituality report less severe menopausal symptoms of both physical and psychological nature.
- Besides spirituality, socio-demographic, health and menopause-related variables predict significantly certain menopausal symptoms.

Menopausal symptoms: do life events predict severity of symptoms in peri- and post-menopause?

Short title: Menopause Symptoms and Life Events

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Keywords: menopausal symptoms, life events, structural equation modeling

ABSTRACT

Objective: Hormonal changes during menopausal transition are linked to physical and psychological symptoms' emergence. The aim of this research is to explore if life events predict menopausal symptoms in a sample of peri- and post-menopausal women, controlling for confounding variables. Methods: This cross-sectional research encompasses a community sample of 992 women who answered to socio-demographic, health, menopause-related and lifestyle questionnaires; menopausal symptoms and life events were assessed with validated instruments. Structural equation modelling was used to build a causal model having as dependent variables twelve sets of menopausal symptoms. Results: Menopausal status predicted only three symptoms, namely, skin/facial hair changes ($\beta=.136;p=.020$), sexual ($\beta=.157;p=.004$) and, marginally,

vasomotor symptoms ($\beta=.094;p=.054$). Life events predicted depressive mood ($\beta=-.391;p=.002$), anxiety ($\beta=-.271;p=.003$), cognitive impairment ($\beta=-.295;p=.003$), body shape changes ($\beta=-.136;p=.031$), aches/pain ($\beta=-.212;p=.007$), skin/facial hair changes ($\beta=-.171;p=.021$), numbness ($\beta=-.169;p=.015$), perceived loss of control ($\beta=-.234;p=.008$), mouth, nails and hair changes ($\beta=-.290;p=.004$), vasomotor ($\beta=-.113;p=.044$) and sexual symptoms ($\beta=-.208;p=.009$). Moreover, menopausal herbal/soy products' use was associated with higher symptoms' severity. When compared with pre-menopausal women, peri- and post-menopausal participants presented a higher severity for the majority of symptoms. Conclusions: Although women in peri- and post-menopausal manifested higher symptoms' severity, only three of the menopausal symptoms assessed were predicted by menopausal status. Since the vast majority of menopausal symptoms' severity was significantly influenced by life events, it is concluded that the symptomatology exacerbation, in peri- and post-menopausal women, might be due to life conditions and events, rather than hormonal changes. Therefore, these should be accounted for in menopause-related clinical and research settings.

INTRODUCTION

The severity of menopausal symptoms, which have their highest prevalence in late perimenopause and early post-menopause[1], is known to be influenced by bio-psycho-social factors[2,3,4].

The symptoms reported during climacteric period have been associated with the reduction of estrogens[5]. However, the symptoms' onset is also affected by well-being, professional status, smoking and education[6]; lifestyle can also entail an influence in psychological symptoms of menopause, namely depressive mood and anxiety[7].

Vasomotor and sexual symptoms have been identified as the clinical manifestations more strongly associated with the menopausal status[6,8-10]; psychological and somatic symptoms (other than sexual and vasomotor) related with the menopause process are more likely to be associated with psychosocial factors[10].

Therefore, some studies have identified negative life events as a strong predictor of some menopausal symptoms[2,8].

The empty nest experience, everyday-life stress, health problems (partner's or own), death of a loved one, offspring's adolescence, financial difficulties, diseased parents,

reformulation of family roles, professional changes, modifications in the interpersonal relationships and in the lifestyle are some of the experiences that midlife (and menopausal) women might face and which can be responsible for the exacerbation of some psychological symptoms during this period[7,11,12].

Thus, the aim of this study is to explore if menopausal symptoms, both physical and psychological, are predicted by life events, controlling for confounding variables such as socio-demographic factors, health and menopause-related variables, and lifestyle, in a sample of peri- and post-menopausal women. It is also our objective to compare different menopausal statuses (namely, pre-, peri- and post-menopause) regarding the severity of menopausal symptoms, in a community sample.

METHODS

Participants

A community sample of 992 women in pre-, peri- and post-menopause was included in the present study. Table 1 describes the participants, aged between 42 and 60 years.

Table 1 - Distribution of the study's participants according to socio-demographic, health and menopause-related characteristics and lifestyle

Characteristics	Pre-		Peri-		Post-	
	n	%	n	%	n	%
n	282	28.5	298	30.0	412	41.5
Age (<i>M</i> ; <i>SD</i>)	45.7(3.230)		47.6(3.787)		53.9(4.207)	
Marital status						
Married or in a relationship	202	71.9	218	73.2	277	67.4
Not married or in a relationship	79	28.1	80	26.8	134	32.6
Education						
Primary school	19	6.9	28	9.5	62	15.4
Middle school	51	18.5	68	23.1	98	24.4
High school	79	28.6	91	31.0	109	27.1
University degree	127	46.0	107	36.4	133	33.0

Professional status						
Active	259	92.5	262	89.7	317	78.7
Inactive	21	7.5	30	10.3	86	21.3
Parity						
0	21	7.5	22	7.5	42	10.4
1	83	30.0	97	33.1	104	25.9
2	123	44.4	136	46.4	186	46.3
>2	50	18.1	38	12.9	70	17.3
Income						
≤ 10.000€	47	19.5	60	23.9	91	26.1
10.001€-20.000€	66	27.4	66	26.3	85	24.4
20.001€-37.500€	63	26.1	65	25.9	79	22.6
37.501€-70.000€	44	18.3	42	16.7	68	19.5
≥ 70.001€	21	8.7	18	7.2	26	7.4
Medical help search (to manage menopause)						
Yes	35	13.5	136	46.7	257	71.6
No	224	86.5	155	53.3	102	28.4
Hormone therapy, herbal/soy therapy or nothing						
Hormone ther.	4	1.5	13	4.5	49	13.5
Herbal/soy ther.	0	0	16	5.5	48	13.3
Nothing	273	98.5	262	90.0	265	73.2
Recent disease						
Yes	35	12.4	51	18.0	95	23.8
No	245	86.9	233	82.0	304	76.2
Recent psychological problem						
Yes	33	12.0	43	14.8	76	18.9
No	243	88.0	247	85.2	327	81.1

Body mass index						
(kg/m ²)						
≤ 24,9	166	59.1	157	53.0	205	50.6
> 24,9	115	40.9	139	47.0	200	49.4
Physical exercise						
Yes	118	42.1	127	43.1	197	48.8
No	162	57.9	168	56.9	207	51.2
Coffee						
Daily	229	81.8	243	82.4	301	74.3
Never or occasionally	51	18.2	52	17.6	104	25.7
Alcohol						
Yes	137	49.1	157	53.0	192	47.2
No	142	50.9	139	47.0	215	52.8
Smoking						
Current smoker	73	25.9	87	29.7	82	20.5
Current non- smoker	204	73.6	206	70.3	318	79.5

Procedure

This cross-sectional study encompasses a community sample which was mainly recruited through schools and universities in the city of Lisbon. The inclusion criteria in this research were gender (female), literacy and age (between 42 and 60 years). The American Psychological Association's standards on the ethical treatment of participants were followed. A written informed consent form was delivered to all participants, explaining the aims of the study, emphasizing that the participation in this research was voluntary and that participants could interrupt their collaboration at any time, without any consequences.

After receiving the informed consent and agreeing to participate in the research, a sample of 1.003 Portuguese women answered to all the instruments adequately (45 were excluded due to lack of sufficient information). In this study 992 participants were included since 11 women gave insufficient information to determine menopausal status.

Measures

Menopause Symptoms

A validated version of the Menopause Symptoms' Severity Inventory, MSSSI-38[13] was used. This inventory includes thirty-eight items, organized in twelve sets of menopausal symptoms (depressive mood; anxiety; cognitive impairment; body shape changes; aches and pain; skin and facial hair changes; numbness; perceived loss of control; mouth, nails and hair changes; vasomotor, urinary and sexual symptoms). Both frequency and intensity of symptoms were measured in reference to the previous month, using a 5-point Likert-type scale which ranges from "never" (0) to "daily or almost every day" (4) and from "not intense" (0) to "extreme intensity" (4), respectively. The severity of each symptom is calculated afterwards, using the mean between the values of frequency and intensity for each item.

Life Events

The Life Experiences Survey[14] evaluates the impact of a variety of events in the participants' life, during the previous month. This inventory includes 47 events that can be measured in a 7-point Likert-type scale, ranging from "very negative" (-3) to "very positive" (3). There is also the possibility to answer "does not apply" for each event. Only events which were mentioned by at least 10% of the sample were included in the causal model.

Menopausal and Health-related variables

The menopausal status was defined according to the Stages of Reproductive Aging Workshop's criteria[15]. Women in pre-menopause presented an absence of changes in their menstrual cycle. Peri-menopausal participants would report variable cycle length (a difference of more than seven days, than usual) or had skipped two or more cycles and had an amenorrhea interval superior to sixty days. Post-menopausal women had at least a twelve-month period of amenorrhea.

Besides menopausal status, the use of hormone therapy, herbal/soy products or nothing to manage menopause symptoms was also asserted. In addition, search for medical help to manage these symptoms was also controlled.

Health status (both physical and psychological), as menopausal status, was self-reported. The presence of a recent disease and of a psychological problem was asked to the participants.

Lifestyle

Alcohol and coffee intake, smoking, physical exercise and body mass index (BMI) were assessed.

Lifestyle habits were explored in terms of presence/absence, amount and/or frequency. Hence, physical exercise was measured in terms of times per week, and during how many minutes, the participant exercised; a mean value of weekly frequency and duration was used in the multivariate model. Coffee intake, when present, was assessed in a four-option scale, ranging from “occasionally” to “more than five per day”. Alcohol intake, when observed, was measured both in terms of frequency (“daily”, “every weekend” or “rarely”) and quantity (“until I feel drunk”, “moderately” or “less than a glass per occasion”); a mean value of both translates the alcohol consumption variable, in the causal model. Finally, for current smokers, smoking was quantified in a 6-point Likert-type scale that ranged from “less than 10 cigarettes per month”, until “more than 40 cigarettes per day”; this quantification integrated the structural equation model to assert the influence of smoking on the menopausal symptoms’ severity.

Socio-demographic characteristics

Socio-demographic factors such as age, marital status, parity, professional status, educational level and family annual income were explored.

Statistical Analysis

Missing values were imputed for variables, where its frequency was lower than 10% of the sample. This was done using the mean interpolation method.

The distribution of the variables studied was explored with SPSS Statistics (v. 19, IBM SPSS Inc, Chicago, IL).

To explore if there were significant differences regarding the severity of menopausal symptoms, the participants in the three menopausal stages (pre-, peri- and post-menopausal) were compared with a one-way ANOVA, followed by a Tukey’s test, to identify if differences were observed between menopausal statuses.

Multicollinearity between the independent variables was explored with the variance inflation factor (VIF) given by SPSS Statistics (v. 19, IBM SPSS Inc, Chicago, IL). All variables presented a value below 5, indicating the absence of collinearity[16].

To test the causal model for menopausal symptoms in peri- and post-menopausal participants, a structural equation model was built, relating the dependent variables (twelve sets of symptoms) with the eighteen independent variables (namely, age, parity, marital and professional status, income, education, presence of a recent psychological problem or a disease, transition from peri- to post-menopause, use of hormone therapy or herbal/soy products to manage menopause symptomatology, medical help search to deal with menopause, alcohol and coffee intake, smoking, physical exercise, body mass index and life events). The model was evaluated with SPSS AMOS software (v. 18, IBM SPSS Inc, Chicago, IL). The quality of the fit of the structural model was given by chi-square statistics (χ^2/df), comparative fit index (*CFI*), goodness of fit index (*GFI*) and root mean square error of approximation (*RMSEA*), and the reference values currently practiced in structural equation modelling[17] were used. A two-step approach was employed to evaluate the causal structural model. First, the factor's measurement model was evaluated to demonstrate an acceptable fit. Thereafter, the structural causal model, encompassing the dependent and independent variables, was adjusted and the significance of the causal trajectories was evaluated.

RESULTS

Women in the three different menopausal statuses were compared regarding the twelve sets of menopausal symptoms. Mean scores (which can range from 0 to 4) and standard deviations, of each symptom in each menopausal status, are also given. The results are shown in table 2.

Table 2 – Menopausal symptoms: comparison between pre-, peri and post-menopausal participants

Menopausal symptoms	Pre- <i>M(SD)</i>	Peri- <i>M(SD)</i>	Post- <i>M(SD)</i>	ANOVA one-way		
				<i>MD(SE)p</i>		
Depressive mood	.771(.894)	.958(.909)	1.032(.952)	Pre- Peri-	-.187(.077). 042	
				Pre- Post-	-.262(.073). 001	
				Peri- Post-	-.075(.072).551	
Cognitive	.832(.833)	1.129(.952)	1.230(.962)	Pre- Peri-	-.297(.078)***	

impairment

				Pre-	Post-	-.397(.073)***
				Peri-	Post-	-.101(.072).340
Aches and pain	.966(.818)	1.227(.873)	1.396(.934)	Pre-	Peri-	-.262(.074). 001
				Pre-	Post-	-.430(.069)***
				Peri-	Post-	-.168(.068).037
Vasomotor symptoms	.263(.534)	.730(.979)	1.102(1.186)	Pre-	Peri-	-.467(.083)***
				Pre-	Post-	-.839(.077)***
				Peri-	Post-	-.373(.076)***
Numbness	.574(.881)	.791(1.012)	.954(1.058)	Pre-	Peri-	-.217(.084). 028
				Pre-	Post-	-.380(.079)***
				Peri-	Post-	-.163(.078).092
Mouth, nails and hair changes	.461(.660)	.647(.846)	.710(.833)	Pre-	Peri-	-.186(.068). 016
				Pre-	Post-	-.249(.063)***
				Peri-	Post-	-.063(.062).575
Anxiety	1.095(.842)	1.379(.895)	1.399(.926)	Pre-	Peri-	-.284(.075)***
				Pre-	Post-	-.304(.070)***
				Peri-	Post-	-.020(.069).954
Skin and facial hair changes	.364(.699)	.452(.758)	.666(.831)	Pre-	Peri-	-.087(.066).380
				Pre-	Post-	-.302(.062)***
				Peri-	Post-	-.214(.061). 001
Urinary symptoms	.513(.751)	.626(.876)	.857(1.021)	Pre-	Peri-	-.114(.077).302
				Pre-	Post-	-.345(.072)***
				Peri-	Post-	-.231(.071). 003
Sexual symptoms	.528(.794)	.892(1.018)	1.380(1.208)	Pre-	Peri-	-.364(.089)***
				Pre-	Post-	-.853(.083)***
				Peri-	Post-	-.488(.082)***
Body shape changes	.789(.874)	1.118(1.042)	1.135(1.094)	Pre-	Peri-	-.330(.086)***

				Pre-	Post-	-.346(.081)***
				Peri-	Post-	-.016(.080).977
Perceived loss of control	.215(.432)	.364(.624)	.450(.695)	Pre-	Peri-	-.149(.051).011
				Pre-	Post-	-.236(.048)***
				Peri-	Post-	-.087(.047).160

MD=Mean difference; *SE*=Standard error; *** $p \leq .001$

To assert if life events could be a significant predictor of menopausal status, in a sample of peri- and post-menopausal women (with a total dimension of 710 participants), a causal model encompassing the eighteen independent variables (age, parity, marital and professional status, household income, education, presence of a recent psychological problem or a disease, transition from peri- to post-menopause, use of hormone therapy or herbal/soy products to manage menopause symptomatology, medical help search do deal with menopause, alcohol and coffee intake, smoking, physical exercise, body mass index and life events) was built.

Both the measurement ($\chi^2/df=2.153$; $CFI=.871$; $GFI=.852$; $RMSEA=.041$; $p=1.000$; $C.I. 90\%=[.039; .042]$) and the structural model ($\chi^2/df=1.967$; $CFI=.860$; $GFI=.848$; $RMSEA=.037$; $p=1.000$; $C.I. 90\%=[.036; .039]$) evidenced a good fit.

Given the high number of trajectories, only significant ones are presented in the table 3.

Table 3 – Significant structural weights: causal model relating the independent variables (socio-demographic, health and menopause-related factors, lifestyle and life events) with the dependent variable (menopausal symptoms)

Significant trajectories	$\beta(SE)p$
Vasomotor symptoms ← Marital status	.088(.059).029
Sexual symptoms ← Marital status	.160(.087)***
Depressive mood ← Educational level	-.116(.020).010
Aches and pain ← Educational level	-.099(.024).041
Mouth, nails and hair changes ← Educational level	-.116(.022).032
Sexual symptoms ← Educational level	-.123(.027).021
Depressive mood ← Household annual income	-.101(.030).019
Perceived loss of control ← Household annual income	-.147(.023).007

Numbness ← Household annual income	-0.126(.036).010
Depressive mood ← Parity	.075(.029).035
Vasomotor symptoms ← Parity	-.089(.027).020
Mouth, nails and hair changes ← Parity	.147(.031)***
Anxiety ← Parity	.083(.034).023
Cognitive impairment ← Recent disease	.116(.081).003
Aches and pain ← Recent disease	.109(.084).005
Vasomotor symptoms ← Recent disease	.122(.065).002
Numbness ← Recent disease	.112(.084).006
Mouth, nails and hair changes ← Recent disease	.217(.076)***
Skin and facial hair changes ← Recent disease	.100(.080).032
Sexual symptoms ← Recent disease	.109(.095).011
Body shape changes ← Recent disease	.095(.083).023
Depressive mood ← Recent psychological problem	.284(.081)***
Cognitive impairment ← Recent psychological problem	.273(.090)***
Aches and pain ← Recent psychological problem	.172(.093)***
Vasomotor symptoms ← Recent psychological problem	.084(.070).031
Perceived loss of control ← Recent psychological problem	.281(.061)***
Numbness ← Recent psychological problem	.095(.092).020
Mouth, nails and hair changes ← Recent psychological problem	.175(.083)***
Anxiety ← Recent psychological problem	.273(.091)***
Skin and facial hair changes ← Recent psychological problem	.197(.088)***
Urinary symptoms ← Recent psychological problem	.241(.101)***
Sexual symptoms ← Recent psychological problem	.196(.104)***
Body shape changes ← Recent psychological problem	.165(.092)***
Skin and facial hair changes ← Menopausal status	.136(.083).020
Sexual symptoms ← Menopausal status	.157(.098).004
Vasomotor symptoms ← Menopausal status	.094(.066).054
Depressive mood ← Medical help search (to manage menopause)	.074(.061).046
Aches and pain ← Medical help search (to manage menopause)	.146(.073)***
Vasomotor symptoms ← Medical help search (to manage menopause)	.175(.056)***
Numbness ← Medical help search (to manage menopause)	.110(.073).009

Mouth, nails and hair changes ← Medical help search (to manage menopause)	.140(.065).002
Anxiety ← Medical help search (to manage menopause)	.121(.071).002
Sexual symptoms ← Medical help search (to manage menopause)	.111(.082).012
Body shape changes ← Medical help search (to manage menopause)	.145(.072)***
Vasomotor symptoms ← herbal/soy products	.131(.091)***
Sexual symptoms ← herbal/soy products	.114(.133).008
Body shape changes ← herbal/soy products	.107(.117).010
Aches and pain ← BMI	.109(.008).008
Numbness ← BMI	.124(.008).004
Urinary symptoms ← BMI	.259(.009)***
Body shape changes ← BMI	.388(.009)***
Cognitive impairment ← Smoking	-.094(.021).023
Perceived loss of control ← Smoking	-.105(.014).026
Numbness ← Coffee	.095(.039).022
Cognitive impairment ← Alcohol	.092(.043).021
Depressive mood ← Life events	-.391(.578).002
Cognitive impairment ← Life events	-.295(.479).003
Aches and pain ← Life events	-.212(.394).007
Vasomotor symptoms ← Life events	-.113(.216).044
Perceived loss of control ← Life events	-.234(.244).008
Numbness ← Life events	-.169(.333).015
Mouth, nails and hair changes ← Life events	-.290(.408).004
Anxiety ← Life events	-.271(.478).003
Skin and facial hair changes ← Life events	-.171(.297).021
Sexual symptoms ← Life events	-.208(.410).009
Body shape changes ← Life events	-.136(.294).031

β =standardized estimates; SE =standardized error; *** $p \leq .001$

DISCUSSION

Menopausal symptoms are expected to be exacerbated in peri-menopause and to decrease in post-menopause[2], and the only symptoms that post-menopausal women seem to have more exacerbated than peri-menopausal women are vasomotor ones[3]. However, it has also been observed that women in post-menopause present higher rates of menopausal symptoms than their counterparts in peri-menopause[18]. Our results support the latter conclusion, since post-menopausal women presented higher mean scores for all symptoms, although only aches and pain, vasomotor, sexual and urinary symptoms, and skin and facial hair changes were significantly higher in post-menopause (compared with their peri-menopause counterparts).

The literature has also highlighted that psychological symptoms are frequent in pre-menopausal women and associated with vasomotor symptoms[3]. Nonetheless, peri-menopause has also been identified in another study as the menopausal stage where psychological symptoms are more prevalent[10]. In this research, all symptoms, both psychological and somatic, were significantly elevated in peri- and post-menopausal women when compared with their pre-menopausal counterparts; the only exception was skin and facial hair changes, and urinary symptoms that did not vary significantly between participants in pre-menopause and in the menopausal transition. Still concerning psychological symptoms, when compared with post-menopausal participants, women in peri-menopause did not differ significantly, specifically in terms of perceived loss of control, anxiety and depressive mood's severity.

Moreover, the severity of menopausal symptoms in this community sample was low: in a scale ranging from 0 to 4, the symptoms varied between a mean score of .215 ($SD=.432$; perceived loss of control in pre-menopausal participants) and 1.399 ($SD=.926$; anxiety in post-menopausal).

In this study, higher education and income were significant predictors of lower severity of menopausal symptoms. These two characteristics have been emphasized, in the past, as influencing the way women experience symptoms and manage the search for medical care: women with higher socio-economic status and more schooling have more access to health care systems and use more often hormone therapy for menopausal symptoms[9]. In addition, it can be hypothesized that these factors provide, to midlife women, not only more medical help, but also more support mechanisms and strategies, which may allow them to manage their menopausal symptoms (and their lives)

differently than their counterparts with lower educational level and economical status. This might partially explain how women with more schooling years and a higher household income presented a lower severity of depressive mood, aches and pain, changes related with the mouth, nails and hair, sexual symptoms, numbness and perceived loss of control.

Marital status has been previously identified as a predictor of sexual symptoms during the menopausal transition[19,20]. The results of the present study emphasized this: married women (or with a partner) had more severe sexual symptoms than their counterparts who were not married or in a relationship. Besides sexual difficulties, marital status as well as parity, were significantly linked to vasomotor symptoms; hence, women with more children and who were not married (or in a relationship) reported less severe vasomotor symptoms.

The health status, both physical and psychological, can be also significantly related with the symptomatology occurring during the menopause process, namely with sexual symptoms[19]. In this study, besides sexual symptoms, self-reported physical and psychological status significantly predicted the vast majority of menopausal symptoms.

The peri-menopausal status has been identified as a risk factor for somatic and vasomotor symptoms[2]. The transition from peri- to post-menopause was significantly associated with sexual and skin and facial hair changes (vasomotor symptoms were predicted by menopausal status but only in a marginally significant way), in the present study. This emphasizes the conclusions drawn elsewhere: hypoestrogenism subsequent to menopause can lead to changes in the skin[21] and there is a significant connection between the menopausal stage and sexual symptoms[10].

Furthermore, the search medical help to manage menopause, significantly predicted both physical and psychological symptoms: women who had used health care for menopause management presented higher severity of symptoms independently of socio-demographic, lifestyle, health and menopausal status and life events. Previous results have demonstrated that there is an association between seeking for medical help and the frequency of menopausal symptoms, which was influenced by socio-demographic characteristics[9].

The use of herbal/soy products to manage menopausal symptoms was significantly associated with more severe vasomotor and sexual symptoms, as well as body shape modifications. Therefore, the use of these natural products did not attenuate the climacteric symptoms, but rather predicted their exacerbation. This might translate an

insufficient clinical control and a mismatching between personal needs of the symptomatic women and products' use. In addition, it has been evidenced that herbal therapies for menopausal symptoms might be ineffective[22,23], and some might not meet the necessary safety conditions[24]. Further research on the impact of herbal/soy therapies is necessary to confirm them as an eligible treatment of menopause-related symptomatology.

A higher BMI was also a significant predictor for several physical symptoms; hence women with a more elevated body weight would present more severe complaints in terms of aches and pain, numbness, urinary symptoms and body shape changes. It has been evidenced elsewhere that the menopausal status does not have an impact in self-rated health; however, modifications in BMI can predict a change in the perceived health status[25]. This data is relevant as an increase in weight can be reported around the menopause transition[26], and weight gain prevention should be targeted in order to prevent its impact not only in the body shape perception, but also in the perceived health status and specific physical symptoms that are, as demonstrated by our results, worsened with higher body weight.

Smoking seems to be associated to less severe cognitive impairment and perceived loss of control since it is a significant and negative predictor. Prior outcomes have identified a moderate alcohol intake (when accompanied with physical exercise and absence of smoking behavior) as beneficial to menopausal women's well-being[27]. In this research, alcohol intake positively predicted cognitive difficulties: participants who drank more alcohol manifested more severe cognitive impairment than those who drank less (or no) alcohol.

A decline in the sexual life during the menopausal transition and post-menopause has been associated with a stressful life[20]. In addition, in a previous study, everyday stressful experiences had a negative impact in middle-aged women[27] and negative life events were presented as a risk factor for menopausal symptoms[2]. Specifically, negative vital events (as well as family dysfunction) incremented the risk for psychological symptoms: depression, anxiety and stress[3]. However, menopausal women might attribute certain symptoms (namely, a worsening in the sexual response) not only to life events, but also to physical and emotional changes subsequent to menopause[28].

The connection between life events and menopausal symptoms is supported in this research which shows that, independently from socio-demographic, menopausal and

health-related variables and lifestyle, life events significantly predicted all menopausal symptoms, except for the urinary ones. This supports the literature which evidences that life events can be related with the exacerbation of psychological menopausal symptoms[7,11,12] and goes further demonstrating that some physical symptoms might be significantly predicted by life events. Hence, women who evaluated their recent life events in a more positive way manifested less severe menopausal symptoms.

Although the measurement of menopausal symptoms has been receiving some attention, their significance for every life is still weakly developed[1]. Given the predictive power of life events concerning menopausal symptoms' severity, it is important to contextualize women in their lives when assessing menopausal symptoms and the impairment perceived to be caused by them. As our results show, in a causal model accounting for the socio-demographic, health and menopause-related variables, lifestyle and life events, menopausal status can predict the severity of certain symptoms. However, the exacerbation of the majority of symptoms was predicted by events that integrate women's lives. This outcome emphasizes the need to amplify the way clinicians and researchers perceive menopause and its related clinical manifestations, since they can be associated not with menopausal status but rather with events which occur in middle-aged women's lives.

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PART II – BODY WEIGHT

Predictors of weight variation and weight gain in peri- and post-menopausal women

Submitted to Health Psychology

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Abstract

Objective: Weight gain during midlife is frequent in women. This study explores the variation of weight around the time of menopause transition (loss, maintenance or gain), and identifies the predictors of this weight variation and, specifically, of weight gain. It is also investigated in which phase of life the overweight started.

Methods: This study is a cross-sectional research encompassing a community sample of 497 women in peri- and post-menopause who provided information about weight before menopause transition and current weight. Structural equation modelling was used to investigate the causal models of weight variation and weight gain. The studied variables included age, marital status, parity, professional status, education, income, self-reported physical and psychological health status, use of hormone therapy, menopausal status, alcohol and coffee intake, smoking, physical exercise, body shape concerns, depression, stress and life events.

Results: The vast majority of women (69%) gained weight from pre-menopause to current menopausal status (peri- or post-menopause) and 37% of overweight or obese participants identified menopause as the period when overweight began. The significant predictors of weight gain were educational level ($\beta=-.146$; $p=.017$), physical exercise

($\beta=-.111$; $p=.021$), having a recent psychological problem ($\beta=.191$; $p<.001$), transition from peri- to post-menopause ($\beta=.147$; $p=.013$) and body shape concerns ($\beta=.313$; $p<.001$).

Conclusions: Given the difficulty of the weight loss process and the negative impact of overweight/obesity on health, prevention of weight gain in pre-menopause is recommended and risk groups should be targeted considering the characteristics which account for a significant prediction of weight increase.

Key-words: weight variation; weight gain; menopause; predictors; structured equation modelling

Introduction

Nowadays, 1.1 billion adults are overweight or obese, and excessive body weight is considered the sixth most important factor in the origin of the overall burden of disease worldwide (Haslam & James, 2005). In developed countries in particular, from 2 to 7% of total health care costs are due to obesity (Hossain, Kavar, & Nahas, 2007).

Women usually report a weight gain during midlife (Campbell & Samaras, 2000; Dubnov, Brzezinski, & Berry, 2003; Heymsfield et al., 1994). During the menopausal process there are changes in body fat distribution, with a loss of lean body mass and an increase in total body fat and visceral fat (Heymsfield et al., 1994; Morita et al., 2006; Sternfeld, Bhat, Wang, Sharp, & Quesenberry, 2005). However, it is suggested that this weight increase during the menopausal transition is more strongly associated with the aging process than with hormonal changes (Simkin-Silverman & Wing, 2000). Despite this substantiation, other research evidenced that menopause has a significant and independent effect on the increase of the body's fat mass in peri-menopausal women (Ho, Wu, Chan, & Sham, 2010).

Independently of its predictors, obesity has been identified as a risk for certain cancers, type II diabetes, hypertension, coronary heart disease and stroke (Kruger, Ham, & Prohaska, 2009). Furthermore, weight gain was significantly associated with increased risk for breast and endometrial cancer, especially in those who never used hormonal therapy (Chang et al., 2007; Harvie et al., 2005; Huang et al., 1997). Moreover, weight

gain during menopause can have a negative impact on cardiovascular health (Simkin-Silverman, Wing, Boraz, & Kuller, 2003).

Since obesity's prevalence has been increasing and its treatment is difficult (Cooper et al., 2010), the prevention of weight gain during this period of women's life is an important health target (Simkin-Silverman et al., 2003).

Socio-demographic factors and lifestyle have been evidenced as contributors to weight gain (Campbell & Samaras, 2000; Crawford, Casey, Avis, & Mckinlay, 2000; Lahmann, Lissner, Gullberg, & Berglund, 2000; Nagata, Takatsuka, Kawakami, & Shimizu, 2002; Simkin-Silverman & Wing, 2000).

The data regarding menopausal status and hormone therapy use is not unanimous. Several studies show no association between these two and weight gain (Campbell & Samaras, 2000; Crawford et al., 2000; Davies, Heaney, Recker, Barger-Lux, & Lappe, 2001; Simkin-Silverman & Wing, 2000). On the other hand, there is evidence that the menopausal status has an impact on some metabolic and behavioural responses associated with weight loss (Riesco et al., 2008). Furthermore, early post-menopause has been associated with an increase of intra-abdominal fat (Toth, Tchernof, Site, & Poehlman, 2006).

The influence of depression and stress in weight gain is not certain. In past research depression did not increase the risk for future obesity although the reverse was factual: obese people had an increased risk for depression (Roberts, Deleger, Strawbridge, & Kaplan, 2003). However, depression has been associated with higher body weight elsewhere (Linde et al., 2004; Pagoto et al., 2007).

Stress has been evidenced as a predictor of weight gain, especially in young women (Serlachius, Hamer, & Wardle, 2007); in contrast, this psychological variable was not related with body weight in another research (Kim, Bursac, Dilillo, White, & West, 2009).

The literature also documents that certain life events could lead to weight gain (Roberts, Troop, Connan, Treasure, & Campbell, 2007); conversely, it has also been reported that that life experiences cannot predict body weight (Strickland, Giger, Nelson, & Davis, 2007).

Body shape concerns are frequently studied in both the context of adolescence (Davies & Furnham, 1986; Field et al., 2005) or in eating disorders (Beato, Cano, & Belmonte, 2003; Hadigan & Walsh, 1991). Additionally, prior body dissatisfaction has been identified as a robust predictor of weight gain rate in the years following pre-

adolescence (Anglé, Keskinen, Lapinleimu, Helenius, Raittinen, Röneemaa, & Simell, 2005). These types of concerns, however, have not been investigated in menopausal women. Given the modification in body weight that is usually reported in the phase, it is pertinent to explore how body shape concerns impact on the weight modification, during the menopause process.

Therefore, the present research explores if socio-demographic, health, menopause, lifestyle, and psychological variables (such as depression, stress and body shape concerns), as well as life events, are predictors of weight variation and, specifically, of weight gain in a sample of peri- and post-menopausal women.

Methods

Participants

A community sample of 1,003 women, aged between 42 and 60 years, participated in a larger study on menopause. In this particular research, 497 participants who were in peri- and post-menopause, and that gave information on their current weight and weight before the menstrual cycle variations started (that, weight in the pre-menopause phase), were included.

Characterization of participants is presented in table 1.

Table 1 – Characterization of peri- and post-menopausal participants

Characteristics	Peri-		Post-	
	n	%	n	%
n	166	33.4	331	66.6
Age ($M\pm SD$)	48.4 \pm 3.645		54.0 \pm 4.147	
Marital status				
Married or in a relationship	125	75.3	224	67.9
Not married or in a relationship	41	24.7	106	32.1
Parity				
0	10	6.2	29	9
1	58	35.8	83	25.6
2	73	45.1	157	48.5

> 2	21	13	54	16.7
Educational level				
Primary school	16	9.8	46	14.2
Middle school	37	22.6	79	24.4
High school	45	27.4	81	25.0
University degree	66	40.2	118	36.4
Professional status				
Active	143	87.7	256	78.5
Inactive	20	12.3	70	21.5
Household annual income				
≤ 10.000 €	34	23.6	66	23.2
10.001 – 20.000 €	33	22.9	72	25.3
20.001 – 37.500 €	38	26.4	64	22.5
37.501– 70.000 €	26	18.1	59	20.7
≥ 70.001 €	13	9.0	24	8.4
Hormone therapy				
Yes	12	7.5	44	15.1
No	154	92.5	287	84.9
Recent disease				
Yes	34	21.5	78	24.3
No	124	78.5	243	75.7
Recent psychological problem				
Yes	28	17.3	57	17.5
No	134	82.7	268	82.5
Coffee intake				
Yes	148	89.2	275	83.6
No	18	10.8	54	16.4
Alcohol intake				
Yes	90	54.2	156	47.4
No	76	45.8	173	52.6
Current smoker				
Yes	57	34.5	70	21.7
No	108	65.5	253	78.3

Physical exercise				
Yes	68	41.5	164	50.2
No	96	58.5	163	49.8
Body mass index (kg/m ²)				
> 24,9	76	45.8	162	49.4
≤ 24,9	90	54.2	166	50.6

Measures

The instruments included the Portuguese adaptation of the Depression, Anxiety and Stress Scales (Lovibond & Lovibond, 1995; Pais-Ribeiro, Horando, & Leal, 2004), the Body Shape Questionnaire (Cooper, Taylor, Cooper, & Fairburn, 1987), the Life Events Survey (Sarason, Johnson, & Siegel, 1978; Silva, Pais-Ribeiro, Cardoso, & Ramos, 2003), as well as a questionnaire to identify the menopausal status according to the Stages of Reproductive Aging Workshop criteria (Soules et al., 2001) and to explore socio-demographic variables, perceived physical and psychological health status, weight variation, menopause-related and lifestyle characteristics.

The Depression, Anxiety and Stress Scales (Lovibond & Lovibond, 1995; Pais-Ribeiro, Horando, & Leal, 2004) include 21-items organized in three factors (depression, anxiety and stress), with answers being given in a 4-points Lykert-type scale (ranging from “did not apply to me” to “it applied to me most of the time”). Data gathered with this measure has shown good psychometric properties (Lovibond & Lovibond, 1995; Pais-Ribeiro, Horando, & Leal, 2004).

The Body Shape Questionnaire (Cooper, Taylor, Cooper, & Fairburn, 1987) assesses the concerns about the body form in 34-items. Responses were given in a 6-point Likert-type scale with scores ranging from “never” to “always”. A confirmatory factor analysis was done and, because the item 26 (“Have you vomit in order to feel thinner?”) had the highest modification index (66.421), its residual evidenced covariance with several other residuals and presented the lowest correlation with the construct (.301), thus it was excluded. The data gathered with this 33-item version manifested good psychometric characteristics.

The Life Experiences Survey (Sarason, Johnson, & Siegel, 1978; Silva, Pais-Ribeiro, Cardoso, & Ramos, 2003) evaluates the impact of a variety of events in the participants’ life, during the previous month. This inventory includes 47 events that can be measured in a 7-point Likert-type scale, ranging from “very negative” to “very positive”. There is

also the possibility to answer “does not apply” for each event. Only events which were mentioned by at least 10% of the sample were included in the causal model.

Regarding menopausal status, peri-menopausal women would report variable cycle’s length (more than seven days different than usual), or had skipped two or more cycles and had an amenorrhea interval superior to sixty days. Post-menopausal women were confirmed for having at least a twelve-month period of amenorrhea.

Weight variation was assessed through self-reported current weight and weight before the variability in the menstrual cycle had begun. The difference between current and past weight (prior to the menstrual alterations) informed us whether the participant had lost, maintained or gained weight during menopausal transition.

Socio-demographic characteristics (age, marital status, parity, professional status, educational level, household annual income), as well as self-reported physical and psychological health status (recent diseases and psychological problems) and lifestyle characteristics (alcohol and coffee intake, smoking and physical exercise) were also assessed.

Lifestyle habits (namely, alcohol, coffee, smoking and physical exercise) were asserted in terms of presence/absence, amount and/or frequency. Hence, physical exercise was measured in terms of times per week, and during how many minutes, the participant exercised; a mean between weekly frequency and duration was used in the multivariate models. Coffee intake, when present, was assessed in a four-option scale, ranging from occasionally to more than five per day. Alcohol intake, when observed, was measured both in terms of frequency (daily, every weekend or rarely) and quantity (until I feel drunk, moderately or less than a glass per occasion); a mean value of both translates the alcohol consumption variable, in the causal models. Finally, for current smokers, smoking was quantified in a 6-point Likert-type scale that ranged from less than 10 cigarettes per month, until more than 40 cigarettes per day; this quantification integrated the structural equation models to assert the influence of smoking on the weight variation and gain.

Finally, to investigate if an excessive increase in weight had begun during menopause transition, women were also asked when the overweight had started.

Procedure

The American Psychological Association’s standards on ethical treatment of participants were followed. A written informed consent was delivered to all participants

explaining the aims of the study, emphasizing that the participation in this research was voluntary and that participants could interrupt their collaboration at any time without any consequences. A copy of the informed consent was given to every participant, where the contacts of the responsible researcher were included so that women could contact her if any question emerged.

After having given their informed consent and agreed to participate in the research, a community sample of 1,003 Portuguese women, not searching for help to lose weight, and between 42 and 60 years of age, filled in all the instruments adequately. This sample was mainly recruited through schools and universities in the city of Lisbon. The inclusion criteria in this research were gender (women), literacy (at least primary school) and age (between 42 and 60). Of a total of 1,003 participants, 497 peri- and post-menopausal women gave information about actual weight and weight prior to changes in menstrual cycle.

Statistical Analysis

Missing values were imputed for variables, where its frequency was lower than 10% of the sample. This was done using the mean interpolation method. To explore the sample distribution of the variables studied SPSS Statistics (v. 19.0, SPSS Inc., Chicago, IL) was used.

Multicollinearity between the independent variables was evaluated with the variance inflation factor (VIF) given by SPSS Statistics (v. 19, IBM SPSS Inc, Chicago, IL). All variables should present a VIF's value below 5 in order to prove the absence of multicollinearity (Maroco, 2010; Weisberg, 1985).

To explore if weight variation (loss, maintenance or gain) was independent of the menopausal status, a chi-square test (for independence) was used.

To test the causal models for body weight variation and weight gain during menopause transition, structural equation modelling was used through AMOS software (v. 18, IBM SPSS Inc, Chicago, IL). The goodness of fit of the structural model was given by chi-square statistics (χ^2/df), comparative fit index (*CFI*), goodness of fit index (*GFI*) and root mean square error of approximation (*RMSEA*). Reference values indicative of good model fit were those values currently practiced in structural equation modelling (Byrne, 2001; Maroco, 2010). A two-step modelling approach was employed to evaluate the causal structural model. First, the factor's measurement model was evaluated to demonstrate a good fit. Thereafter, the structural causal model, encompassing the

dependent variable (weight variation or weight gain) and the independent variables (socio-demographic, health and menopause-related, lifestyle and psychological variables, and life events), was adjusted and the significances of the causal trajectories were evaluated.

Results

The majority of peri- and post-menopausal women gained weight from pre-menopause to current menopausal status, as evidenced in table 2.

Table 2 - Weight variation: comparison between current weight and weight prior to menstrual changes had started

	Peri-menopausal			Post-menopausal		
	n	%	<i>M±SD</i>	N	%	<i>M±SD</i>
Weight Lost	20	12	-4.7±4.807	44	13	-6.5±6.296
Maintained	48	29	0±0	43	13	0±0
Gained	98	59	5.2±3.863	244	74	7.5±6.185

The chi-square test (for independence) showed that the weight variation (loss, maintenance and gain) was not independent of menopausal status ($\chi^2(2)=18.907$; $p<.001$).

Participants were also asked when the excessive weight began. Results from women with a body mass index above 25 kg/m² are presented in table 3.

Table 3 - Beginning of excessive body weight in overweight and obese women

	Overweight		Obesity	
	n	%	n	%
Start of excessive weight in participants with current BMI \geq 25 kg/m ²				
Childhood	8	5.7	6	9.2
Adolescence	5	3.5	5	7.7
Beginning of adulthood	38	27.0	17	26.2
Pregnancy	6	4.3	8	12.3

Thirties	8	5.7	4	6.1
Forties	5	3.5	---	---
Menopause	64	45.4	23	35.4
Medical problem	5	3.5	1	1.5
Smoking cessation	1	0.7	---	---
Other	1	0.7	1	1.5

The multicollinearity analysis showed that anxiety presented a VIF's value above 5, hence demonstrating collinearity between anxiety and other predictor variables in the model (Maroco, 2010; Weisberg, 1985). For that reason anxiety was excluded from the causal models.

Weight variation

The measurement model ($X^2/df=2.722$; $CFI=.821$; $GFI=.877$; $RMSEA=.059$; $p<.001$; $C.I.$ 90%=[.055; .063]) and the structural model ($X^2/df=2.105$; $CFI=.820$; $GFI=.877$; $RMSEA=.047$; $p=.920$; $C.I.$ 90%=[.044; .050]) evidenced a good fit. The variables accounted for explained 18.3% of the variability of the body weight variation (that is, loss, maintenance and gain) in peri- and post-menopausal women. Table 4 presents the structural weights regarding variables integrated in the causal model.

Table 4 - Predictors of weight variation (loss, maintenance and gain) between current weight (at peri- or post-menopause) and pre-menopause weight

Structural weights	$\beta(SE)p$
Weight variation ← Age	.054(.077).310
Weight variation ← Marital status	-.026(.671).558
Weight variation ← Professional status	.025(.816).590
Weight variation ← Educational level	-.063(.204).231
Weight variation ← Annual income	-.090(.310).088
Weight variation ← Parity	.079(.280).071
Weight variation ← Smoking	-.061(.184).175
Weight variation ← Alcohol	-.009(.380).845
Weight variation ← Coffee	-.030(.331).484
Weight variation ← Physical exercise	-.052(.003).216

Weight variation ← Recent disease	.021(.705).629
Weight variation ← Recent psychological problem	.074(.864).115
Weight variation ← Hormone therapy	.034(.928).423
Weight variation ← Transition from peri- to post-menopause	.105(.762). 043
Weight variation ← Depression	.050(1.004).564
Weight variation ← Stress	-.143(.776).063
Weight variation ← Body shape concerns	.361(.322) ***
Weight variation ← Life events	.089(.396).121

*** $p < .001$

Weight gain

In order to explore which variables predicted weight gain, a causal model was explored encompassing only the 342 women who had gained weight from pre-menopause to their current menopausal status (peri- or post-menopause). Both measurement ($X^2/df=2.451$; $CFI=.795$; $GFI=.845$; $RMSEA=.065$; $p<.001$; $C.I. 90\%=[.060; .071]$) and structural models ($X^2/df=1.872$; $CFI=.803$; $GFI=.847$; $RMSEA=.051$; $p=.406$; $C.I. 90\%=[.046; .055]$) presented a good fit.

Several predictors emerged as statistically significant from this analysis, as shown in table 5.

Table 5 - Predictors of weight gain from pre-menopause to the current menopausal status (peri- or post-menopause)

Structural weights	$\beta(SE)p$
Weight gain ← Age	.041(.072).504
Weight gain ← Marital status	-.075(.649).147
Weight gain ← Professional status	-.029(.779).580
Weight gain ← Educational level	-.146(.195). 017
Weight gain ← Annual income	-.099(.290).106
Weight gain ← Parity	.066(.268).208
Weight gain ← Smoking	-.071(.187).162

Weight gain ← Alcohol	-.061(.360).214
Weight gain ← Coffee	-.012(.328).808
Weight gain ← Physical exercise	-.111(.003). 021
Weight gain ← Recent disease	.057(.673).248
Weight gain ← Recent psychological problem	.191(.794) ***
Weight gain ← Hormone therapy	-.043(.811).385
Weight gain ← Transition from peri- to post-menopause	.147(.749). 013
Weight gain ← Depression	-.090(.899).367
Weight gain ← Stress	-.040(.697).202
Weight gain ← Body shape concerns	.313(.293) ***
Weight gain ← Life events	.080(.427).283

******* $p < .001$

The significant predictors account for 25.7% of variability in weight gain in this sample of peri- and post-menopausal women who had an increment on body weight from the absence of menstrual cycle changes until the present date.

Discussion

Although 31% of participants lost or maintained their weight from pre-menopause to their current menopausal status (peri- or post-menopause) most women reported a weight gain. These results are congruent with previous research (Campbell & Samaras, 2000; Dubnov et al., 2003; Heymsfield et al., 1994). Moreover, a great majority of women that are overweight and obese, evidenced menopause as the life period where excessive weight began. Besides obese and overweight women, 91 women with normal weight (that is, with a BMI between 18.5 and 24.9 kg/m²) perceived themselves as having excessive weight (specifically, they identified in the questionnaire when their excessive weight had began). This data might reveal a degree of dissatisfaction with current weight in these participants in peri- and post-menopause, leading to this overestimation of body weight; this outcome, which has been evidenced before (Cooper & Fairburn, 1983), is likely to be associated with an interpersonal-cultural pressure and

the desire of thinness, which can predict body image dissatisfaction (Matz, Foster, Faith, & Wadden, 2004).

The weight variation (loss, maintenance or gain) was significantly predicted by menopausal status and body shape concerns. Therefore, women whose weight difference was higher and positive (that is, had gained weight instead of maintained or lost) were more likely to be in post-menopause. Similarly, women with more frequent body shape concerns had a higher and positive weight difference (in terms of weight gained), when compared with participants with less frequent body shape concerns.

The educational level had been previously proven to have a negative association with BMI, including in a study with a multinational sample of women (Lahmann et al., 2000; McLaren, 2007; Molarius et al., 2000). In this research, the education appears as a negative predictor of weight gain, reinforcing prior conclusions: women who had a lower schooling level presented a higher weight gain than their counterparts with a higher schooling level.

As expected, physical exercise also predicted significantly and negatively weight gain, since women who presented a higher frequency and intensity of physical activity had a lower increase in body weight than participants with lower levels of physical exercise. This conclusion is supported by previous studies (Campbell & Samaras, 2000; Crawford et al., 2000; Simkin-Silverman & Wing, 2000) and highlights the importance of implementing physical exercise at pre-menopause so that the weight increase, during the menopause transition and post-menopause, is minimized.

Although depression and stress did not predict weight increment, having a recent psychological problem was significantly associated with weight gain. This means that some types of psychological distress, other than depression, stress or the presence of stressful life events (which, again, did not predict weight gain), might contribute to a weight increase during menopausal transition and post-menopause; for example anxiety, that was not possible to include in the structural model, has been related with higher BMI in women (Anderson, Cohen, Naumova, & Must, 2006).

Moreover, the association between psychological distress and weight cycling has been evidenced before (Petroni et al., 2007). In this research, it is observed that the vast majority of obese and overweight women identify the beginning of excessive weight at the time of menopause, hence reducing the chances of having a history of extended weight cycling, and partially supporting the absence of a significant association between weight gain and two kinds of psychological distress (namely, depression and stress).

Body shape concerns were also a significant and positive predictor of weight gain. Women who presented more frequent concerns with their body shape had a higher weight gain than women less frequently worried with their body figure. This can be influenced by expectations about weight and body changes around menopause that might create in women a concern with body figure. This expectation can promote an attentional bias towards shape and weight-related changes which in turn can lead to body dissatisfaction (Smith & Rieger, 2006). And, as stated before, body dissatisfaction at a young age can predict a subsequent weight increase rate (Anglé et al., 2005). This study emphasizes this outcome, that is, body shape concerns predicted significantly weight gain in a different developmental phase: midlife. Moreover, body dissatisfaction has been considered strongly associated with binge and emotional eating, abnormal attitudes towards body and weight, and low self-esteem (Johnson & Wardle, 2005). This might also explain part of how body shape concerns are a predictor of weight gain.

Furthermore, and although some studies evidence that the menopause transition is not related with weight gain (Campbell & Samaras, 2000; Crawford et al., 2000; Davies et al., 2001; Simkin-Silverman & Wing, 2000), this research demonstrates the opposite. In this sample of peri- and post-menopausal women, the transition from peri- to post-menopause significantly predicted weight increase, independently of socio-demographic characteristics, health status, hormone use, lifestyle factors, psychological variables and life events. This outcome accentuates the conclusion drawn elsewhere (Riesco et al., 2008), which evidences that menopausal status has an impact on some metabolic and behavioural responses, given that pre-menopausal women manifest more positive improvements at these levels, when compared with post-menopausal women, after a weight loss program. Additionally, early post-menopause has been associated with an increase of intra-abdominal fat, which is independent of age and total adiposity (Toth et al., 2006), and that can contribute to some extent to the weight gain observed.

Weight gain prevention is usually conducted in another normative life phase, particularly, by the time of pregnancy since the post-partum weight retention can be of around 13 kg (Giroux, Lander, Charleswoth, & Mottola, 2009). Given the results of the present study, the same prevention in pre-menopausal women is recommended since it was observed an increment of weight in the menopausal transition. This prevention should take into account the risk group for weight gain, namely, women in menopausal transition, with more frequent body shape concerns, with lower educational level, who do not practise physical exercise and present psychological distress.

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Brief cognitive-behavioural therapy for weight loss with midlife women: a controlled study with follow-up

Short title: CBT for weight loss in middle-aged women

Submitted to Psychology and Health

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ABSTRACT

Cognitive-behavioural therapy (CBT) has proven to be effective in weight reduction. This research explores if a brief, individual, 8-session CBT can promote weight loss in midlife women, as compared with a control group (waiting list). Anthropometric (weight and abdominal perimeter), psychological (health-related and sexual quality-of-life, stress, anxiety and depression) and behavioural measures (binge eating disorder,

restrained, external and emotional eating) were assessed at the baseline (T1), post-treatment (T2) and at the 4-month follow up (T3), in a group of 17 participants. At the post-intervention, participants with individual CBT had higher health-related quality of life and restrained eating; stress levels and emotional eating had decreased. At T3, women who underwent CBT had a significantly lower weight, abdominal perimeter, external eating and higher restrained eating. During these three assessments there were no significant differences in the waiting list participants. Moreover, binge eating disorder was significantly lower in CBT participants at T2 and T3 when compared with baseline. An effective, though small, weight loss was achieved. Changes in eating behaviour were also successful and maintained. However, there is the need to improve the efficacy of the intervention in order to promote a greater weight reduction.

Key-words: cognitive-behavioural therapy, weight loss, control group, follow up, midlife, women

INTRODUCTION

It has been more than a decade since the World Health Organization (WHO) identified obesity has an epidemic, recognizing it as an actual public health threat (WHO, 1998). Currently, 30-80% of adults in the countries of the WHO's European Region are overweight and obesity was recently growing rapidly towards 150 million among adult population in 2010 (WHO, 2007). In the United States current data points to a prevalence of 33.6% for overweight and 34.3% for obesity among adults (Centres for the Disease Control and Prevention, 2010).

Obesity is a risk factor for cardiovascular disease, metabolic syndrome, dyslipidaemia, type II diabetes and premature death (Hu et al., 2001; van Gaal, Mertens, & de Block, 2006; Xydakis et al., 2004). In addition, metabolic and muscular-skeletal benefits, as well as brain function improvement, may be attained through weight loss and physical fitness (Franco et al., 2009; Xydakis et al., 2004).

Cognitive-behavioural therapy (CBT) has proven to be effective in weight reduction (Cooper et al., 2010; Kalodner & DeLucia, 1991; Mefferd, Nichols, Pakiz, & Rock, 2007; Munsh et al., 2007). However, it is not easy to achieve and maintain this weight lost (Cooper et al., 2010; DiLillo, Siegfried, & West, 2003).

There are some psychological symptoms that can be associated to excessive weight and obesity. Anxiety, depression (Anderson, Cohen, Naumova, & Must, 2006; Cilli et al., 2003; Luppino et al., 2010) and stress have been strongly related with higher body mass index (BMI) and weight gain, especially in women (Block, He, Zaslavsky, Ding, & Ayanian, 2009; Serlachius, Hamer, & Wardle, 2007; Smith, Baum, & Wing, 2005). However, this association is not unanimous since in another study anxiety and depression symptoms were not associated with the severity of overweight (Castellini et al., 2008). Furthermore, and independently of the depressive mood, increased stress can predict binge eating (Yacono-Freeman & Gil, 2004). The presence of binge eating disorder (BED), as proposed by DSM-IV-TR (APA, 2000), increases the likelihood of higher BMI comparing with individuals without BED (Grucza, Przybeck, & Cloninger, 2007).

Research with BED has evidenced that CBT can be effective in the reduction or cessation of binge eating (Eldredge et al., 1997; Wilson & Fairburn, 2007), being that its decrease will promote a weight reduction (Agras, Telch, Arnow, Eldredge, & Marnell, 1997).

A consequence of weight loss can be the improvement of sexual (Kolotkin et al., 2008) and health-related quality of life (QoL) (Blissmer et al., 2006; Kolotkin, Crosby, Williams, Hartley, & Nicol, 2001). However, this conclusion is not unanimous (Maciejewski, Patrick, & Williamson, 2005).

The objective of this study was to explore the efficacy of an 8-week individual CBT in weight and binge eating reduction and to investigate if these changes will promote differences in depression, anxiety, stress, QoL and eating behaviours in middle-aged women.

METHODS

Participants

After giving their informed consent and agreeing to participate in the research, a community sample of 1,003 participants, with ages between 42 and 60 years old, participated in a study about menopause with Portuguese midlife women. Participants with a body mass index (BMI) above 24.9 kg/m² were given the opportunity to participate in an intervention for weight loss. Eighteen women integrated and completed

the 8-week cognitive-behavioural therapy or were on a waiting list for an equivalent amount of time. One participant of the individual CBT was excluded from the final statistical analysis because of the presence of axis II psychopathology (APA, 2000). The mean age of the 17 participants was 51 ($M=51.0$; $SD=5.820$) and mean BMI was 29 ($M=29.3$; $SD=2.183$). Table 1 describes the participants at baseline.

Table 1 – Participants' characterization

Variables	n	%
Marital status		
Married or in a relationship	12	70.6
Not married or in a relationship	5	29.4
Professional status		
Active	14	82.4
Inactive	3	17.6
Educational level		
Primary school	3	17.7
Middle school	3	17.6
High School	4	23.5
University	7	41.2
Family annual income		
Less than 10.000 euro	4	23.5
10.001 – 20.000 euro	4	23.5
20.001 – 37.500 euro	5	29.4
37.501 – 70.000 euro	3	17.6
More than 70.001 euro	1	5.9
Menopausal status		
Pre-menopause	5	29.4
Peri-menopause	6	35.3
Post-menopause	6	35.3
Physical exercise		
Yes	9	52.9
No	8	47.1

Measures

The socio-demographic characteristics, menopausal status, BMI and physical exercise were evaluated in a first moment through self-reported measures.

The menopausal status was defined according to Soules et al. (2001). Pre-menopausal women did not manifest any changes in their menstrual cycle, perimenopausal reported variations in it and post-menopausal women were confirmed for having at least a 12-month period of amenorrhea.

Weight and abdominal perimeter were measured by a trained health psychologist, always using the same scale, acquired for this project; the remaining variables were assessed by self-reported measures.

Binge eating disorder was explored using the DSM-IV-TR (2000) criteria as evidenced in “Criteria for Further Study”.

The instruments included the Portuguese adaptation of the Depression, Anxiety and Stress Scales (DASS) to assess stress, anxiety and depression symptoms (Lovibond & Lovibond, 1995); the Utian Quality of Life Scale, to explore sexual and health-related quality of life in menopausal women (Utian, Janata, Kingsberg, Schluter, & Hamilton, 2002); and the Dutch Eating Behaviour Questionnaire (van Strien, Frijters, Bergers, & Defares, 1986) to measure restrained, emotional and external eating behaviour.

Procedure

Socio-demographic data was collected in a cross-sectional study with a community sample of 1,003 women with ages between 42 and 60. Women who had participated in this study voluntarily enrolled in an intervention for weight loss. From those who were enrolled, the ones with a BMI above 24.9 kg/m² were contacted by telephone, and distributed to one of two conditions (CBT or waiting list) randomly, and prior to the contact, with the support of a computer-generated randomization scheme.

From the forty-three women enrolled, thirty-four had a BMI above the mentioned outline and were contacted. From those, thirteen women were unreachable or unavailable to participate.

Eleven participants were attributed to the individual CBT and 10 to a waiting list (WL) which lasted twenty-six weeks, the same time that the intervention group from T1 until T3. During the intervention two participants in CBT and one in WL dropped out.

After these twenty-six weeks, the nine women on the waiting list started the individual intervention and went from T1 until T3. Two participants of the experimental

group did not complete the follow-up assessment and one participant of the same group was not taken into consideration in the statistical analysis because she was diagnosed with an axis II mental disorder.

Menopausal status, anthropometric measures and psychological variables were evaluated one week before the intervention (or control condition) began, one week after it ended and four months after the second assessment. Baseline (T1), post-test (T2) and follow-up were conducted by a psychologist different from the one who delivered the intervention. The anthropometric measurements were always made in the same weight scale.

To prevent experimenter's bias, the psychologist, responsible for the assessments, was told that these were done in the context of a study on menopause, without giving any further information on the different groups or specific objectives. The participants were told, at the time of the recruitment that, any questions about the intervention should be addressed to the psychologist who was responsible for the treatment, and a phone contact was provided for that effect.

Intervention

The cognitive-behavioural intervention was structured by two psychologists and psychotherapists, after a literature review and based on previous interventions. It was planned as presented in Table 2. The intervention was individual, conducted in an adequate setting, and with a weekly frequency.

Table 2 – Contents of each session

Sessions	Contents
1 st	Relationship with the food and the body Eating routines Psycho-education about the consequences of excessive weight and obesity Motivation increment
2 nd	Analysis of situations when there was an excessive ingestion of food happens Exploration of thoughts, emotions and behaviours subsequent to excessive food ingestion

	Evaluation of perceived control before and during excessive food ingestion
3 rd	ABC model Lifestyle characteristics facilitating excessive eating Triggers' identification
4 th	Triggers' identification and exploration of obstacles to triggers' management Cognitive restructuring Behavioural techniques Physical exercise promotion
5 th	Evaluating successful and unsuccessful implementation of behavioural techniques Exploration of new behavioural techniques Development of mindfulness Development of attention towards triggers and consequent behaviour (successful versus unsuccessful management) Motivation increment
6 th	Assessment of successful and unsuccessful management of excessive food ingestion Difficulties' anticipation Assessment of cognitive and behavioural techniques
7 th	Lifestyle: integrating changes Redefining daily well-being
8 th	Maintenance of adaptive changes made Relapse prevention

Statistical Analysis

Data was first analysed to check for outliers and distribution forms. No missing value imputation was made.

To explore if at baseline the two groups were homogeneous, a t-Student test was used to compare both conditions, on the anthropometric, psychological and behavioural variables.

Comparisons between groups on the repeated measures were done using mixed repeated measures ANOVA. Post hoc LSD test for mean differences was used to compare the three assessments (T1, T2 and T3) for the anthropometric, psychological and behavioural measures, in each group (CBT and waiting list).

Additionally, to explore if binge eating disorder had suffered changes in the three assessments, the Cochran-Q test was used.

Finally, to investigate if the amount of weight loss in the experimental group was related with educational level and family income, a Spearman correlation was used.

RESULTS

To assert if the participants who did CBT differed from the ones who were attributed to the waiting list, the two groups were compared regarding to anthropometric, psychological and behavioural variables.

Table 3 – Comparison of participants placed in intervention (CBT) with participants in waiting list (WL) at baseline assessment (T1)

Variables	t-Student <i>t(df)p</i>
Weight (kg)	-.476(24).639
Abdominal perimeter (cm)	-.810(24).426
BMI (kg/m ²)	-.996(24).329
Health QoL	.734(24).470
Sexual QoL	-.854(24).401
Depression	-.153(24).880
Anxiety	.011(24).992
Stress	.502(24).620
Restrained eating	-.788(24).438
Emotional eating	.069(24).946
External eating	.702(24).489

To explore if the variables changed during the three assessments, within the same condition, CBT and waiting list groups were analysed separately, after the confirmation of sphericity for all variables/groups with the Mauchly test.

Results of the control group are presented in table 4.

Table 4 – Waiting list: comparison between T1, T2 and T3 assessment for all variables

Variables	T1	T2	T3	I	J	Mean Difference <i>I-J(SE)p</i>	η^2_p
	n=9 <i>M(SD)</i>	n=9 <i>M(SD)</i>	n=9 <i>M(SD)</i>				
Weight (kg)	78.1(7.169)	78.1(6.294)	78.9(5.704)	T1	T2	.022(.561).969	.270
					T3	-.822(.765).314	
				T2	T3	-.844(.492).125	
Abdominal perimeter(cm)	98.5(6.961)	99.5(7.000)	99.0(5.831)	T1	T2	-.989(1.508).530	.069
					T3	-.478(.695).511	
				T2	T3	.511(1.289).702	
BMI (kg/m ²)	31.8(2.401)	31.8(2.201)	32.2(2.230)	T1	T2	-.011(.234).963	.267
					T3	-.372(.332).295	
				T2	T3	-.361(.212).127	
Health QoL	2.5(.623)	2.7(.645)	2.8(.627)	T1	T2	-.175(.138).243	.406
					T3	-.286(.124).052	
				T2	T3	-.111(.109).336	
Sexual QoL	3.3(.676)	3.1(.954)	3.1(.909)	T1	T2	.222(.229).360	.167
					T3	.222(.176).242	
				T2	T3	.000(.157)1.000	
Depression	1.7(.776)	1.6(.555)	1.7(.833)	T1	T2	.079(.107).479	.065
					T3	.016(.230).947	
				T2	T3	-.063(.235).794	
Anxiety	1.6(.580)	1.5(.589)	1.4(.351)	T1	T2	.063(.093).512	.226
					T3	.206(.137).170	
				T2	T3	.143(.141).340	
Stress	1.9(.463)	1.8(.853)	1.9(.780)	T1	T2	.079(.160).633	.032
					T3	-.016(.198).938	

				T2	T3	-.095(.245).780	
Restrained				T1	T2	.178(.262).517	
Eat	3.0(.722)	2.8(.747)	2.7(.733)		T3	.278(.262).320	.149
				T2	T3	.100(.130).464	
Emotional				T1	T2	-.222(.121).103	
Eat	2.7(.844)	3.0(.978)	2.8(.921)		T3	-.093(.146).545	.299
				T2	T3	.130(.161).443	
External Eat				T1	T2	-.033(.125).796	
					T3	-.167(.166).344	.121
				T2	T3	-.133(.147).391	

Changes in the experimental group from baseline to follow-up are presented in table 5.

Table 5 – CBT group: comparison between T1, T2 and T3 assessment for all variables

Variables	T1	T2	T3	I	J	Mean Difference <i>I-J(SE)p</i>	η^2_p
	n=17	n=17	n=15				
	<i>M(SD)</i>	<i>M(SD)</i>	<i>M(SD)</i>				
Weight (kg)	76.9(5.434)	76.4(5.100)	74.5(4.390)	T1	T2	.493(1.093).659	
					T3	2.233(.621). 003	.536
				T2	T3	1.740(.915).078	
Abdominal perimeter(cm)	96.5(5.852)	96.1(5.472)	95.0(5.954)	T1	T2	-.187(.897).838	.288
					T3	1.620(1,122).171	
				T2	T3	1.807(.759). 032	
BMI (kg/m ²)	30.9(2.297)	30.7(2.581)	29.9(2.085)	T1	T2	.177(.455).703	
					T3	.891(.251). 003	.521
				T2	T3	.713(.392).091	
Health QoL	2.7(.633)	3.0(.498)	2.9(.644)	T1	T2	-.343(.152). 041	
					T3	-.210(.138).151	.289
				T2	T3	.133(.166).435	

Sexual QoL	3.0(.989)	3.1(1.017)	3.2(.516)	T1	T2	-.178(.102).104	.183
					T3	-.133(.203).521	
				T2	T3	.044(.172).800	
Depression	1.6(.676)	1.3(.326)	1.5(.552)	T1	T2	.286(.156).088	.233
					T3	.143(.160).388	
				T2	T3	-.143(.101).177	
Anxiety	1.6(.677)	1.4(.411)	1.5(.493)	T1	T2	.137(.098).185	.158
					T3	.051(.120).678	
				T2	T3	-.086(.085).328	
Stress	2.0(.633)	1.6(.342)	1.9(.605)	T1	T2	.343(.136). 024	.375
					T3	.095(.137).499	
				T2	T3	-.248(.108). 038	
Restrained Eat	2.8(.691)	3.3(.619)	3.3(.616)	T1	T2	-.540(.164). 005	.547
					T3	-.513(.134). 002	
				T2	T3	.027(.146).858	
Emotional Eat	2.8(.728)	2.4(.674)	2.6(.737)	T1	T2	.411(.175). 034	.287
					T3	.298(.155).076	
				T2	T3	-.113(.128).391	
External Eat	2.9(.547)	2.7(.433)	2.7(.425)	T1	T2	.233(.110).052	.454
					T3	.293(.086). 004	
				T2	T3	.060(.079).461	

In relation to binge eating disorder (BED), there were significant differences in the intervention group, comparing T1 both with T2 and with T3 ($Q(2)=2.315$; $p=.021$). Before the intervention (T1) there were 6 participants (from a total of 17) with BED; at T2 and T3 only one participant met the criteria for this disorder.

In the waiting list condition there were no significant differences regarding BED prevalence ($Q(2)=.000$; $p=1.000$) since there were the exact same number of participants with BED in T1, T2 and T3 (4 women with binge eating disorder and 5 without).

Additionally, within the experimental group, it was observed that the association between family income and amount of weight lost was not significant ($r_p=.232$; $p=.406$).

Yet, there was a very strong, positive and significant correlation between the educational level and the amount of weight lost ($r_p=.722$; $p=.001$).

DISCUSSION

Achieving weight reduction and maintaining the weight loss after the end of an intervention is not easy (Cooper et al., 2010; DiLillo et al., 2003). In the present research, the mean weight loss evidenced at follow-up (T3), by the participants who had undergone CBT, was 2.4kg or 3.1% of the baseline weight. In opposition, between baseline and follow-up, the control group had a mean 1.2% increase of their initial weight (that is, a mean increment of 0.8kg).

Although this reduction was below the 5% loss pointed as a successful weight loss in other studies (e.g., Teixeira et al., 2004), it was statistically significant.

Immediately after the intervention, a significantly decrease in emotional and increase in restrained eating was observed in the participants who did CBT. At follow-up the emotional eating was not significantly different, but the decrease in restrained behaviour observed in T2 was maintained. Moreover, four months after the CBT had finished, external eating was significantly lower when compared with baseline. Additionally, BED also decreased significantly in women who did the CBT (this reduction was observed immediately after the intervention and maintained at follow up), comparing with the control group, in which the participants who met the criteria for BED at T1 continued meeting these at follow-up (T3).

Even though eating behaviours changed significantly within an eight-week individual CBT (demonstrated in the T2 assessment), it did not reflect an objective weight reduction immediately after the intervention, given that there were no significant changes between the baseline (T1) and the second assessment (T2). This is congruent with prior research which demonstrates that, despite the decrease in binge eating behaviour, weight loss might not be achieved (Grilo & Masheb, 2005). It has been concluded elsewhere, regarding cognitive-behavioural and behavioural interventions, that the first is more effective in reducing binge eating while the second promotes a greater weight loss reduction by the end of the intervention (Munsh et al., 2007), an evidence that supports the results of the present research.

Cognitive restraint has been associated with a significantly lower energy and fat intake, higher carbohydrate and fibre use and been also strongly associated to a higher weight reduction at a 18-month follow-up (Keränen, Strengell, Savolainen, & Laitinen, 2011). This conclusion supports the observation that, four months after the intervention, a significant weight loss accompanied by an increase in restrained eating and a decline in external ingestion, occurred when compared with the baseline assessment. This data is also in agreement with another study which pointed out that, after a two-year follow-up, participants who managed to maintain their weight, also demonstrated the maintenance of the changes in eating behaviours (Pekkarinen, Takala, & Mustajoki, 1996).

Cognitive factors and the establishment of clear objectives, components that were approached in this brief CBT, have been evidenced as important when addressing a treatment of this kind, as they can contribute to weight regain (Cooper & Fairburn, 2001).

Stress levels decreased significantly from the baseline (T1) to the post-intervention assessment (T2). Given that during the third and fourth sessions, we addressed the triggers of excessive food ingestion, and considering that these triggers are frequently stressful events (Loth, van den Berg, Eisenberg, & Neumark-Sztainer, 2008), the identification and exploration of strategies to manage these triggers could have some influence in the observed stress decline. However, stress levels were significantly higher at the time of follow-up in the intervention group, when compared with the prior assessment (T2). As shown before, there is evidence that cortisol reactivity, in response to stress, stimulates a caloric food intake (Dallman et al., 2004; Epel, Lapidus, McEwen, & Brownell, 2001). Thus, it is hypothesized that a significant increase in stress might have prevented further weight loss. We do not exclude that the follow-up assessment (T3) could have been a stressful event itself for the participants who have perceived a weight lost lower than expected. Knowing that this would be the last contact with this research (which can have been perceived has a source of support in a weight loss intended process), it could have contributed to an increase in stress levels at T3.

The therapy format (group versus individual) has been subject of debate. There are no significant differences in terms of the intervention's efficacy when comparing group with individual interventions (Adams, Grady, Wolk, & Mukaida, 1986; Jeffery et al., 1983). However, in a recent research with a large sample, weight reduction (as well

as decrease in blood pressure, glucose and cholesterol) was higher in a group intervention, when compared with an individual one (Jovanović et al., 2009). Consequently, it is suggested that a group format could enhance the efficacy of this CBT. Furthermore, and because contents regarding physical exercise and nutrition were promoted according to general guidelines (WHO, 2006), it would be important, in future research, to include individualized nutritional and physical exercise plans as a complement to this intervention, given their efficacy in weight reduction (Wu, Gao, Chen, & van Dam, 2009).

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Predictors of body mass index (BMI) in normal weight, overweight and obese middle-age women

Short title: Body mass index's predictors in middle-age women

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Abstract

Objective: The aim of this study was to build a causal model to explore the predictors of BMI in normal weight, overweight and obese middle-aged women.

Methods: A community sample of women aged between 42 and 60 years answered a questionnaire to determine socio-demographic information (age, parity, professional and marital status, education and household income), lifestyle (physical exercise, coffee and alcohol intake, and smoking) and self-reported weight, height and menopausal status. Several instruments were used to assert psychological variables, namely depression, anxiety, stress and body shape concerns. Structural equation modelling was used to

build a causal model, encompassing all variables mentioned, to compare the three categories of BMI (i.e., normal weight, overweight and obese participants).

Results: The models comparing the three categories of BMI presented a good fit and the invariance analysis regarding the structural model assured group comparison. Education was a significant predictor of BMI for normal weight ($\beta=-.083$; $p=.023$), overweight ($\beta=-.085$; $p=.023$) and obese ($\beta=-.086$; $p=.023$) women. Depression also predicted BMI for normal weight ($\beta=-.230$; $p<.001$), overweight ($\beta=-.236$; $p<.001$) and obese ($\beta=-.237$; $p<.001$) participants. Stress predict body weight only in normal weight subjects ($\beta=.289$; $p<.001$). Finally, for normal weight ($\beta=.247$; $p<.001$), overweight ($\beta=.254$; $p<.001$) and obese ($\beta=.254$; $p<.001$) participants, body shape concerns predicted BMI.

Conclusions: Our results demonstrate that depression is a significant and negative predictor of BMI (women with higher levels of depressive symptoms evidenced a lower BMI) and stress only predicting BMI in normal weight participants (women with higher scores in stress presented a higher BMI). Body shape concerns and education were both predictors for all categories of BMI, demonstrating that women with higher education and less frequent concerns with body shape presented a lower BMI.

Keywords: middle-age; BMI; predictors; normal weight; overweight; obesity

Introduction

High body mass index (BMI), namely overweight and obesity, has been evidenced as compromising quality of life, particularly when health related¹. In addition, overweight, especially obesity, have a significant impact on the onset of functional impairment, including impairment in daily living activities, lower body mobility and strength².

The increment of the risk of developing several diseases has also been emphasized, namely, coronary heart disease³, diabetes, hypertension⁴ and several cancers⁵ have been associated with an increased BMI.

Given the actual high (and growing) prevalence of obesity and excessive weight in European countries and the United States^{6,7}, it is important to assert the underlying factors in order to allow an effective management of these conditions⁵.

There is evidence that women usually report a weight gain during midlife⁸⁻¹⁰. Age, namely being over 40, is associated with obesity/overweight¹¹. Moreover, a low educational level^{11,12}, unemployment¹² and being married¹¹ have also been associated with higher BMI. It has also been observed that in women with a high socio-economic status the relationship between depression and obesity is stronger than in women with low socio-economic status¹³.

Lifestyle habits are other determinant in overweight and obesity. It is proven that having a sedentary lifestyle facilitates the occurrence of both¹¹, as it does being an ex-smoker or a non-smoker, who have higher BMI compared with current smokers¹⁴. However, this conclusion is not consistent: daily cigarette consumption has also been associated with higher BMI in some studies¹², or evidenced as not having any relation with BMI in others¹⁵. Alcohol consumption has also been associated with a lower likelihood of being obese, in women over 50 years of age¹⁶.

Stress can be related to weight gain, especially in women in the first year of university¹⁷. Furthermore, having a child with a life-threatening disease¹⁸ and workload increment^{19,20} will function as severe stressors and lead to weight increase in women. Similarly, it is observed that both salivary cortisol secretion and BMI increase with the proximity of a stressful event are connected, and the first can significantly predict the latter²¹. Furthermore, strains in family interactions, perceived limitations in life and financial difficulties have also been related with weight gain in women who already have a high BMI¹⁹.

Nevertheless this association has not been consistently confirmed²². Perceived stress did not predict the weight category in a group of peri-menopausal African American women²³, nor was it related with body weight in another research²⁴.

It has been emphasized that a BMI between 20 and 25 is linked with optimal mental health and lower health services usage²⁵. Therefore, psychological distress has been identified as higher among underweight, overweight and obese women, compared with their counterparts with normal BMI, independently of lifestyle factors²⁶.

The literature evidences that obesity, and a higher BMI, are strongly associated with depression^{13,27-31}. An increased BMI is also related to the onset of depression in female participants: an early onset can be associated with higher BMI³². Nonetheless, other variables might account for this connection. BMI has been associated with depression levels, but this positive relation seems to be mediated by low dichotomous thinking; in women who presented high levels of this cognitive bias this association was absent³³.

Despite the evidences of a strong connection between depression and a high BMI, this conclusion is not unanimous. A meta-analysis conducted in the field did not suggest a significant association between obesity and depression³⁴ and, among female adolescents, an absence of relation between obesity and depression was also confirmed³⁵.

Again, in a study with obese and non-obese participants, obesity was not associated to depression. However, in people who had ever experienced a major depression episode, weight gain was more likely to occur during this depressive period in obese participants given their higher probability to over-eat during the episode³⁶. In another research, depression did not increase the risk for future obesity although the reverse was factual: obese people had an increased risk for depression³⁷.

Anxiety disorders have also been related with a higher BMI in women³². Additionally, sub-clinical anxiety was significantly higher in obese patients than in normoponderal subjects³⁸ and middle-aged women with high weight anxiety have been found to be more likely to engage in dieting behavior³⁹.

Contrary to previous researches, anxiety was not associated with BMI in a multiethnic group of women³¹. Moreover, anxiety was not associated with weight cycling, neither in normal-weight nor in overweight women⁴⁰ and, in a research with adolescents, anxiety levels did not differ between obese and normal weight subjects⁴¹.

Prior body dissatisfaction has also been identified elsewhere as a predictor of body weight increase rate in the years following pre-adolescence⁴². Body shape concerns are frequently studied with an adolescent population^{43,44} or in the context of eating disorders^{45,46}. However, little is known about these concerns in the midlife population. Given that around menopause changes in body fat distribution will be observed, with an increase in total body fat and visceral fat^{10,47,48}, these types of concerns are pertinent to explore in order to identify if they play an important role as BMI predictors.

Therefore, the objective of this study is to investigate a causal model of BMI in normal weight, overweight and obese middle-aged women to explore if different predictors are evidenced in the different weight categories.

Methods

Participants

Participants were a community sample of 986 women, aged between 42 and 60 years. The mean BMI of normal weight participants was 22.3 kg/m² (*SD*=1.685), of overweight women was 27.1 kg/m² (*SD*=1.475) and obese participants had a mean BMI of 33.7 kg/m² (*SD*=3.041).

Table 1 describes the 986 participants by body weight class.

Table 1 - Distribution of the study participants according to BMI

Characteristics	Normal weight		Overweight		Obese	
	n	%	n	%	n	%
n	527	53,4	334	33,9	125	12,7
Age (<i>M</i> ; <i>SD</i>)	49.0(5.153)		50.4(5.308)		50.6(5.114)	
Marital status						
Married or in a relationship	357	68.0	247	74	91	72.8
Not married or in a relationship	168	32.0	87	26.0	34	27.2
Parity						
0	48	9.3	25	7.7	11	8.8
1	148	28.6	95	29.3	40	32.0
2	225	43.4	162	50.0	56	44.8
3	71	13.7	30	9.3	15	12.0
>3	26	5.1	12	3.7	3	2.4
Education						
Primary school	36	7.0	48	14.6	27	21.8
Middle school	89	17.3	86	26.1	44	35.5
High school	140	27.3	104	31.1	32	25.8
University degree or higher	248	48.4	91	27.7	21	16.9
Professional status						
Active	452	87.9	280	84.6	102	82.9

Inactive	62	12.1	51	15.4	21	17.1
Family annual income						
≤ 10.000 €	85	19.4	78	26.9	32	30.5
10.001 – 20.000 €	96	21.9	80	27.6	41	39.0
20.001 – 37.500 €	107	24.4	74	25.5	23	21.9
37.501– 70.000 €	102	23.3	46	15.9	5	4.8
≥ 70.001 €	48	11.0	12	4.1	4	3.8
Menopausal status						
Pre-menopause	162	31.3	90	27.0	27	21.8
Peri-menopause	152	29.3	97	29.1	42	33.9
Post-menopause	204	39.4	146	43.8	55	44.4
Physical exercise						
Yes	269	51.6	138	41.8	33	26.4
No	252	48.4	192	58.2	92	73.6
Smoking behaviour						
Current smoker	158	30.7	70	21.3	15	87.8
Current non-smoker	357	69.3	258	78.7	108	12.2
Alcohol intake						
Yes	284	54.4	154	46.4	51	40.8
No	238	45.6	178	53.6	74	59.2
Coffee intake						
Yes	454	86.8	292	87.4	104	83.2
No	69	13.2	42	12.6	21	16.8

Procedure

This cross-sectional study encompasses a community sample of 1,003 women who were mainly recruited through schools and universities in the city of Lisbon. The inclusion criteria in the research were gender (women), literacy and age (between 42 and 60 years).

The American Psychological Association's standards on the ethical treatment of participants were followed. A written informed consent form was delivered to all

participants, explaining the aims of the study, emphasizing that the participation in this research was voluntary and that participants could interrupt their collaboration at any time, without any consequences. Each participant kept a copy of the informed consent form, where the contacts of the responsible researcher were included (so that women could contact her if any question emerged).

After receiving the informed consent and agreeing to participate in the research, a sample of 1,003 Portuguese women, between 42 and 60 years of age, filled in all the instruments adequately (45 were excluded due to lack of sufficient information).

Of these 1,003 women, 17 were excluded from the present study: 7 participants presented underweight (that is, BMI lower than 18.5 kg/m²) and 10 did not give enough information to calculate the BMI. The present research includes 986 female participants, presenting three different BMI categories: normal weight, overweight and obesity.

Measures

To assess socio-demographic, lifestyle, menopausal status, BMI and psychological variables (depression, anxiety, stress and body shape concerns) a questionnaire and two instruments, which presented good psychometric properties, were used.

Depression, Anxiety and Stress

These variables were assessed through the Portuguese version of the Depression, Anxiety and Stress Scales^{49,50}; each subscale includes 7 items, with answers being given in a 4-point Lykert-type scale (ranging from “did not apply to me” to “it applied to me most of the time”).

Body Shape Concerns

The Body Shape Questionnaire⁵¹ assesses the concerns about the body appearance in 34 items. Responses were given in a 6-point Likert-type scale with scores ranging from “never” to “always”. Item 26 (“Have you vomited in order to feel thinner?”) was excluded from this Portuguese version of the instrument, because it presented levels of kurtosis (ku=79) and skewness (sk=8) above those recommended for structural equation modelling (ku=7; sk=3)⁵². Moreover, this item had the lowest standardized estimate (□□□□□□) presenting a squared multiple correlation below .25 (that is, $r^2=.091$). In addition, it presented very high modification indexes (around 60) and its residual was correlated with several other residuals from other items. This evidenced that this item

explained very little of the measured construct, and shared with several other items the little variance that it explained. Therefore, it was not included.

Menopausal status

The menopausal status was defined according to the Stages of Reproductive Aging Workshop's criteria⁵³. Pre-menopausal women were identified for not having any changes in their menstrual cycle. Peri-menopausal participants would report a variable cycle length (a difference of more than seven days than usual) or had skipped two or more cycles and had an amenorrhea interval superior to sixty days. Post-menopausal women had, at least, a twelve-month period of amenorrhea.

Socio-demographic variables, lifestyle and BMI

Socio-demographic (age, marital status, parity, professional status, educational level, family's annual income) and lifestyle characteristics (alcohol and coffee intake, smoking and physical exercise) were assessed.

Lifestyle characteristics were assessed in terms of presence/absence, amount and/or frequency. Hence, physical exercise was measured in terms of times per week, and during how many minutes the participant exercised; a mean between weekly frequency and duration was used in the structural equation model. Coffee intake, when present, was assessed in a four-option scale, ranging from occasionally to more than five per day. Alcohol intake, when observed, was measured both in terms of frequency ("daily", "every weekend" or "rarely") and quantity ("until I feel drunk", "moderately" or "less than a glass per occasion"); a mean value of both translates the alcohol consumption variable, in the causal model. Finally, for current smokers, smoking was quantified in a 6-point Likert-type scale that ranged from less than 10 cigarettes per month, until more than 40 cigarettes per day; this quantification integrated the structural equation model to assert the influence of smoking on BMI.

BMI was calculated through self-reported weight and height.

Statistical analysis

Missing values were imputed for variables, where its frequency was lower than 10% of the sample. This was done using the mean interpolation method.

Group differences between women with normal weight, overweight, and obese, regarding anxiety, depression, stress and body shape concerns, were evaluated with the

one-way ANOVA (followed by post-hoc Tukey's test) implemented in SPSS Statistics (v. 19, IBM SPSS Inc, Chicago, IL).

Multicollinearity between the independent variables was explored with the variance inflation factor (VIF) given by SPSS Statistics (v. 19, IBM SPSS Inc, Chicago, IL). All variables must present a value below 5 in order to indicate the absence of collinearity⁵⁴.

To test the causal BMI model, a structural equation model was built relating this dependent variable with sixteen independent variables (namely, age, marital status, parity, professional status, family's annual income, educational level, transition from pre- to peri- and from peri- to post-menopause, alcohol and coffee, smoking, physical exercise, depression, stress, anxiety and body shape concerns). The model was evaluated with SPSS AMOS software (v. 18, IBM SPSS Inc, Chicago, IL). The quality of the fit of the structural equation model was given by chi-square statistics (X^2/df), comparative fit index (*CFI*), goodness of fit index (*GFI*) and root mean square error of approximation (*RMSEA*), and the reference values currently used to suggest a good model fit in structural equation modelling⁵⁵ were used.

A 3-step approach was employed to evaluate the causal structural model. First, the factors' measurement model was evaluated to demonstrate an acceptable fit. Thereafter, the structural causal model, encompassing the dependent and the independent variables, was adjusted and the significance of the causal trajectories was evaluated. Finally, invariance analysis was done comparing the three groups (women with normal weight, with overweight and with obesity) and, if invariance of the model was evidenced, the three groups would be compared regarding the significant predictors of actual BMI.

Results

The three BMI categories were compared regarding the four psychological variables: stress, depression, anxiety, and body shape concerns. The results are presented in table 2.

Table 2 – Comparative analysis between the three groups regarding the psychological variables

Psychological variables	Normal weight	Overweight	Obese	One-way ANOVA		
	<i>M(SD)</i>	<i>M(SD)</i>	<i>M(SD)</i>	Groups compared	<i>MD(SE)p</i>	
Anxiety	1.3(.438)	1.4(.489)	1.4(.471)	Norm_W Over_W	-.102(.032). 005	
				Norm_W Obes	-.135(.046). 010	
				Over_w Obes	-.033(.049).773	
Depression	1.4(.522)	1.5(.598)	1.5(.577)	Norm_W Over_W	-.102(.039). 026	
				Norm_W Obes	-.107(.056).135	
				Over_w Obes	-.006(.059).995	
Stress	1.7(.549)	1.7(.570)	1.8(.582)	Norm_W Over_W	-.024(.039).819	
				Norm_W Obes	-.085(.056).283	
				Over_w Obes	-.061(.059).554	
Body shape concerns	1.7(.634)	2.2(.847)	2.5(.983)	Norm_W Over_W	-.477(.057)***	
				Norm_W Obes	-.834(.084)***	
				Over_w Obes	-.357(.089)***	

MD: mean difference; *SD*: standard deviation; *SE*: standard error; *** $p \leq .001$

Multicollinearity analysis

VIF values were above 5 for anxiety evidencing collinearity with other independent variables in the model. For that reason anxiety was excluded from the causal model.

Fit of the model

Both measurement ($X^2/df=2.419$; $CFI=.992$; $GFI=.986$; $RMSEA=.038$; $p=.948$; $C.I. 90\%=[.026; .050]$) and structural model evidenced a good fit ($X^2/df=3.251$; $CFI=.965$; $GFI=.971$; $RMSEA=.048$; $p=.741$; $C.I. 90\%=[.042; .053]$).

Invariance analysis

The unconstrained measurement model did not have a significantly better fit than the model with constrained factorial weights ($X^2(3)=5.906$; $p=.116$) hence confirming the invariance of the measurement model. Therefore, there are no significant differences in

the factorial measurement weights between the three groups (normal weighted, overweighted and obese participants) and the groups can be compared regarding socio-demographic, menopausal status, lifestyle and psychological variables.

Causal Model

A causal model for BMI was built, integrating fifteen independent variables and comparing three different categories of BMI. The results are evidenced in table 3.

Table 3 – Structural weights of the dependent variable regarding all independent variables considered in the causal model

Structural weights	Normal weight	Overweight	Obese
	$\beta(SE)p$	$\beta(SE)p$	$\beta(SE)p$
BMI ← Age	.081(.015).056	.083(.015).056	.083(.015).056
BMI ← Marital status	.052(.134).112	.053(.134).112	.053(.134).112
BMI ← Professional status	-.027(.175).406	-.027(.175).406	-.027(.175).406
BMI ← Educational level	-.083(.041). 023	-.085(.041). 023	-.086(.041). 023
BMI ← Annual income	-.067(.062).072	-.069(.062).072	-.069(.062).072
BMI ← Parity	-.033(.059).294	-.033(.059).294	-.033(.059).294
BMI ← Smoking	-.029(.037).360	-.030(.037).360	-.030(.037).360
BMI ← Alcohol	-.042(.075).183	-.043(.075).183	-.043(.075).183
BMI ← Coffee	.004(.067).899	.004(.067).899	.004(.067).899
BMI ← Physical exercise	.030(.112).343	.031(.112).343	.031(.112).343
BMI ← Transition from pre- to peri-menopause	-.025(.150).490	-.026(.150).490	-.026(.150).490
BMI ← Transition from peri- to post-menopause	.009(.181).844	.010(.181).844	.010(.181).844
BMI ← Depression	-.230(.143)***	-.236(.143)***	-.237(.143)***
BMI ← Stress	.289(.043)***	.107(.226).093	.077(.348).437
BMI ← Body shape concerns	.247(.061)***	.254(.061)***	.254(.061)***

β : standardized estimate; SE : standard error; *** $p \leq .001$

Discussion

Univariate and comparative analysis showed significant differences between midlife women with normal weight, overweight and obesity regarding several psychological variables.

As evidenced elsewhere, normoponderal participants have significantly lower scores of non-clinical anxiety and depression when compared with obese individuals³⁸. The univariate analysis supports this for anxiety, which was significantly lower in women with normal weight when compared both with overweight and obese participants. However, depression levels did not differ between normal weight and obese participants; the significant differences were only between women with a healthy weight and overweight, being the latter who evidenced higher levels of depressive symptoms.

In the comparative analysis, stress did not differ among the three groups. On the contrary, body shape concerns were significantly different between the three BMI categories (normal weight, overweight and obesity) and women with a higher BMI category presented more frequent concerns with their body shape when compared with participants with a lower BMI category.

When socio-demographic, lifestyle and menopausal status are controlled in the multivariate analysis it is observed that depression is a significant predictor of BMI, in all three groups (healthy weight, overweight and obesity). However, depressive mood is a negative predictor, that is, for each BMI group women with more frequent depressive symptoms presented lower BMI than their counterparts (included in the same BMI category) with higher body weight. This outcome is fairly new since either a positive or no association between BMI (and overweight/obesity) and depression have been evidenced before^{13,27-31,34,36,56}.

However, it has been previously documented that decreased emotional well-being was significantly associated with poor appetite⁵⁷ and it is also known that the diagnosis symptoms for depression can include weight and appetite changes, namely, gain or loss⁵⁸. In addition, for men who quit smoking, an improved mood predicted weight gain at follow up, comparing with counterparts with depression, which gain significantly less weight⁵⁹. Also, the weight loss literature emphasized the strong association between depression and physiological changes when a plateau of weight reduction is achieved:

after losing 11% of initial weight, depression symptoms increased significantly⁶⁰. Moreover, it has been shown elsewhere that the remission of depressive symptoms is associated with weight gain, and this was not a pharmacological effect but rather a result of recovery⁶¹. This might indicate that, when depressed, people can have an inferior weight than when they are not depressed; this could explain the negative correlation between BMI and depressive mood. Therefore, the literature has already presented few evidences indicating that depressive symptoms can be a negative, rather than a positive predictor of body weight.

Regardless of the depressive mood, increased stress can predict binge eating⁶² and consequently body weight increase. In the present research, stress is a positive and significant predictor of BMI, but only in women with normal weight. Hence, participants (with a healthy BMI) with higher levels of stress manifested a higher BMI than women feeling less stress. This is in agreement with previous studies¹⁷⁻²¹. However, stress has also been mentioned as not related with body weight²⁴ and a prior study on weight cycling revealed that stress had no significant association with BMI in overweight women⁴⁰. The causal model, which allows the control of confounding variables, shows stress as significantly predicting BMI, but only in normal weight participants. This might evidence that in women who do not have major problems with body weight (that is, are neither overweight nor obese), stress influences weight; whereas in participants who have difficulties related with weight management (that is, are overweight or obese) body weight is influenced by factors other than stress. Thus, factors such as behavioural weight control, self-defeating thoughts or frustration for not meeting thinness social standards might influence the BMI in overweight and obese women.

Body shape concerns were also a significant predictor of BMI: participants with more frequent body shape concerns evidenced higher BMI than their counterparts with less frequent concerns about their body form. Body dissatisfaction has already been identified as predicting the weight gain rate after adolescence⁴². These results demonstrate that, in midlife, concerns with the body (which might evidence dissatisfaction with its form) predict a higher body weight.

Education has been mentioned as a significant and negative predictor of BMI^{11,12,63,64}. Our results support the conclusions from previous studies that educational level is a negative predictor of BMI, not only in overweight and obese participants, but also in

normal weight participants. Regarding other socio-demographic variables, age and income were marginally significant predictors of BMI for the three categories.

Although physical activity has been consistently associated with weight variability⁶⁵ the relation between BMI and physical exercise is inexistent in this study. Although almost half of normal weight and overweight participants, and 26% of obese women of this sample, do practise physical activity, the absence of a connection might be related with a low frequency and duration of physical activity done by these participants. Additionally, although around menopause women report a weight increase⁹, menopausal status was not a significant predictor of BMI.

It is important to consider that in self-report assessments women can underreport their weight and height, independently of depression levels or BMI status⁶⁶, which might be a limitation.

The sample sizes for the three sub-groups (527 participants with normal weight, 334 with overweight and 125 with obesity) were adequate for this type of statistical analysis, accordingly with the common rule of thumb of five subjects per manifest variable, which is current practice in structural equation modelling⁵². Given the absence of multicollinearity, good psychometric properties of the instruments used, and the good fit of both measurement and causal models, these outcomes are statistically valid and reliable. Nevertheless, the fact that this research has a cross-sectional design limits the generalization of these results.

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Conflict of interests

The authors report no conflicts of interest. The authors alone are responsible for the content and writing of the paper.

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PART III – WELL-BEING

What predicts well-being in midlife women? The influence of socio-demographic, health and menopause-related factors, lifestyle, life events, menopausal symptoms, body shape concerns, stress and spirituality

Running title: Well-being in midlife women

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Abstract

Background: Midlife women can face several significant changes during middle-age related with menopause, health deterioration and life events, which can have an impact on their well-being. The aim of this research was to build a causal model to identify variables which can predict subjective well-being in midlife.

Methods: A community sample of 1,003 women aged between 42 and 60 years filled in questionnaires which asserted socio-demographic, health and menopause-related, and lifestyle characteristics. Additionally, participants answered the Body Shape Questionnaire (Cooper et al, 1987), the Depression, Anxiety and Stress Scales (Lovibond & Lovibond, 1995), the Spiritual Well-being Scale (Gomez & Fisher, 2003), the Life Events Survey (Sarason et al., 1978), the Menopause Symptoms' Severity

Inventory (Pimenta et al., 2011) and the Subjective Well-being Scale (Albuquerque & Tróccoli, 2004). Structural equation modelling was used to generate a causal model to explore which variables predicted well-being in midlife, controlling for possible confounding variables.

Results: Stress ($\beta=-.247;p=.023$), spirituality ($\beta=.252;p<.001$), life events ($\beta=.166;p=.023$), depressive mood ($\beta=-.493;p=.019$), having a recent psychological problem ($\beta=-.117;p=.047$) and coffee intake ($\beta=.104;p=.033$) were the statistically significant predictors of subjective well-being. These variables account for 92% of the well-being.

Conclusions: Although menopause has been identified as having a negative impact on well-being, this impact was not confirmed. Moreover, since life events and stress were significant predictors, hardiness development in middle-aged should be focused. In this context, spirituality is also a personal resource to promote well-being.

Introduction

In addition to physiological health, it is important to understand what determines well-being during the aging process and how the various factors are associated with women's psychological and physical optimal functioning [1]. The pertinence of this line of research is incremented by the fact that, around the year 2050, the percentage of people with more than 60 years old will grow from 10% to 21% [2]. The literature has evidenced that general psychosomatic complaints can have a negative impact on well-being in middle-aged women [3].

Also, lowered well-being is related with the presence of certain cytokines (namely, interleukin-6, implicated in age-related diseases such as osteoporosis, some forms of cancer, Alzheimer's, among others) proving that there is an association between psychological factors and inflammatory process, characteristic of later life [4]. Moreover, in a Japanese research with middle-age and elderly men and women, who were assessed in 1993 and again in 2000, low subjective well-being was related with mortality (independent of the causes, gender, age, education, health-related variables and living alone) [5].

However, other variables such as socio-demographic, lifestyle, health and menopause-related, menopause symptoms, spirituality, stress, body shape concerns and life events can have an impact on well-being.

Socio-demographic characteristics

Higher educational level [5,6], higher income [7,8,9], parental status [10,11], being married [3,5,6,8] and professionally active [12] are associated with better health and well-being.

However, this is not unanimous: single middle-aged women have presented some personality characteristics enhanced, which were associated with higher well-being, than their married counterparts [13]; childlessness has also been related to midlife well-being (not directly, but through the influence of current marital, health and socio-economic status) [14].

Lifestyle

Healthier lifestyles have been associated with enhanced well-being [1,15]. Dieting and smoking behaviour [3], physical activity [16], and alcohol (when consumed moderately and by women who exercise and do not smoke) [17], had a significant impact in well-being during the climacteric period.

Health and menopausal status, hormone therapy and medical help search

Variables related with health status can significantly influence well-being in midlife [3]. Regarding menopausal status, the results are not consensual. Although very few studies have explored well-being during menopausal years, evidences are that the menopausal status does not influence well-being [3]. However, in a more recent research, and along the same menopause stage, it has been concluded that, as women go from early to late peri-menopause, negative mood decreases, positive mood is maintained and well-being improves significantly [18]; additionally, in post-menopausal women, age progression was significantly associated with a decrease in negative affect and an increase in positive affect [19].

Despite this, a negative impact has also been reported: menopause can worsen well-being [20].

In another longitudinal research, neither being in menopause transition nor hormonal levels (such as estrone glucuronide and follicle-stimulating hormone), predicted the participants' well-being [21].

Hormone therapy has also been described as having a positive impact on well-being, incrementing it, especially in surgical postmenopausal women [22]. Though, in different study (using dehydroepiandrosterone against a placebo), no significant differences were observed between women using hormone therapy and those using a placebo in terms of well-being [23].

Well-being has also been related with the search for medical help, to manage menopause [24]

Menopausal symptoms

Hot flashes have been identified as exacerbating negative mood [19] and their severity is associated with decreased well-being [25]. Nonetheless, in a different research, neither the presence nor the severity of hot flashes predicted well-being [21]. Similarly, in another study, there were no significant differences in well-being between women who were in late peri-menopause (and manifested the highest prevalence of vasomotor symptoms) and their counterparts without vasomotor symptomatology [26]. However, except for this menopausal status (that is, peri-menopause), women in pre- and in post-menopause, and who had vasomotor symptoms, presented a lower well-being when compared with participants without these symptoms [26].

It has been concluded elsewhere that well-being can predict sexuality [27]; on the other hand, sexual problems might occur during menopause transition and these can impair well-being [28].

Depression can also be linked to the decline of the ovarian function [29] and depressive symptoms have been strongly associated with decreased well-being in middle-aged and older adults [30]. Cognitive difficulties have also been reported during the menopausal transition [31]. In addition, fatigue, which can also be identified during menopause, has been evidenced as a significant predictor of well-being [27].

Nonetheless, the relief of menopausal symptoms around menopause is not the only factor that is strongly associated to the improvement of well-being [28].

Life events

During midlife, women often have their children leaving home and their marriage ending by divorce or widowhood [32] and might also have the need to assume the caregiving role of aged parents [33]. The empty nest experience has been evidence as not having an impact, by itself, on the midlife women's well-being; however, in

interaction with other variables (such as professional status) it might interfere with it [12]. Being professionally active and a caregiver might be two conflicting roles and this conflict can have a negative impact on well-being [34].

Furthermore, the autobiographical reasoning about self-growth is related with well-being. Hence, both positive processing (that is, the tendency to interpret events positively) and differentiated processing of negative life events (that is, the extent to which past events are perceived as self-growth promoters) predict well-being [35].

Literature has evidenced as well that well-being can change significantly with life events and daily hassles in middle-aged women [17,18,21].

Spirituality

Little is still known about the contribution that spirituality can have to well-being and health [36]. Yet, personal resources have been mentioned as a significant predictor of well-being during the menopausal transition and post-menopause, determining the variability of women's well-being more significantly than other menopause-related variables [21]. In this context, some studies support that spirituality can be a well-being resource in later life [37,38].

Body shape concerns

During midlife and menopausal transition women frequently report an increase in body weight [39-41], and weight increase has been shown to have a negative impact on well-being [42].

In addition, dissatisfaction with body weight is related with self-esteem in older women [43]. Also, age has been found to moderate the association between regular body monitoring and body dissatisfaction, and this association was higher in middle-aged women (compared with older women) [44]. Nonetheless, in another research, body weight dissatisfaction did not vary across the life span in a female sample [45].

Stress

Stress was found to be significantly related with subjective well-being in midlife [3,46,47] and stress associated to the professional role can lead to a lower life satisfaction in midlife men and less happiness in women [8].

Given the multiplicity of variables that can impact the well-being during middle-age, the aim of this study is to, through a structural causal model of subjective well-being for middle-aged women, evaluate which of the variables mentioned previously, can explain subjective well-being, after controlling for confounding variables.

Method

Participants

One thousand and three women agreed to participate in this study and answered to all questionnaires and instruments adequately. This community sample encompasses women aged between 42 and 60 years and 71% were married, as evidenced in table 1.

Table 1 - Distribution of the study's participants according to socio-demographic, health and menopause-related characteristics, and lifestyle

Characteristics	Participants	
	n	%
N	1,003	
Age <i>M (SD)</i>	49.7 (5.241)	---
Marital status		
Married or in a relationship	706	70.5
Not married or in a relationship	295	29.5
Parity		
0	85	8.6
1	290	29.5
2	450	45.8
≥ 3	158	16.0
Education		
Primary school	112	11.4
Middle school	222	22.6
High school	280	28.5
University degree	395	37.5
Professional status		
Active	849	86.2

Inactive	136	13.8
Household annual income		
≤ 10,000€	199	23.5
10,001€ - 20,000€	220	26.0
20,001€ - 37,500€	208	24.6
37,501€ - 70,000€	154	18.2
≥ 70,001€	65	7.7
Recent disease		
Yes	184	18.9
No	789	81.1
Psychological problem		
Yes	153	15.6
No	827	84.4
Menopausal status		
Pre-menopause	282	28.4
Peri-menopause	298	30.0
Post-menopause	412	41.5
Medical help sought to manage menopause		
Yes	431	47.2
No	483	52.8
Hormone therapy, herbal/soy therapy or nothing		
Hormone therapy	67	7.2
Herbal/soy therapy	64	6.8
Nothing	803	85.8
Smoking		
Current smoker	247	25.2
Current non-smoker	733	74.8
Alcohol		
Yes	493	49.6
No	500	50.4
Coffee		

Yes	862	86.5
No	134	13.5
Physical exercise		
Yes	447	45.2
No	543	54.8
Body mass index (kg/m ²)		
Underweight (BMI<18.5)	7	0.7
Normal weight (18.5≤BMI≤24.9)	527	53.1
Overweight (24.9>BMI≤29.9)	334	33.6
Obesity (BMI>29.9)	125	12.6

Procedure

This cross-sectional study encompasses a community sample which was mainly recruited through schools and universities in the city of Lisbon. The inclusion criteria in this research were gender (women), literacy and age (between 42 and 60 years). The American Psychological Association's standards on the ethical treatment of participants were followed. A written informed consent form was delivered to all participants, explaining the aims of the study, emphasizing that the participation in this research was voluntary and that participants could interrupt their collaboration at any time, without any consequences.

After receiving the informed consent and agreeing to participate in the research, a sample of 1,003 Portuguese women answered to all the instruments adequately (45 were excluded due to lack of sufficient information).

Measures

Due to the complexity and size of the theoretical model proposed and given the high number of independent variables (thirty-four), each instrument was used in a shortened version, that is, each construct (specifically, each subscale) was assessed only by the three items with the highest structural weights.

All instruments produced data with good psychometric properties (sensitivity, factorial validity and reliability) in this sample.

Subjective Well-being

The Subjective Well-being Scale has 62 items and encompasses an emotional (positive and negative affect) and a cognitive component (life satisfaction), measured in a 5-point Lykert-type scale, ranging from “nothing” to “extremely” in the emotional components, and from “I completely disagree” to “I completely agree” in the cognitive component [48].

Menopause Symptoms

A validated version of the Menopause Symptoms' Severity Inventory, MSSSI-38 [49] was used. This inventory includes thirty-eight items, organized in twelve sets of menopausal symptoms (depressive mood; anxiety; cognitive impairment; body shape changes; aches and pain; skin and facial hair changes; numbness; perceived loss of control; mouth, nails and hair changes; vasomotor, urinary and sexual symptoms). Both frequency and intensity of symptoms were measured in reference to the previous month, using a 5-point Likert-type scale which ranges from “never” to “daily or almost every day” and from “not intense” to “extreme intensity”, respectively. The severity of each symptom is calculated afterwards, using the mean between the values of frequency and intensity for each item.

Stress

This variable was assessed through the Portuguese version of the Depression, Anxiety and Stress Scales [50,51]; the stress subscale includes 7 items, with answers being given in a 4-point Lykert-type scale (ranging from “did not apply to me” to “it applied to me most of the time”).

Body Shape Concerns

The Body Shape Questionnaire [52] assesses the concerns about the body appearance in 34 items. Responses were given in a 6-point Likert-type scale with scores ranging from “never” to “always”.

Life Events

The Life Experiences Survey [53,54] evaluates the impact of a variety of events in the participants' life, during the previous month. This inventory includes 47 events that can be measured in a 7-point Likert-type scale, ranging from “very negative” to “very

positive”. There is also the possibility to answer “does not apply” for each event. Only events which were mentioned by at least 10% of the sample were included in the causal model.

Spirituality

Spirituality was assessed through the Portuguese version of the Spiritual Well-being Questionnaire [55,56] which allows the measurement of four dimensions, namely personal, communal, environmental and transcendental well-being, evaluated in a 5-point Likert-type scale, ranging from “very low” to “very high”.

Menopausal and Health-related variables

The menopausal status was defined according to the Stages of Reproductive Aging Workshop’s criteria [57]. Women in pre-menopause presented an absence of changes in their menstrual cycle. Peri-menopausal participants would report variable cycle length (a difference of more than seven days, than usual) or had skipped two or more cycles and had an amenorrhea interval superior to sixty days. Post-menopausal women had at least a twelve-month period of amenorrhea.

Besides menopausal status, the use of hormone therapy, herbal/soy products or nothing to manage menopause symptoms was also asserted. In addition, the search for medical help to manage these symptoms was also controlled.

Health status (both physical and psychological), as well as menopausal status, was self-reported. The participants were asked about the presence of a recent disease and of a psychological problem.

Lifestyle

Alcohol and coffee intake, smoking, physical exercise and body mass index (BMI) were assessed.

Lifestyle habits were explored in terms of presence/absence, amount and/or frequency. Hence, physical exercise was measured in terms of times per week and during how many minutes the participant exercised; a mean value of weekly frequency and duration was used in the multivariate model. Coffee intake, when present, was assessed in a four-option scale, ranging from “occasionally” to “more than five per day”. Alcohol intake, when observed, was measured both in terms of frequency (“daily”, “every weekend” or “rarely”) and quantity (“until I feel drunk”, “moderately” or “less than a

glass per occasion”); a mean value of both translates the alcohol consumption variable, in the causal model. Finally, for current smokers, smoking was quantified in a 6-point Likert-type scale that ranged from “less than 10 cigarettes per month” to “more than 40 cigarettes per day”; this quantification integrated the structural equation model to assert the influence of smoking on the subjective well-being.

Socio-demographic characteristics

Socio-demographic variables, such as age, marital status, parity, professional status, educational level and family annual income, were also explored.

Statistical Analysis

Missing values were imputed for variables, where its frequency was lower than 10% of the sample. This was done using the mean interpolation method.

Multicollinearity between the independent variables was explored with the variance inflation factor (VIF) given by SPSS Statistics (v. 19, IBM SPSS Inc, Chicago, IL). All variables presented a value below 5, indicating the absence of collinearity [58,59].

The distribution of the variables studied was explored with SPSS Statistics (v. 19, IBM SPSS Inc, Chicago, IL).

To test the causal model for subjective well-being, a structural equation model was built relating the dependent variable (well-being) with the thirty-four independent variables (namely, age, parity, marital and professional status, income, education, presence of a recent psychological problem or a disease, transition from pre- to peri-menopause and from peri- to post-menopause, use of hormone therapy or herbal/soy products to manage menopause symptomatology, medical help search do deal with menopause, alcohol and coffee intake, smoking, physical exercise, BMI, stress, body shape concerns, the twelve types of menopausal symptoms, life events and spirituality). The model was evaluated with SPSS AMOS software (v. 18, IBM SPSS Inc, Chicago, IL). The quality of the fit of the structural model was given by chi-square statistics (X^2/df), comparative fit index (*CFI*), goodness of fit index (*GFI*) and root mean square error of approximation (*RMSEA*), and the reference values currently practiced in structural equation modelling were used [59,60]. A two-step approach was employed to evaluate the causal structural model. First, the factor’s measurement model was evaluated to demonstrate an acceptable fit. Thereafter, the structural causal model, encompassing the dependent and

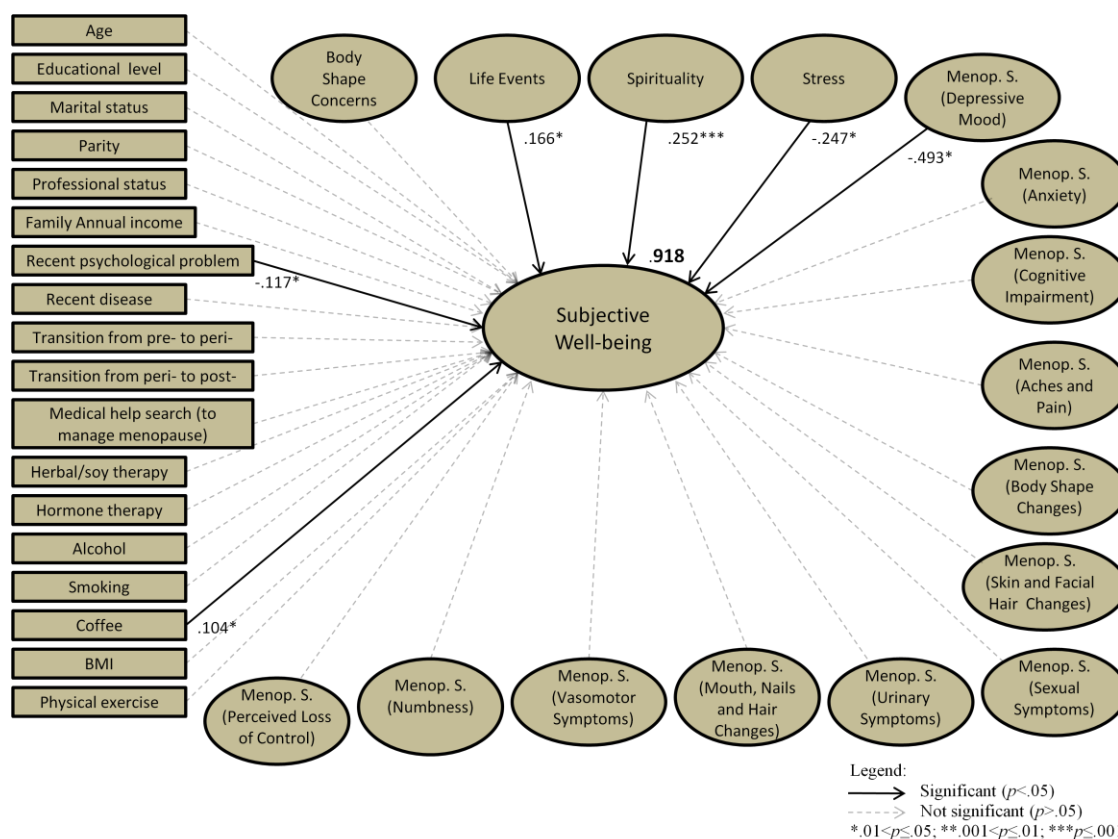
the thirty-four independent variables, was adjusted and the significance of the causal trajectories was evaluated.

Results

The fit of both the measurement ($X^2/df=2.503$; $CFI=.863$; $GFI=.842$; $RMSEA=.039$; $p=1.000$; $C.I. 90\%=[.038; .040]$) and the causal models were good ($X^2/df=2.255$; $CFI=.859$; $GFI=.841$; $RMSEA=.035$; $p=1.000$; $C.I. 90\%=[.035; .036]$).

The causal model encompassing the 34 independent variables is presented in Figure 1.

Figure 1 - Subjective Well-being: its relation with socio-demographics, health and menopause-related variables, lifestyle, life events, body shape concerns, stress, spirituality and menopausal symptoms



Stress ($\beta=-.247$; $p=.023$), spirituality ($\beta=.252$; $p<.001$), life events ($\beta=.166$; $p=.023$), depressive mood ($\beta=-.493$; $p=.019$), having a recent psychological problem ($\beta=-.117$; $p=.047$) and coffee intake ($\beta=.104$; $p=.033$), were the significant predictors of subjective well-being. Parity was only a marginally significant predictor ($\beta=.088$; $p=.091$). The

variables included in the causal model explain 92% of the variability of subjective well-being.

Discussion

In this study with middle-aged women, depressive mood presented a strong and negative association with well-being. Moreover, literature supports this conclusion: subjects with depression or depressive mood tend to manifest significantly lower levels of well-being [30,61,62]. Another indicator of mental health, which predicted significantly and negatively well-being, was the presence of a recent psychological problem. Therefore, women with a self-reported psychological problem (of diverse nature) or with higher levels of depressive mood would report significantly lower levels of well-being than their counterparts with lower depressive mood and absence of a psychological problem.

Regarding spirituality, the present study supports the conclusions of previous ones [37,38] demonstrating that spirituality can be a significant predictor and a resource of well-being in midlife. Recent research emphasizes the increasing attention that is being given to spirituality, both in health-care (through the integration of courses on spirituality in medicine, by medical schools) [63] and in self-care context, given its potential to promote personal development and well-being in illness and health [36].

Both life events (other than becoming peri- and post-menopausal, which did not predict well-being levels) and stress, affected significantly the variability of women's well-being during midlife. Therefore, participants who evaluated their recent life events more positively and presented lower levels of stress, manifested higher levels of well-being.

This is concordant with previous studies [3,17,18,21,46,47].

In a previous study about middle-aged women's self-care actions, one-fourth of the sample mentioned self-care behaviours were associated with developmental changes that happen in midlife [64]. And it has been concluded elsewhere that behaviours leading to good health promotion, in midlife women, were related with hardiness (that is, the psychological ability to cope with stress) [65]. Given that both stress and life events (assessed not only by the presence of the event but also by the impact it had) were significant predictors of well-being, the development of hardiness, as well as spirituality, seem to be important resources to maintain well-being during middle-age.

Of all lifestyle variables, coffee intake was the only one significantly predicting well-being. Caffeine has a stimulant effect on the central nervous system, and consumption patterns reveal the motives why people take it: at the beginning of the day caffeine facilitates waking up and during the day it helps to neutralize tiredness [66]. The benefits of caffeine intake are an increment of energy, attention, alertness, cognitive performance and elevation of mood [67]. A moderate consumption (defined as less than six cups per day) has been related to less depressive symptoms, lower suicide risk and decreased cognitive failure [67]. Moreover, in a previous study testing the effects of a combination of caffeine, taurine and glucuronolactone, used in some energy drinks, it was found that this combination had a positive impact against a group taking a placebo, improving significantly well-being, vitality and social extrovertedness; the authors suggest that caffeine might be the mediator of these effects [68]. It cannot be disregarded that this effect is also exacerbated by expectations: it has been proven, in a double-blind design, that people who believe they are drinking caffeine (but, in fact, consuming a placebo) show increases in subjective alertness; however, there were no significant changes in well-being and reaction time [69]. Therefore, our results show that people who take more coffee present (due to physiological, expectation effect or both) a higher well-being than those who drink less (or none) coffee.

It has been proven before that, rather than the endocrine changes, it is the health status, psychosocial variables and lifestyle that determine well-being in women undergoing midlife [3]. The causal model of well-being presented in this study confirms this conclusion: self-reported psychological health status, depressive mood, spirituality, life events, stress, and coffee intake significantly predict well-being.

Although peri- and post-menopause have been identified as having a significant impact on women's well-being and quality of life [70-72], in this study this developmental change did not predict well-being. This might be due to the fact that, being this a community sample, the symptoms' severity is not exacerbated. Moreover, it has been evidenced that menopause can be associated to positive experiences (like relief due to menses' and pre-menstrual syndrome's cessation) [70] which might counteract the negative ones.

Although the variables studied account for almost the total variability (92%) of well-being in this sample of middle-aged women, the hypothesis that other factors, not approached in this study, might have also influenced well-being of these women cannot be excluded. For example, a longitudinal study, which assessed participants when they

were adolescents and again 25 years later, concluded that family experiences during the adolescence predicted the well-being in adulthood [73]. In addition, a close relationship with the mother at the age of 16 was a significant predictor of life satisfaction of women at the age of 42 [74].

The sample size (1,003 participants) was adequate for this type of statistical analysis given that a rule of thumb of ten subjects per manifest variable was applied, as is current practice in structural equation modelling [59,75]. Nevertheless, the fact that this research has a cross-sectional design, and uses a sample where more than one third of the women have a college degree, limits the generalization of these results. Also, in the model, we have only considered direct effects of the predictor variables in subjective well-being. It is however possible that some predictors can interact (e.g. education and marital status) and possible mediation and moderation effects of the predictors may well need to be address in future researchs.

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GENERAL CONCLUSION

1. Menopause and Menopausal Symptoms

The qualitative study has revealed that, in this sample of Portuguese women, participants identified much more negative consequences than positive ones regarding menopause (93 versus 63 responses). The model built shows that menopause is represented as a negative occurrence, a positive or a neutral experience, or as a life cycle transition. The perceived positive consequences are structured in two factors which are cessation of menses or absence of positive consequences on one hand, and positive psychological changes on the other hand. The negative consequences of menopause are of psychological/sexual nature, physical nature, vasomotor symptoms or weight gain and perception of loss, as demonstrated by the proposed four-factor model.

From all the negative consequences, perceived by women as a direct effect of menopause, only vasomotor and sexual symptoms were proven to be subsequent to the menopausal status in three different causal models, tested later in the study's development. Weight gain was not considered to be an effect of the menopausal status in these three models (and when measured for the previous month), but when analysing women's weight change in a larger period of time (from pre-menopause until current menopausal status), hormonal changes appeared to play an important role in weight gain.

This research supports a predominantly negative vision of menopause, although, as literature evidences and this study supports, women also perceive positive outcomes.

The inventory built to assess menopausal symptoms, was initially based on the information provided by the peri- and post-menopausal interviewees (specifically, regarding the elicited contents of perceived negative consequences), derived from pre-existing menopausal symptoms' scales and supported on the opinion of specialists (namely, two gynecologists and one clinical psychologist with experience on women's issues). The result was a measure with good psychometric characteristics, which assessed twelve sets of symptoms, both psychological and physical. It was demonstrated that measuring the symptoms' frequency or intensity are two statistically different things; moreover, researchers assessing the frequency might obtain higher mean scores than those measuring symptoms in terms of intensity.

Regarding vasomotor symptoms' severity, in symptomatic women, this research adds fairly new outcomes: coffee can be a negative predictor (rather than a positive, as evidenced in previous researches), as well as perceived control, which was the strongest predictor accounted for in this model (even stronger than hormone therapy use).

This confirms that physiological symptoms, such as hot flashes and night sweats, can be influenced (regarding their severity) by non-hormonal variables, such as a lifestyle variables and perceived control. This conclusion is of particular importance for women who do not use hormonal therapies; the increased perception of control (given it is a predictor of less accentuated vasomotor symptoms), can be a useful strategy to manage the exacerbation of vasomotor symptoms in these women, given that the use of hormone therapies increases the risk for breast cancer (especially, considering women with a higher vulnerability to oncologic disease and long-term use of hormone therapy) (Corrao et al., 2008). Therefore, and congruently with Liao and Hunter (1998), the modification of certain habits and negative beliefs (in this case, the absence of control) will lead to an improvement of the climacteric experience.

After establishing that perceived control can predict the severity of vasomotor symptoms, in symptomatic women, stress and depression symptoms were also confirmed as significant predictors of vasomotor symptoms' occurrence: women with more frequent stress and depression-related symptoms were more likely to evidence hot flashes and night sweats, independently of socio-demographic, health and menopause-related, and lifestyle factors.

In this causal model of vasomotor symptoms' occurrence, several variables predicted the emergence of hot flashes: older women, married (or in a relationship), with less children, using natural products to manage menopausal symptoms, and with more frequent depressive symptoms were more likely to manifest them. Regarding night sweats, again participants married (or in a relationship), with less children, with a recent disease, using herbal/soy products (specific for climacteric symptoms) and with more frequent stress symptoms presented night sweats.

The fact that, on the one hand, stress (which is associated with sleep disturbance) predicted night sweats' (but not hot flashes) occurrence and, on the other hand, depression (which is worse during the diurnal period of the day), is associated with hot flashes (but not with night sweats), shows a differentiated impact of the two psychological variables. This difference regarding stress and depression's influence on

night sweats and hot flashes can be due to the very nature of the two psychological symptoms. Therefore, it can be thought that another way to cope with vasomotor symptoms (in this case their emergence) is through the management of stress and depressive symptoms.

Additionally, this research showed that from twelve sets of symptoms, typically identified in literature as menopausal symptoms, only three were predicted by the menopausal status. Thus (and independently from socio-demographic, health status and lifestyle factors), skin and facial hair changes, vasomotor and sexual symptoms were predicted by the transition from peri- to post-menopause, evidencing that these are the single conditions associated with the hormonal changes. The same causal model identified age as a significant predictor of cognitive impairment, aches and pain, urinary and sexual symptoms. Therefore, age can foretell more symptoms than the menopausal status itself, and age progression seemed to explain conditions that have been attributed to the menopausal status.

Two of the symptoms reflected in the menopausal stage have been gathering concordance regarding their identification as the only symptoms which are, in fact, related with peri- and post-menopausal status (that is, vasomotor and sexual symptoms). The other symptom (skin and facial hair changes) was already mentioned as a possible side effect of hormonal therapy (Munarriz et al., 2002); nonetheless, previous researchers have identified skin alterations as subsequent to hormonal changes (but also age) (Raine-Fenning, Brincat, & Muscat-Baron, 2003).

The remaining, supposedly menopausal, symptoms were predicted by marital status, educational level, parity, income, health status, body mass index, among others. And, although skin/facial hair changes, vasomotor and sexual symptoms are significantly linked to the menopausal status, they are also influenced by socio-demographic characteristics, and by physical and psychological health statuses.

These conclusions support the bio-psycho-social conceptualization of menopause: although some symptoms emerged subsequently to changes in the menopausal status, the vast majority of the symptoms assessed are not predicted by this imminently hormonal variable (stage of menopause). Thus, these outcomes establish the consequences of menopause not as a medical condition (as it has been seen given the (over)medicalization of this natural process), but instead as a set of physical and psychological conditions which are due to age progression, life conditions and health-related variables.

This causal model, as well as two other models, has confirmed an unexpected association: women who use natural products to manage menopausal symptoms, have reported them with higher severity when compared with women who do not use herbal/soy therapy. This result evidences that these products might not have the expected therapeutical effect. Since studies (specially, randomized controlled trials) about the efficacy of the herbal/soy therapies are still scarce, it is suggested that further research is developed with these products in order to clarify their usefulness in the menopausal symptoms' management.

The causal models testing the predictive power of both personal and contextual variables (namely, spirituality and life events) have proven that both can predict menopausal symptoms (in fact, they were associated with the vast majority of symptoms assessed), independently of socio-demographic, health and menopause-related and lifestyle factors. This, once again, supports the hypothesis that the climacteric symptoms that are commonly identified in literature may not be in fact clinical conditions derived from hormonal changes, but rather physical and psychological manifestations associated with life conditions and internal resources, again confirming the inadequacy of a generalized medicalization to menopause.

Three exceptions can be observed, namely vasomotor and sexual symptoms, and skin/facial hair changes, which have proven to be consistently predicted by the menopausal status, in the three causal models (that is, the previous one – that tested only the influence of socio-demographic, health and menopause-related factors, and lifestyle – and the two models exploring the predictive power of spirituality and life events).

While the literature has evidenced depressive mood and anxiety as being associated with climacteric's hormonal changes, this was not supported by this research: menopausal status did not predict the two psychological symptoms. This research evidenced that the participants in post- and peri-menopause manifested more severe depressive mood and anxiety, when compared with their pre-menopausal counterparts. These symptoms were related with life conditions (such as socio-demographic, health-related variables and lifestyle) and events, and with personal characteristics (namely, spirituality). It can be also thought that negative representations of menopause might be associated with these two symptoms (literature has supported that negative attitudes regarding menopause might be associated with a more negative climacteric experience). This is hypothesized since the results of the qualitative study highlight that women can manifest a negative representation of menopause, and their perceived negative

consequences (including anxiety and depressed mood) were much more frequent than positive ones.

2. Body Weight

Regarding weight changes, it is concluded that the majority of women in this study gained weight from the pre- to peri- or to the post-menopause. Besides socio-demographic and health-related variables (that is, lower education, less intense and frequent physical exercise, and presence of a psychological problem), also body shape concerns and menopausal status determined the weight increase.

It is important to emphasize that, menopausal status did not predict body shape changes (that is, weight gain and feeling bloated) when assessed by the Menopausal Symptoms' Severity Inventory (MSSI-38); this might be explained by the fact that this instrument asserts these body alterations only regarding the previous month. When weight gain is evaluated comparing weight in pre-menopause with body weight in the current menopausal status (peri- or post-menopause), the hormonal changes seemed to play a significant part in weight gain. Also, more frequent body shape concerns predicted an increase in weight.

This body weight increase had already been identified as a negative consequence perceived by women as associated to menopause, as evidenced by several interviews with peri- and post-menopausal women.

These results support that women with more concerns about their body shape, with less frequent and intense physical exercise routines, less educated, with a psychological problem and close to the menopausal transition, are the most vulnerable to manifest later, in the menopausal transition or post-menopause, a weight increase and, therefore, should be targeted to weight gain prevention.

The literature has evidenced that cognitive-behavioural therapies are effective in weight loss. This was partially supported by the present research: a brief (eight sessions) and individual cognitive-behavioural intervention allowed a small group of participants (seventeen) to significantly lose weight (comparing weight prior to the intervention and the weight at the 4-month follow-up), but the loss was below the 5% of body weight, established as a successful weight lost. We suggested that the intervention might need to

be longer and a group format might have benefits for this particular health-related objective.

Other conclusion of the present study is that three different body mass index (BMI) categories, specifically, normal weight, overweight and obesity, are all predicted by body shape concerns and education level (that is, more frequent concerns and less schooling years are associated with higher BMI inside each category). Moreover, and contrary to what literature shows, in this sample of middle-aged women, more frequent depression symptoms predicted a lower BMI, for the three categories. Although this outcome is not the most frequent in the literature (in fact, most studies associate an increased weight with more severe depression symptoms), a limited number of researchers have documented that this relation might be observed. Moreover, stress levels were also associated with weight but only in participants with a healthy weight.

Thus, increased stress and depression symptoms do not appear to be associated with a higher body weight in both overweight and obese middle-aged women.

3. Well-being during Midlife

Finally, the variability of subjective well-being in this sample of midlife women is almost totally explained (92%) by the variables accounted for. Therefore, the proposed causal model identifies life events (more positively evaluated), higher spirituality, less frequent stress symptoms, lower severity of depressive mood, the absence of a self-reported psychological problem and higher coffee intake as the variables that are associated with higher well-being.

This research evidences that neither menopausal status nor a recent disease impact on well-being. This might be explained by the adaptation mechanism, that is, unhappiness might emerge when people experience changes perceived as negative for the first time, but soon they adapt to it and stop evidencing such a negative mood (Diener, 2000). Furthermore, health-related changes' acceptance can be one of the factors more strongly associated with well-being (Migliorini & Tonge, 2009).

On the other hand, we can hypothesize that cultural constructions of certain changes, namely, menopause, are also associated with positive representations (as evidenced in the qualitative research), and these (although in lower number when compared with the negative representations) may counteract the impact of a

disagreeable representation or negative expectation and, consequently, not have a significant impact on well-being at midlife.

4. Limitations and Future Research

This study has several limitations and leaves room to future research. A recent study has shown that, although women lose weight with cognitive-behavioural interventions, longer follow-ups (namely, three years) have demonstrated that it is very difficult for people to maintain the new lower weight on the long run: most women regain it (Cooper et al., 2010). Hence, the 4-month follow-up used to assess the success of the weight loss after the cognitive-behavioural intervention gives little information. It is recommended that future studies in the field use longer follow-ups.

Also, the fact that one third of the sample has a college degree limits the generalization of the results, since education can be an important predictive variable.

Furthermore, marital status tends to be a rather narrow variable since it does not provide information on the quality of the relationship. And, as it is known that quality of the marriage is associated with life satisfaction (Hohaus & Berah, 1996), and that an emotionally supportive relationship with a partner also contributes to the middle-aged women's well-being in midlife (Martire, Stephens, & Townsend, 1998), it is suggested that in future studies that the quality of, or satisfaction with, the relationship is included.

Since the partner's sexual dysfunction and health problems can be correlated with menopausal women's sexual symptoms (Chedraui, Aguirre, Hidalgo, & Fayad, 2007; Sarti et al., 2010), in future studies data regarding the partner should be collected to assert if this condition also explains part of women's sexual symptoms.

Regarding the life events assessed, not having included menopause as a life event could be pointed as a limitation. However, although technically menopause corresponds to the last menstrual period (and therefore, it is an event limited in time), most women perceive menopause as a phase of life and, therefore, its inclusion as a life occurrence could be misinterpreted and evaluated with a bias. Moreover, the transitions from pre- to peri-menopause and again from peri- to post-menopause were assessed as events (in terms of presence or absence) in the context of the menopausal status' determination.

Another limitation was the fact of not asserting if women were in a sexually active relation; this might confound results concerning MSSSI-38 sexual symptoms' subscale

and in Utian Quality of Life Scale (namely, in relation to the sexual quality of life), since it is not known if participants who answered to the items negatively did it because they had a negative sexual quality of life (or, in the case of MSSSI-38, an absence of negative sexual experiences) or because they were not sexually active.

Moreover, the instruments assessing symptoms' reporting can be linked to the vulnerability of measuring symptoms through checklists, namely the elicitation effect since these instruments will facilitate more positive answers, than open-ended questions would (Dennerstein, Dudley, Hopper, Guthrie, & Burger, 2000). Therefore, although this community sample does not present a high severity of symptoms (namely, regarding menopausal symptoms), it is hypothesised that, due to the mentioned limitation, this reporting is in reality, lower than the identified in this study.

This work intends to be a useful contribution to the understanding of menopause (in terms of representation and assessment), adding information about the factual menopausal symptoms and proving that most symptoms identified as "menopausal" are not predict by menopausal status and are influenced by personal characteristics, life conditions, health status, lifestyle and life events. Additionally, in was our objective to explore the weight gain phenomenon during menopause, ways to promote weigh loss (through a brief intervention) and body mass categories' predictors, allowing also new insights about what determines well-being in Portuguese middle-aged women.

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APPENDIX A

Cross-sectional study's questionnaires and instruments

ESTUDO DE DOUTORAMENTO: A MULHER E A MENOPAUSA

Consentimento Informado

O presente estudo de doutoramento, efectuado na especialidade de **Psicologia da Saúde** e com a orientação da Prof. Doutora Isabel Leal (ISPA – Instituto Superior de Psicologia Aplicada), é financiado pela Fundação para a Ciência e Tecnologia (referência SFRH/BD/32359/2006).

Esta investigação estuda a fase da vida da mulher durante a qual ocorre a **menopausa**.

Numa primeira etapa o objectivo deste estudo é explorar a forma como as mulheres portuguesas, **com idades compreendidas entre os 42 e os 60 anos**, vivem esta fase da sua vida e que aspectos contribuem para o seu bem-estar durante o período de menopausa. Neste momento, convido-a a participar nesta fase da investigação através do preenchimento das questões que encontrará nas páginas seguintes.

Esta investigação tem igualmente o objectivo de explorar, numa segunda fase, formas de diminuir determinados sintomas da menopausa (concretamente, os afrontamentos) e ajudar a gerir o peso de forma saudável (focando o comportamento alimentar e a relação com o corpo), tendo como finalidade a diminuição de peso, caso a participante tenha excesso de peso.

Não se irá recorrer a medicação e a exploração de formas para diminuir os afrontamentos e o (excesso de) peso será feita através de uma intervenção psicológica breve que não envolve riscos. Algumas pessoas poderão ser convidadas a participar na segunda fase (que se iniciará brevemente), convite esse que poderão rejeitar, se assim o quiserem, sem que isso tenha quaisquer consequências. Se quiser participar na segunda fase, deverá preencher também a última folha.

A sua participação é de elevada importância para que possamos conhecer de uma forma mais objectiva e abrangente **como é que as mulheres portuguesas vivem o período de menopausa**.

Sublinha-se que todos os dados são totalmente **confidenciais**.

Muito obrigada pela sua participação!

A investigadora responsável,

Filipa Pimenta
Instituto Superior de Psicologia Aplicada
Rua Jardim do tabaco, 34
1149-041 Lisboa
Tel.:218 811 700
Tlm: 96.341.22.24
e-mail: filipa_pimenta@ispa.pt

Se aceita participar, por favor rubrique esta página e a seguinte e, de seguida, retire para si a primeira página (são ambas iguais e a primeira página é para si).

Data: ____/____/____

(Rubrica da participante)

ESTUDO DE DOUTORAMENTO: A MULHER E A MENOPAUSA

Consentimento Informado

O presente estudo de doutoramento, efectuado na especialidade de **Psicologia da Saúde** e com a orientação da Prof. Doutora Isabel Leal (ISPA – Instituto Superior de Psicologia Aplicada), é financiado pela Fundação para a Ciência e Tecnologia (referência SFRH/BD/32359/2006).

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Não se irá recorrer a medicação e a exploração de formas para diminuir os afrontamentos e o (excesso de) peso será feita através de uma intervenção psicológica breve que não envolve riscos. Algumas pessoas poderão ser convidadas a participar na segunda fase (que se iniciará brevemente), convite esse que poderão rejeitar, se assim o quiserem, sem que isso tenha quaisquer consequências. Se quiser participar na segunda fase, deverá preencher também a última folha.

A sua participação é de elevada importância para que possamos conhecer de uma forma mais objectiva e abrangente **como é que as mulheres portuguesas vivem o período de menopausa**.

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Tel.:218 811 700
Tlm: 96.341.22.24
e-mail: filipa_pimenta@ispa.pt

Se aceita participar, por favor rubrique e coloque a data.

Data: ____/____/____

(Rubrica da participante)

Refira, por favor, de que forma recebeu este questionário:

1. Recebi no Hospital S. Francisco Xavier___
2. Recebi de outra forma (Por favor, especifique qual _____)

QUESTIONÁRIO SÓCIO-DEMOGRÁFICO

- a) Idade: _____
- b) Data de Nascimento: ____/____/____ (dia/mês/ano)
- c) Raça: Caucasiana (branca)___ Negra___ Asiática___ Outra___
- d) Estado civil: Casada___ Divorciada___ Separada___ Solteira___ União de Facto___ Viúva___
- e) N.º de filhos que tem: _____
- f) Situação profissional: Activa___ Reformada___ Desempregada___ Outra_____
 - i. Que profissão exerce/exerceu? _____
- g) Habilitações literárias: 4ª classe ou menos___ Antigo 5º ano___ Antigo 7º ano___ Bacharelato___
Licenciatura___ Outro _____
- h) Rendimento total anual bruto do agregado familiar: Até 10.000€___ De 10.001 a 20.000€ ___
De 20.001 a 37.500€___ De 37.501 a 70.000€___ Superior a 70.000€ ___

QUESTIONÁRIO DE SAÚDE

A - Menopausa:

1. Nos **últimos 12 meses** teve ciclos menstruais mais curtos ou mais longos, isto é, com uma variação de 7 ou mais dias do que o habitual (por exemplo, ter o período de 24 em 24 dias em vez de 31 em 31 dias)?
Sim___ Não___
2. Nos **últimos 12 meses** teve menstruações irregulares, isto é, passaram 2 meses (ou mais meses) sem que o período lhe aparecesse e permaneceu sem ter o período durante 60 ou mais dias? Sim___ Não___
3. Já estive 12 meses (ou mais tempo) sem ter menstruação? Sim___ Não___
4. Procurou ajuda médica (isto é, consultar um médico ginecologista ou um médico de clínica geral) para gerir os sintomas da menopausa? Sim___ Não___
5. Está a tomar alguma medicação, produtos naturais ou de outro género, para os sintomas da menopausa?
Sim ___ Não ___ Se sim, qual(quais)?_____
6. (Caso não tenha a menstruação há mais de 12 meses) Teve uma menopausa natural, isto é, sem ser consequência de intervenção médico-cirúrgica? Sim___ Não___ Ainda não estive 12 meses sem menstruação___
7. (Caso não tenha a menstruação há mais de 12 meses) Que idade tinha quando teve a sua última menstruação?_____ anos

B - Saúde geral:

8. Teve recentemente alguma(s) doença(s)? Sim___ Não___
 - i. Se sim, qual(quais)?_____
9. Foi sujeita a alguma intervenção cirúrgica? Sim___ Não ___

- i. Se sim, que tipo de intervenção? _____
- ii. Se sim, há quanto tempo fez a intervenção? _____
10. Teve recentemente algum problema psicológico? Sim___ Não___
- i. Se sim, que tipo de problema? _____
- ii. Está a ser acompanhada por um psicológico? Sim___ Não___
11. Qual o seu peso actual? _____ kg
12. E a sua altura? _____ m
13. Caso tenha excesso de peso, desde quando começou a ter peso a mais? Desde criança___ Desde a adolescência___ Desde o início da idade adulta___ Desde a menopausa___ Outro_____

C - Consumo de tabaco, bebidas quentes, álcool e café

14. É fumadora? Sim, sou fumadora___ Não, sou ex-fumadora___ Não, nunca fumei___
- i. (Caso seja fumadora) Fuma todos os dias? Sim___ Não___
- ii. (Caso seja fumadora) Que quantidade de cigarros fuma? Mais de 40 cigarros **por dia**___ Entre 40 e 20 cigarros **por dia**___ Entre 20 e 10 cigarros **por dia**___ Menos de 10 cigarros **por dia**___ Menos de 10 cigarros **por semana**___ Menos de 10 cigarros **por mês**___
15. Com que frequência toma bebidas quentes (leite, café, chá, etc.)? Mais de 5 vezes por dia___ Entre 5 e 3 vezes por dia___ Entre 3 vezes e 1 vez por dia___ Tomo bebidas quentes ocasionalmente___ Nunca tomo bebidas quentes___
16. Consome bebidas alcoólicas? Sim___ Não___
- i. Se sim, com que regularidade: diariamente___ todos os fins-de-semana___ raramente___
- ii. Se sim, em que quantidades: até ficar embriagada___ moderadamente___ um copo ou menos por cada ocasião___
17. Costuma tomar café? Sim___ Não___
- i. Se sim, quantos cafés costuma tomar? Mais de 5 cafés por dia___ Entre 5 e 3 cafés por dia___ Entre 3 e 1 café por dia___ Tomo café ocasionalmente___

D – Exercício físico e peso:

18. Pratica algum tipo de exercício físico (ir ao ginásio, caminhadas, etc.)? Sim___ Não___
- i. Se sim, quantas vezes por semana? _____
- ii. Se sim, durante quanto tempo exercita? _____
19. Quanto pesa neste momento? _____ kg.
20. Quanto pesava antes de começar a ter **alterações** no seu ciclo menstrual (isto é, quando começou a ter ciclos menstruais mais curtos e a ser irregular)? _____ kg Ainda não detectei alterações no meu ciclo menstrual_____

De seguida irá encontrar alguns questionários que a convidam a explorar vários aspectos da sua vida. Por favor preencha **todas as questões**. Não existem respostas certas nem erradas. Os meus agradecimentos pela sua atenção e sinceridade!

Escala de Bem-estar Subjectivo

Gostaria de saber como se tem sentido ultimamente. Encontra de seguida algumas palavras que descrevem diferentes sentimentos e emoções. Leia cada item e escreva seguidamente, no espaço ao lado de cada palavra, o número que melhor expressa sua resposta de acordo com a seguinte escala:

1	2	3	4	5
Nada	Um pouco	Moderadamente	Bastante	Extremamente

Ultimamente tenho-me sentido:

- | | | |
|----------------------|-----------------------|-----------------------|
| 1. Aflita ____ | 17. Transtornada ____ | 33. Abatida ____ |
| 2. Alarmada ____ | 18. Animada ____ | 34. Amedrontada ____ |
| 3. Amável ____ | 19. Determinada ____ | 35. Aborrecida ____ |
| 4. Activa ____ | 20. Chateada ____ | 36. Agressiva ____ |
| 5. Angustiada ____ | 21. Decidida ____ | 37. Estimulada ____ |
| 6. Agradável ____ | 22. Segura ____ | 38. Incomodada ____ |
| 7. Alegre ____ | 23. Assustada ____ | 39. Bem ____ |
| 8. Apreensiva ____ | 24. Dinâmica ____ | 40. Nervosa ____ |
| 9. Preocupada ____ | 25. Empenhada ____ | 41. Empolgada ____ |
| 10. Capaz ____ | 26. Produtiva ____ | 42. Vigorosa ____ |
| 11. Contente ____ | 27. Impaciente ____ | 43. Inspirada ____ |
| 12. Irritada ____ | 28. Receosa ____ | 44. Tensa ____ |
| 13. Deprimida ____ | 29. Entusiasmada ____ | 45. Triste ____ |
| 14. Interessada ____ | 30. Desanimada ____ | 46. Agitada ____ |
| 15. Entediada ____ | 31. Ansiosa ____ | 47. Envergonhada ____ |
| 16. Atenta: ____ | 32. Indecisa: ____ | |

Por favor indique de seguida, para cada uma das seguintes afirmações, o número que melhor expressa a sua opinião sobre a sua vida actual.

1	2	3	4	5
Discordo Completamente	Discordo	Não sei	Concordo	Concordo Completamente

	1	2	3	4	5
48. Estou satisfeita com a minha vida					
49. Tenho aproveitado as oportunidades da vida					
50. Avalio a minha vida de forma positiva					
51. A minha vida está longe do meu ideal de vida em quase todos os aspectos					
52. Se eu pudesse mudaria o meu passado					
53. Tenho conseguido tudo o que esperava da vida					
54. A minha vida está de acordo com o que desejo para mim					
55. Gosto da minha vida					
56. A minha vida é má					
57. Estou insatisfeita com a minha vida					
58. A minha vida poderia estar melhor					
59. Tenho mais momentos de tristeza do que de alegria na minha vida					
60. A minha vida não tem interesse					
61. As minhas condições de vida são muito boas					

62. Considero-me uma pessoa feliz	1	2	3	4	5
-----------------------------------	---	---	---	---	---

Escalas de Ansiedade, Stress e Depressão

Por favor leia cada uma das afirmações abaixo e assinale 1, 2, 3 ou 4 para indicar quanto cada afirmação se aplicou a si *durante a semana passada*, tendo em conta as seguintes opções de resposta:

Não se aplicou nada a mim 1	Aplicou-se a mim algumas vezes 2	Aplicou-se a mim muitas vezes 3	Aplicou-se a mim a maior parte das vezes 4
--------------------------------	-------------------------------------	------------------------------------	---

1 - Tive dificuldade em me acalmar	1	2	3	4
2 - Senti a minha boca seca	1	2	3	4
3 - Não consegui sentir nenhum sentimento positivo	1	2	3	4
4 - Senti dificuldade em respirar	1	2	3	4
5 - Tive dificuldade em tomar iniciativa para fazer coisas	1	2	3	4
6 - Tive tendência a reagir em demasia em determinadas situações	1	2	3	4
7 - Senti tremores (por ex., nas mãos)	1	2	3	4
8 - Senti que estava a utilizar muita energia nervosa	1	2	3	4
9 - Preocupei-me com situações em que podia entrar em pânico e fazer figura ridícula	1	2	3	4
10 - Senti que não tinha nada a esperar do futuro	1	2	3	4
11 - Dei por mim a ficar agitada	1	2	3	4
12 - Senti dificuldade em relaxar	1	2	3	4
13 - Senti-me desanimada e melancólica	1	2	3	4
14 - Fui intolerante em relação a qualquer coisa que me impedisse de terminar aquilo que estava a fazer	1	2	3	4
15 - Senti-me quase a entrar em pânico	1	2	3	4
16 - Não fui capaz de ter entusiasmo por nada	1	2	3	4
17 - Senti que não tinha muito valor como pessoa	1	2	3	4
18 - Senti que por vezes estava sensível	1	2	3	4
19 - Senti alterações no meu coração sem fazer exercício físico	1	2	3	4
20 - Senti-me assustada sem ter tido uma boa razão para isso	1	2	3	4
21 - Senti que a vida não tinha sentido	1	2	3	4

Questionário de Sintomas do Climatério

Indique, por favor, com que FREQUÊNCIA e INTENSIDADE experimentou as seguintes situações no MÊS PASSADO, tendo em conta as seguintes hipóteses de resposta para a **frequência (isto é, quantas vezes)** e a **intensidade (ou seja, o quão forte foi)** de cada situação:

Frequência:

Nunca	Sim, menos de uma vez por semana	Sim, uma ou duas vezes por semana	Sim, várias vezes por semana	Sim, diariamente ou quase todos os dias
1	2	3	4	5

Intensidade:

Nada intensa	Intensidade mínima	Intensidade moderada	Intensidade elevada	Intensidade extrema
1	2	3	4	5

Sintomas	Frequência (isto é, quantas vezes?)					Intensidade (ou seja, o quão forte foi?)				
	1	2	3	4	5	1	2	3	4	5
1 – Batimento cardíaco acelerado ou forte	1	2	3	4	5	1	2	3	4	5
2 – Sentir-se tensa ou nervosa	1	2	3	4	5	1	2	3	4	5
3 – Dificuldade em dormir	1	2	3	4	5	1	2	3	4	5
4 – Sentir-se facilmente excitada (isto é, agitada, exaltada ou sobressaltada)	1	2	3	4	5	1	2	3	4	5
5 – Ataques de pânico	1	2	3	4	5	1	2	3	4	5
6 – Dificuldade em concentrar-se	1	2	3	4	5	1	2	3	4	5
7 – Sentir-se cansada ou com falta de energia	1	2	3	4	5	1	2	3	4	5
8 – Perda de interesse pela maior parte das coisas	1	2	3	4	5	1	2	3	4	5
9 – Ataques de choro	1	2	3	4	5	1	2	3	4	5
10 – Irritabilidade	1	2	3	4	5	1	2	3	4	5
11 – Mudanças de humor	1	2	3	4	5	1	2	3	4	5
12 – Estar descontente com a sua minha vida pessoa	1	2	3	4	5	1	2	3	4	5
13 – Sentir-se ansiosa ou nervosa	1	2	3	4	5	1	2	3	4	5
14 – Sentir perda ou falta de memória	1	2	3	4	5	1	2	3	4	5
15 – Diminuição geral da capacidade de desempenho (isto é, fazer menos coisas do que costumava fazer)	1	2	3	4	5	1	2	3	4	5
16 – Sentir-se deprimida, em baixo ou triste	1	2	3	4	5	1	2	3	4	5
17 – Sentir-se impaciente com outras pessoas	1	2	3	4	5	1	2	3	4	5
18 – Querer estar sozinha	1	2	3	4	5	1	2	3	4	5
19 – Sentir-se tonta ou desmaiar	1	2	3	4	5	1	2	3	4	5
20 – Pressão e sensação de tensão na cabeça ou no corpo	1	2	3	4	5	1	2	3	4	5
21 – Dormência ou formigueiro nalgumas partes do corpo	1	2	3	4	5	1	2	3	4	5
22 – Dores de cabeça	1	2	3	4	5	1	2	3	4	5
23 – Dores nos músculos e articulações	1	2	3	4	5	1	2	3	4	5
24 – Perda de sensibilidade nas mãos ou pés	1	2	3	4	5	1	2	3	4	5
25 – Dificuldade em respirar ou sentir falta de ar	1	2	3	4	5	1	2	3	4	5
26 – Flatulência (gases) ou dores provocadas por gases	1	2	3	4	5	1	2	3	4	5
27 – Dores na parte detrás do pescoço ou da cabeça	1	2	3	4	5	1	2	3	4	5
28 – Diminuição da força física	1	2	3	4	5	1	2	3	4	5
29 – Pele seca	1	2	3	4	5	1	2	3	4	5
30 – Aumento de peso	1	2	3	4	5	1	2	3	4	5
31 – Aumento de pêlos faciais	1	2	3	4	5	1	2	3	4	5
32 – Mudanças na aparência, textura ou tonalidade da sua pele	1	2	3	4	5	1	2	3	4	5
33 – Sentir-se inchada	1	2	3	4	5	1	2	3	4	5
34 – Dores na parte lombar das costas (parte inferior das costas)	1	2	3	4	5	1	2	3	4	5
35 – Perdas de urina quando se ri ou tosse	1	2	3	4	5	1	2	3	4	5
36 – Sensibilidade dos seios	1	2	3	4	5	1	2	3	4	5
37 – Afrontamentos	1	2	3	4	5	1	2	3	4	5
38 – Suores nocturnos	1	2	3	4	5	1	2	3	4	5
39 – Sudação excessiva	1	2	3	4	5	1	2	3	4	5
40 – Perda de interesse sexual	1	2	3	4	5	1	2	3	4	5
41 – Dificuldade em urinar	1	2	3	4	5	1	2	3	4	5
42 – Vontade excessiva de urinar	1	2	3	4	5	1	2	3	4	5

43 – Secura vaginal (sensação de secura, ardor e problemas durante o acto sexual)	1	2	3	4	5	1	2	3	4	5
44 – Problemas no cabelo (por ex., insuficiência ou excesso de cabelo)	1	2	3	4	5	1	2	3	4	5
45 – Alterações nas unhas (mudanças na cor, espessura, no aspecto da unha, etc.)	1	2	3	4	5	1	2	3	4	5
46 – Problemas na boca e nos dentes (dor e ardor nas gengivas, alteração do paladar, aumento da sensibilidade ao quente e ao frio, boa seca, etc.)	1	2	3	4	5	1	2	3	4	5
47 – Hemorragias vaginais muito fortes e/ou irregulares	1	2	3	4	5	1	2	3	4	5

Escala de Qualidade de Vida

Por favor indique o seu grau de concordância com as seguintes afirmações, avaliando em que medida elas se aplicam a si em relação ao passado mês. Certifique-se que responde a todas as afirmações, marcando com um círculo a sua opção, tendo em conta a seguinte escala de cinco pontos:

Não é verdadeiro no meu caso	1	2	Parcialmente verdadeiro no meu caso	3	4	Largamente verdadeiro no meu caso	5
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1 - Sou capaz de controlar as coisas que, na minha vida, são importantes para mim.	1	2	3	4	5
2 - Sinto-me desafiada pelo meu trabalho.	1	2	3	4	5
3 - Acredito que o meu trabalho beneficia a sociedade.	1	2	3	4	5
4 - Não estou satisfeita com a minha vida sexual.	1	2	3	4	5
5 - Estou satisfeita com a minha vida amorosa.	1	2	3	4	5
6 - Tenho recebido muito reconhecimento pessoal na minha comunidade ou no meu emprego.	1	2	3	4	5
7 - Sinto-me insatisfeita com a minha aparência.	1	2	3	4	5
8 - A minha alimentação não é equilibrada.	1	2	3	4	5
9 - Sinto que controlo o meu comportamento alimentar.	1	2	3	4	5
10 - Habitualmente, faço exercício físico três ou mais vezes por semana.	1	2	3	4	5
11 - O meu humor está geralmente deprimido.	1	2	3	4	5
12 - Sinto ansiedade frequentemente.	1	2	3	4	5
13 - A maior parte das coisas que me acontecem estão fora do meu controlo.	1	2	3	4	5
14 - Estou satisfeita com a frequência com que tenho relações sexuais com um(a) parceiro(a).	1	2	3	4	5
15 - Actualmente, sinto desconforto físico ou dor durante a actividade sexual.	1	2	3	4	5
16 - Acredito que não tenho controlo sobre a minha saúde física.	1	2	3	4	5
17 - Sinto-me orgulhosa das metas que alcancei em termos profissionais.	1	2	3	4	5
18 - Considero a minha vida estimulante.	1	2	3	4	5
19 - Continuo a traçar para mim novos objectivos pessoais.	1	2	3	4	5
20 - Tenho a expectativa de que irão acontecer na minha vida coisas boas.	1	2	3	4	5
21 - Sinto-me bem fisicamente.	1	2	3	4	5
22 - Sinto-me em forma fisicamente.	1	2	3	4	5

23 - Continuo a traçar para mim novos objetivos profissionais.	1	2	3	4	5
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Questionário de Bem-estar Espiritual

A **espiritualidade** pode descrever-se como algo que reside no íntimo do ser humano.

A **saúde espiritual** pode ser vista como um indicador do quão bem nos sentimos connosco próprios e com os aspectos que valorizamos no mundo que nos rodeia.

Para cada uma das afirmações seguintes, assinale com uma cruz o número que melhor indique em que medida sente que cada afirmação **reflete a sua experiência pessoal nos últimos 6 meses.**

Responda utilizando a seguinte escala:

1 = Muito pouco **2 = Pouco** **3 = Moderadamente** **4 = Muito** **5 = Totalmente**

Se lhe parecer mais adequado, pode substituir a palavra “Deus” por “Força Cósmica” ou outra expressão idêntica, cujo significado seja mais relevante para si.

Não perca muito tempo em cada afirmação. A **primeira resposta é** provavelmente a mais adequada para si.

Em que medida você se sente a desenvolver:

	Muito pouco	Pouco	Moderac	Muito	Totalme
1. um sentimento de amor pelos outros	1	2	3	4	5
2. uma relação pessoal com o Divino ou Deus	1	2	3	4	5
3. generosidade em relação aos outros	1	2	3	4	5
4. uma ligação com a natureza	1	2	3	4	5
5. um sentimento de identidade pessoal	1	2	3	4	5
6. admiração e respeito pela Criação	1	2	3	4	5
7. espanto e admiração perante uma paisagem deslumbrante	1	2	3	4	5
8. a confiança entre as pessoas	1	2	3	4	5
9. conhecimento sobre si mesma	1	2	3	4	5
10. um sentimento de união com a natureza	1	2	3	4	5
11. o sentimento de união com Deus ou o Universo	1	2	3	4	5
12. uma relação de harmonia com o ambiente	1	2	3	4	5
13. um sentimento de paz com Deus	1	2	3	4	5
14. alegria na vida	1	2	3	4	5
15. uma vida de meditação e/ou oração	1	2	3	4	5
16. paz interior	1	2	3	4	5
17. respeito pelas outras pessoas	1	2	3	4	5
18. um sentido para a vida	1	2	3	4	5
19. um sentimento de bondade para com os outros	1	2	3	4	5
20. a sensação de “magia” na natureza	1	2	3	4	5

Questionário de Imagem Corporal

Por fim, gostaríamos de saber como se tem sentido em relação à sua **aparência** ao longo do **ÚLTIMO MÊS**. Por favor leia cada uma das questões e assinale a opção que melhor se aplica ao seu caso, tendo em conta a seguinte escala:

Nunca	Raramente	Às vezes	Frequentemente	Muito frequentemente	Sempre
1	2	3	4	5	6

Durante as ÚLTIMAS QUATRO SEMANAS:

1 - sentir-se aborrecida fê-la preocupar-se com a forma do seu corpo?	1	2	3	4	5	6
2 - tem estado tão preocupada com a forma do seu corpo que começou a sentir que devia fazer dieta?	1	2	3	4	5	6
3 - tem pensado que as suas coxas, ancas ou nádegas são demasiado grandes para o resto do seu corpo?	1	2	3	4	5	6
4 - tem sentido medo de ficar gorda (ou mais gorda)?	1	2	3	4	5	6
5 - preocupou-se com o facto do seu corpo não ser suficientemente firme?	1	2	3	4	5	6
6 - sentir-se cheia (por exemplo, depois de ingerir uma refeição grande) fê-la sentir-se gorda?	1	2	3	4	5	6
7 - sentiu-se tão mal com a forma do seu corpo a ponto de chorar?	1	2	3	4	5	6
8 - evitou correr devido à hipótese do seu corpo poder estremecer?	1	2	3	4	5	6
9 - estar com mulheres magras fê-la sentir-se desconfortável com a forma do seu corpo?	1	2	3	4	5	6
10 - preocupou-se com o facto das suas coxas se espalharem quando está sentada?	1	2	3	4	5	6
11 - comer, mesmo que seja uma quantidade pequena de comida, fê-la sentir-se gorda?	1	2	3	4	5	6
12 - reparou nas formas do corpo de outras mulheres e sentiu-se em desvantagem quando as comparou com a forma do seu corpo?	1	2	3	4	5	6
13 - pensar na forma do seu corpo interferiu com a sua capacidade de se concentrar (por exemplo, enquanto está a ver televisão, a ler, a ouvir conversas)?	1	2	3	4	5	6
14 - estar nua, por exemplo, durante o banho, fê-la sentir-se gorda?	1	2	3	4	5	6
15 - tem evitado usar roupas que a façam reparar na forma do seu corpo?	1	2	3	4	5	6
16 - imaginou cortar do seu corpo partes de gordura?	1	2	3	4	5	6
17 - comer doces, bolos ou outros alimentos ricos em calorias fê-la sentir-se gorda?	1	2	3	4	5	6
18 - deixou de ir a eventos sociais (por exemplo, festas) por sentir-se mal em relação à forma do seu corpo?	1	2	3	4	5	6
19 - sentiu-se excessivamente grande ou arredondada?	1	2	3	4	5	6
20 - sentiu vergonha do seu corpo?	1	2	3	4	5	6
21 - a preocupação com a forma do seu corpo fê-la fazer dieta?	1	2	3	4	5	6
22 - sentiu-se mais feliz com a forma do seu corpo quando o seu estômago estava vazio (por exemplo, de manhã)?	1	2	3	4	5	6
23 - pensou que tem a forma de corpo que tem actualmente por falta de auto-controlo?	1	2	3	4	5	6
24 - tem-se preocupado com o facto de outras pessoas estarem a ver dobras de gordura na zona da sua cintura ou do seu estômago?	1	2	3	4	5	6

25 - pensou que não é justo que outras mulheres sejam mais magras que você?	1	2	3	4	5	6
26 - vomitou para se sentir mais magra?	1	2	3	4	5	6
27 - preocupou-se por estar a ocupar demasiado espaço (por exemplo, enquanto está sentada num sofá ou no banco do autocarro), quando na companhia de outras pessoas?	1	2	3	4	5	6
28 - preocupou-se pelo facto do seu corpo apresentar covas ou ondulações?	1	2	3	4	5	6
29 - ver o seu reflexo (por exemplo, no espelho ou na montra de uma loja) fê-la sentir-se mal com a forma do seu corpo?	1	2	3	4	5	6
30 - beliscou partes do seu corpo para ver a quantidade de gordura?	1	2	3	4	5	6
31 - evitou situações nas quais as pessoas pudessem ver o seu corpo (por exemplo, vestiários)?	1	2	3	4	5	6
32 - tomou laxantes para se sentir mais magra?	1	2	3	4	5	6
33 - sentiu-se particularmente desconfortável com a forma do seu corpo, quando na companhia de outras pessoas?	1	2	3	4	5	6
34 - a preocupação com a forma do seu corpo fê-la sentir que devia fazer exercício?	1	2	3	4	5	6

2ª Fase da Investigação de Doutoramento sobre Menopausa: Intervenção Psicológica para Afrontamentos e Peso

Brevemente irá iniciar-se uma outra fase desta investigação de doutoramento.

Durante essa fase irão seleccionar-se algumas participantes às quais se irá **facultar gratuitamente** (isto é, sem qualquer custo para a participante) uma intervenção psicológica breve com a psicóloga responsável pelo estudo e psicoterapeuta em formação, Filipa Pimenta.

A intervenção terá cerca de 8 sessões (uma por semana, 60 minutos cada) e terá dois objectivos:

- a) **atenuar os afrontamentos** (isto é, calores súbitos e incómodos típicos da menopausa, durante os quais pode ocorrer um avermelhar da pele e sudação)
- b) ajudar a **gerir o seu peso** (focando concretamente o seu comportamento alimentar e a sua relação com o corpo), tendo como objectivo a diminuição de peso, caso a voluntária tenha excesso de peso.

Assim, pretende-se que as participantes sejam senhoras:

- com idades compreendidas entre os 42 e os 60 anos;
- que tenham afrontamentos e **que não estejam a fazer qualquer tratamento para os afrontamentos**;
- que tenham excesso de peso.

Estas sessões (cerca de 8 sessões, 60 minutos cada) irão decorrer num consultório de psicologia situado no Edifício Imaviz em Lisboa, na Avenida Fontes Pereira de Melo, n.º 35 – 11 B.

O horário será combinado posteriormente, tendo em conta a sua disponibilidade e a da psicóloga.

Se estiver interessada, por favor deixe de seguida o seu contacto para beneficiar dessas sessões. Sublinho que deixar o contacto não implica qualquer compromisso em, quando for contactada por mim, aceitar participar. A participação será sempre voluntária, podendo desistir a qualquer momento.

Nome: _____

Telefone/ Telemóvel: _____

E-mail: _____

Estou interessada em usufruir da intervenção psicológica que tem como objectivo:

- Apenas a diminuição dos afrontamentos
- Apenas a gestão do peso
- A diminuição dos afrontamentos e a gestão do peso

Melhores cumprimentos,

Filipa Pimenta

Instituto Superior de Psicologia Aplicada

Rua Jardim do tabaco, 34

1149-041 Lisboa

Tel.:218 811 700

Tlm: 96.341.22.24

e-mail: filipa_pimenta@ispa.pt

Se sente afrontamentos, MESMO QUE SEJAM POUCO FREQUENTES E POUCO INTENSOS, por favor responda também ao questionário desta página.

Se não sente quaisquer afrontamentos, a sua participação acaba aqui. Muito obrigada pela colaboração!

Questionário PHFC

Indique, por favor, o seu grau de concordância ou discordância com cada uma das quinze afirmações seguintes, assinalando o número apropriado para cada afirmação de acordo com a seguinte escala:

1	2	3	4
Discordo fortemente	Discordo	Concordo	Concordo fortemente

1 – Os afrontamentos estão a controlar a minha vida	1	2	3	4
2 – É largamente da minha responsabilidade gerir os meus afrontamentos	1	2	3	4
3 – Consigo reduzir o meu mal-estar durante os afrontamentos se permanecer calma e relaxada	1	2	3	4
4 – Com muita frequência sinto um afrontamento que aparece de forma repentina	1	2	3	4
5 – Se eu fizer todas as coisas certas, posso gerir com sucesso os afrontamentos	1	2	3	4
6 – Consigo fazer muita coisa para lidar com os meus afrontamentos	1	2	3	4
7 – No que toca à gestão dos meus afrontamentos, sinto que apenas consigo fazer o que o meu médico me diz	1	2	3	4
8 – Quando consigo gerir bem a minha vida pessoal, os meus afrontamentos não são tão intensos	1	2	3	4
9 – Tenho uma capacidade considerável para controlar os meus afrontamentos	1	2	3	4
10 – Eu dependo da ajuda de outras pessoas para lidar com os afrontamentos	1	2	3	4
11 – Normalmente, consigo saber em que dias os meus afrontamentos vão ser intensos	1	2	3	4
12 – Independentemente do que faça ou por muito que tente, não consigo aliviar os meus afrontamentos	1	2	3	4
13 - Consigo lidar de uma forma eficaz com os meus afrontamentos	1	2	3	4
14 – Sinto que os meus afrontamentos são influenciados por factores que ultrapassam o meu controlo	1	2	3	4
15 – Quero aprender o máximo possível sobre os afrontamentos e a menopausa	1	2	3	4

Muito obrigada pela sua participação!

APPENDIX B

Longitudinal study's questionnaires and instruments

ESTUDO DE DOUTORAMENTO: A MULHER E A MENOPAUSA

De seguida irá encontrar alguns questionários. Por favor responda a TODAS as questões. Não existem respostas certas nem erradas.

21. Nos **últimos 12 meses** teve ciclos menstruais mais curtos, isto é, com menos 7 ou mais dias do que o habitual (por exemplo, ter o período de 24 em 24 dias em vez de 31 em 31 dias)? Sim__ Não__

22. Nos **últimos 12 meses** teve menstruações irregulares, isto é, passaram 2 meses (ou mais meses) sem que o período lhe aparecesse e permaneceu sem ter o período durante 60 ou mais dias? Sim__ Não__

23. Já estive 12 meses (ou mais tempo) sem ter menstruação? Sim__ Não__

24. Está a tomar alguma medicação, produtos naturais ou de outro género, para os sintomas da menopausa? Sim__ Não__

25. Está a fazer algum tratamento para perder peso?

i) Sim__ Não__

ii) Se sim, que tipo de tratamento? _____

Escala de Qualidade de Vida

Por favor indique o seu grau de concordância com as seguintes afirmações, avaliando em que medida elas se aplicam a si em relação ao passado mês. Certifique-se que responde a todas as afirmações, marcando com um círculo a sua opção, tendo em conta a seguinte escala de cinco pontos:

Não é verdadeiro no meu caso	1	2	Parcialmente verdadeiro no meu caso	3	4	Largamente verdadeiro no meu caso	5
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1 - Sou capaz de controlar as coisas que, na minha vida, são importantes para mim.	1	2	3	4	5
2 - Sinto-me desafiada pelo meu trabalho.	1	2	3	4	5
3 - Acredito que o meu trabalho beneficia a sociedade.	1	2	3	4	5
4 - Não estou satisfeita com a minha vida sexual.	1	2	3	4	5
5 - Estou satisfeita com a minha vida amorosa.	1	2	3	4	5
6 - Tenho recebido muito reconhecimento pessoal na minha comunidade ou no meu emprego.	1	2	3	4	5
7 - Sinto-me insatisfeita com a minha aparência.	1	2	3	4	5
8 - A minha alimentação não é equilibrada.	1	2	3	4	5
9 - Sinto que controlo o meu comportamento alimentar.	1	2	3	4	5
10 - Habitualmente, faço exercício físico três ou mais vezes por semana.	1	2	3	4	5
11 - O meu humor está geralmente deprimido.	1	2	3	4	5
12 - Sinto ansiedade frequentemente.	1	2	3	4	5
13 - A maior parte das coisas que me acontecem estão fora	1	2	3	4	5

do meu controlo.					
14 - Estou satisfeita com a frequência com que tenho relações sexuais com um(a) parceiro(a).	1	2	3	4	5
15 - Actualmente, sinto desconforto físico ou dor durante a actividade sexual.	1	2	3	4	5
16 - Acredito que não tenho controlo sobre a minha saúde física.	1	2	3	4	5
17 - Sinto-me orgulhosa das metas que alcancei em termos profissionais.	1	2	3	4	5
18 - Considero a minha vida estimulante.	1	2	3	4	5
19 - Continuo a traçar para mim novos objectivos pessoais.	1	2	3	4	5
20 - Tenho a expectativa de que irão acontecer na minha vida coisas boas.	1	2	3	4	5
21 - Sinto-me bem fisicamente.	1	2	3	4	5
22 - Sinto-me em forma fisicamente.	1	2	3	4	5
23 - Continuo a traçar para mim novos objectivos profissionais.	1	2	3	4	5

Escalas de Ansiedade, Stress e Depressão

Por favor leia cada uma das afirmações abaixo e assinale 1, 2, 3 ou 4 para indicar quanto cada afirmação se aplicou a si *durante a semana passada*, tendo em conta as seguintes opções de resposta:

Não se aplicou nada a mim 1	Aplicou-se a mim algumas vezes 2	Aplicou-se a mim muitas vezes 3	Aplicou-se a mim a maior parte das vezes 4
--------------------------------	-------------------------------------	------------------------------------	---

1 - Tive dificuldade em me acalmar	1	2	3	4
2 - Senti a minha boca seca	1	2	3	4
3 - Não consegui sentir nenhum sentimento positivo	1	2	3	4
4 - Senti dificuldade em respirar	1	2	3	4
5 - Tive dificuldade em tomar iniciativa para fazer coisas	1	2	3	4
6 - Tive tendência a reagir em demasia em determinadas situações	1	2	3	4
7 - Senti tremores (por ex., nas mãos)	1	2	3	4
8 - Senti que estava a utilizar muita energia nervosa	1	2	3	4
9 - Preocupei-me com situações em que podia entrar em pânico e fazer figura ridícula	1	2	3	4
10 - Senti que não tinha nada a esperar do futuro	1	2	3	4
11 - Dei por mim a ficar agitada	1	2	3	4
12 - Senti dificuldade em relaxar	1	2	3	4
13 - Senti-me desanimada e melancólica	1	2	3	4
14 - Fui intolerante em relação a qualquer coisa que me impedisse de terminar aquilo que estava a fazer	1	2	3	4
15 - Senti-me quase a entrar em pânico	1	2	3	4
16 - Não fui capaz de ter entusiasmo por nada	1	2	3	4
17 - Senti que não tinha muito valor como pessoa	1	2	3	4
18 - Senti que por vezes estava sensível	1	2	3	4
19 - Senti alterações no meu coração sem fazer exercício físico	1	2	3	4
20 - Senti-me assustada sem ter tido uma boa razão para isso	1	2	3	4
21 - Senti que a vida não tinha sentido	1	2	3	4

6. Acontece dar por si a **comer grandes quantidades de comida** (superiores à que a maioria das pessoas poderia consumir no mesmo espaço de tempo e sob circunstâncias semelhantes), **num curto espaço de tempo** e com a **sensação de perda de controlo** sobre a comida que ingere durante esse período (por ex., sensação de que não pode parar de comer ou controlar o que come ou quando está a comer)?
- Sim___ Não___
 - Se sim, indique quantas vezes por dia_____ OU quantas vezes por semana_____
7. Durante estes períodos em que come grandes quantidades de comida, verifica que:
- A ingestão é muito mais rápida que o habitual? Sim___ Não___
 - Come até se sentir desagradavelmente cheia? Sim___ Não___
 - Consome grandes quantidades de comida apesar de não sentir fome? Sim___ Não___
 - Come sozinha por sentir embaraço? Sim___ Não___
 - Sente-se desgostosa consigo própria, deprimida ou grande culpabilidade depois de ingerir estas grandes quantidades de comida? Sim___ Não___

Questionário Holandês de Comportamento Alimentar

Responda, por favor, ao questionário que se segue tendo em conta aquilo que faz habitualmente com respeito à sua alimentação. As respostas, quaisquer que sejam, são sempre adequadas uma vez que traduzem um modo pessoal de agir.

Responda nos quadrados respectivos tendo em conta o seu caso particular. Note que em algumas situações dispõe de uma outra opção se a pergunta não for adequada ao seu caso.

- Tem desejo de comer quando se sente irritado?
 Nunca Raramente Às vezes Frequentemente Muito frequentemente
 Nunca me sinto irritado
- Se a comida lhe sabe bem, come mais do que o habitual?
 Nunca Raramente Às vezes Frequentemente Muito frequentemente
- Sente desejo de comer quando não tem nada que fazer?
 Nunca Raramente Às vezes Frequentemente Muito frequentemente
 Tenho sempre qualquer coisa para fazer
- Quando o seu peso aumenta come menos do que o habitual?
 Nunca Raramente Às vezes Frequentemente Muito frequentemente
 O meu peso não se altera

5. Tem desejo de comer quando se sente deprimido ou desanimado?
 Nunca Raramente Às vezes Frequentemente Muito frequentemente
 Nunca me sinto deprimido ou desanimado
6. Se a comida cheira bem ou tem bom aspecto, come mais do que o habitual?
 Nunca Raramente Às vezes Frequentemente Muito frequentemente
7. Com que frequência recusa comida ou bebidas, por estar preocupado com o seu peso?
 Nunca Raramente Às vezes Frequentemente Muito frequentemente
8. Tem desejo de comer quando se sente sozinho?
 Nunca Raramente Às vezes Frequentemente Muito frequentemente
 Nunca me sinto só
9. Se vê ou cheira algo delicioso, sente desejo de o comer?
 Nunca Raramente Às vezes Frequentemente Muito frequentemente
10. Sente desejo de comer quando alguém o deixa “em baixo”?
 Nunca Raramente Às vezes Frequentemente Muito frequentemente
 Nunca me sinto “em baixo”
11. Durante as refeições tenta comer menos do que gostaria de comer?
 Nunca Raramente Às vezes Frequentemente Muito frequentemente
12. Se tem alguma coisa deliciosa para comer come-a de imediato?
 Nunca Raramente Às vezes Frequentemente Muito frequentemente
13. Tem desejo de comer quando se sente zangado?
 Nunca Raramente Às vezes Frequentemente Muito frequentemente
 Nunca me sinto zangado
14. Controla minuciosamente o que come?
 Nunca Raramente Às vezes Frequentemente Muito frequentemente
15. Quando passa por uma padaria apetece-lhe comprar algo delicioso?
 Nunca Raramente Às vezes Frequentemente Muito frequentemente

16. Sente desejo de comer quando alguma coisa desagradável está prestes a acontecer?
 Nunca Raramente Às vezes Frequentemente Muito frequentemente

17. Come propositadamente alimentos que fazem emagrecer?
 Nunca Raramente Às vezes Frequentemente Muito frequentemente

18. Se vê alguém a comer sente também desejo de comer?
 Nunca Raramente Às vezes Frequentemente Muito frequentemente

19. Quando come demasiado procura comer menos no dia seguinte?
 Nunca Raramente Às vezes Frequentemente Muito frequentemente
 Nunca como demasiado

20. Tem desejo de comer quando se sente ansioso, preocupado ou tenso?
 Nunca Raramente Às vezes Frequentemente Muito frequentemente
 Nunca me sinto ansioso ou tenso

21. Consegue resistir a comer alimentos deliciosos?
 Nunca Raramente Às vezes Frequentemente Muito frequentemente

22. Come menos propositadamente para não aumentar o seu peso?
 Nunca Raramente Às vezes Frequentemente Muito frequentemente

23. Sente desejo de comer quando as coisas lhe correm mal ou não lhe correm de feição?
 Nunca Raramente Às vezes Frequentemente Muito frequentemente

24. Quando passa por uma confeitaria ou snack-bar, sente desejo de comprar alguma coisa deliciosa?
 Nunca Raramente Às vezes Frequentemente Muito frequentemente

25. Tem desejo de comer quando se sente impaciente?
 Nunca Raramente Às vezes Frequentemente Muito frequentemente
 Nunca me sinto impaciente

26. Com que frequência tenta não comer entre as refeições porque está a controlar o seu peso?
 Nunca Raramente Às vezes Frequentemente Muito frequentemente

27. Come mais do que o habitual quando vê alguém a comer?

Nunca Raramente Às vezes Frequentemente Muito frequentemente

28. Tem desejo de comer quando se sente aborrecido?

Nunca Raramente Às vezes Frequentemente Muito frequentemente
 Nunca me sinto aborrecido

29. Com que frequência tenta não comer, durante a tarde, porque está a controlar o seu peso?

Nunca Raramente Às vezes Frequentemente Muito frequentemente

30. Tem desejo de comer quando se sente amedrontado?

Nunca Raramente Às vezes Frequentemente Muito frequentemente
 Nunca me sinto amedrontado

31. Toma em consideração o seu peso quando escolhe o que vai comer?

Nunca Raramente Às vezes Frequentemente Muito frequentemente

32. Tem desejo de comer quando se sente desapontado ou desiludido?

Nunca Raramente Às vezes Frequentemente Muito frequentemente
Nunca me sinto desapontado ou desiludido

33. Quando está a preparar uma refeição apetece-lhe comer (petiscar) alguma coisa?

Nunca Raramente Às vezes Frequentemente Muito frequentemente

Se sente afrontamentos, por favor continue a responder às perguntas que se seguem.

Se não sente quaisquer afrontamentos, o preenchimento do seu questionário acaba aqui.

Por favor entregue-o à psicóloga. Muito obrigada.

Intensidade e Frequência dos Afrontamentos

Peço-lhe agora que indique, por favor, com que FREQUÊNCIA e INTENSIDADE sentiu AFRONTAMENTOS (isto é, calores súbitos e incómodos típicos da menopausa, durante os quais pode ocorrer um avermelhar da pele e sudação) e SUORES NOCTURNOS (isto é, suar de forma intensa durante a noite) no MÊS PASSADO.

Faça uma cruz na opção que melhor se adequa ao seu caso em relação à **frequência** (isto é, quantas vezes) e à **intensidade** (ou seja, o quão forte foi) dos seus afrontamentos e dos suores nocturnos, de acordo com as seguintes escalas:

Frequência:

- 1 = Nunca
 2 = Sim, menos de uma vez por semana
 3 = Sim, uma ou duas vezes por semana
 4 = Sim, várias vezes por semana
 5 = Sim, diariamente ou quase todos os dias

Intensidade:

- 1 = Nada
 2 = Intensidade mínima
 3 = Intensidade moderada
 4 = Intensidade elevada
 5 = Intensidade extrema

	Frequência					Intensidade				
1 – Afrontamentos	1	2	3	4	5	1	2	3	4	5
2 – Suores nocturnos	1	2	3	4	5	1	2	3	4	5

Questionário PHFC

Indique por favor o seu grau de concordância ou discordância com cada uma das quinze afirmações da escala seguinte, assinalando o número apropriado para cada afirmação:

1	2	3	4
Discordo fortemente	Discordo	Concordo	Concordo fortemente

1 – Os afrontamentos estão a controlar a minha vida	1	2	3	4
2 – É largamente da minha responsabilidade gerir os meus afrontamentos	1	2	3	4
3 – Consigo reduzir o meu mal-estar durante os afrontamentos se permanecer calma e relaxada	1	2	3	4
4 – Com muita frequência sinto um afrontamento que aparece de forma repentina	1	2	3	4
5 – Se eu fizer todas as coisas certas, posso gerir com sucesso os afrontamentos	1	2	3	4
6 – Consigo fazer muita coisa para lidar com os meus afrontamentos	1	2	3	4
7 – No que toca à gestão dos meus afrontamentos, sinto que apenas consigo fazer o que o meu médico me diz	1	2	3	4
8 – Quando consigo gerir bem a minha vida pessoal, os meus afrontamentos não são tão intensos	1	2	3	4
9 – Tenho uma capacidade considerável para controlar os meus afrontamentos	1	2	3	4
10 – Eu dependo da ajuda de outras pessoas para lidar com os afrontamentos	1	2	3	4
11 – Normalmente, consigo saber em que dias os meus afrontamentos vão ser intensos	1	2	3	4
12 – Independentemente do que faça ou por muito que tente, não consigo aliviar os meus afrontamentos	1	2	3	4
13 – Consigo lidar de uma forma eficaz com os meus afrontamentos	1	2	3	4
14 – Sinto que os meus afrontamentos são influenciados por factores que ultrapassam o meu controlo	1	2	3	4
15 – Quero aprender o máximo possível sobre os afrontamentos e a menopausa	1	2	3	4

APPENDIX C

Analysis of the Instruments' Psychometric Properties

ANALYSIS OF INSTRUMENTS' PSYCHOMETRIC PROPERTIES

The construct validity of all scales was asserted by confirmatory factor analysis, convergent and discriminant validity.

The goodness of fit of the measurement model was given by chi-square statistics (χ^2/df), comparative fit index (*CFI*), goodness of fit index (*GFI*) and root mean square error of approximation (*RMSEA*). Reference values indicative of good model fit were those values currently practiced in structural equation modelling (Byrne, 2001; Maroco, 2010a).

The convergent validity of the instruments was analysed through the average variance extracted (*AVE*). An adequate value should be higher than .45. The discriminant validity was explored comparing the inter-factors' squared correlation with the *AVE* of each individual factor. To demonstrate the factors' discriminant validity, the squared correlation between factors should be smaller than the individual (*Maroco, 2010a*).

Criterion validity was explored through concurrent-oriented validity of scales, using Pearson's correlation with similar constructs.

In addition, to demonstrate the stability of the original structure of the instruments and assert external validity of the measurement model, initial confirmatory factor analysis was made in 60% of the sample, randomly selected, and the factor weights and correlations stability were confirmed in the remaining 40% of the sample (*Maroco, 2010a*).

Sensitivity was explored through the analysis of minimum and maximum values, skewness and kurtosis. Values are expected to range through the overall Lykert-type scales (from the minimum to the maximum scores) and skewness and kurtosis are expected to have absolute values below 3 and 7 respectively (*Kline, 2005; Maroco, 2010a*). Finally, reliability was studied applying the Cronbach's alpha. Alpha scores should be above .70 (*Maroco, 2010b*).

Subjective Well-being Scale
(Albuquerque & Tróccoli, 2004)

Construct Validity

Confirmatory factor analysis

Item 47 was excluded given it presented a low standardized estimate ($\lambda=.394$; $p<.001$) and evidenced a value of squared multiple correlations below the recommended .250 ($r^2=.155$). Moreover, the modification index ($MI\approx 14$) was above the recommended value of 11 (Maroco, 2010a) and the residual of this item was correlated with several other residuals of different items.

The subjective well-being measurement model without item 47 presented a good fit ($X^2/df=3.793$; $CFI=.846$; $GFI=.798$; $RMSEA=.053$; $p<.001$; $C.I. 90\%=[.051; .054]$).

Convergent validity

All subscales present good AVE scores (i.e., equal or above .450).

Table 1 – Subjective well-being scale: convergent validity

Subjective well-being subscales	AVE
Positive Affect	.479
Negative Affect	.510
Life Satisfaction	.455

Discriminant validity

Of the three paired-factors possible comparisons, all presented discriminant validity.

Table 2 – Subjective well-being scale: discriminant validity

Association between different factors	Squared correlations
Negative Affect – Positive Affect	.260
Positive Affect – Life Satisfaction	.314
Life Satisfaction – Negative Affect	.397

Criterion validity

Negative affect subscale was positively and highly related with Depression Anxiety and Stress Scales' (DASS) depression factor ($r=.653$; $p<.001$).

In addition, both positive affect ($r=.592$; $p<.001$) and life satisfaction ($r=.594$; $p<.001$) were positively and strongly correlated with personal spiritual well-being.

External Validity

The model presents a good adjustment ($X^2/df=2.494$; $CFI=.871$; $GFI=.753$; $RMSEA=.039$; $p=1.000$; $C.I. 90\%=[.038; .040]$) in both groups (60% and 40% of the total sample).

The unconstrained measurement model does not have a significantly better fit than the model with constrained factorial weights ($X^2(58)=70.844$; $p=.120$), hence confirming external validity of the measurement model. Therefore, there are no significant differences in the factorial measurement weights between both groups (60% of the sample versus 40%) confirming the stability of the subjective well-being's assessment.

Reliability

The internal consistency of three subscales and of the overall scale was also explored. All subscales presented a very good Cronbach's alpha, as shown in table 3.

Table 3 – Subjective well-being scale: reliability

Scale	Cronbach's Alpha
Positive affect	.951
Negative affect	.963
Life satisfaction	.923
Subjective well-being (overall scale)	.828

Sensitivity

To address sensitivity, the range of the Likert-type scale was explored as well as the skewness and kurtosis values of the 61 items. All items presented answers ranging from 1 to 5 and all values of kurtosis and skewness were below 7 and 3, respectively, as evidenced in table 4.

Table 4 – Subjective well-being scale: values regarding minimum and maximum scores, skewness and kurtosis

Items	Minimum	Maximum	Skewness	Kurtosis
1	1	5	1.918	3.791
2	1	5	2.069	4.511
3	1	5	-.238	.386
4	1	5	-.653	.634
5	1	5	.939	.189
6	1	5	-.172	.245
7	1	5	-.259	.098
8	1	5	.610	-.276
9	1	5	.459	-.641
10	1	5	-.599	.570
11	1	5	-.316	.175
12	1	5	.616	-.465
13	1	5	1.025	.179
14	1	5	-.469	.101
15	1	5	.856	-.080
16	1	5	-.310	-.114
17	1	5	1.736	2.591
18	1	5	-.270	.029
19	1	5	-.490	-.004
20	1	5	.739	.027
21	1	5	-.513	.169
22	1	5	-.335	-.108
23	1	5	1.513	2.043
24	1	5	-.466	.126
25	1	5	-.538	.256
26	1	5	-.577	.394
27	1	5	.568	-.469
28	1	5	.835	.111
29	1	5	-.245	-.056

30	1	5	1.049	.562
31	1	5	.710	-.309
32	1	5	.934	.188
33	1	5	1.168	.731
34	1	5	1.663	2.360
35	1	5	1.052	.568
36	1	5	1.449	1.719
37	1	5	-.154	-.525
38	1	5	1.159	.961
39	1	5	-.392	.184
40	1	5	.639	-.415
41	1	5	.119	-.772
42	1	5	-.195	-.387
43	1	5	-.179	-.400
44	1	5	.763	-.260
45	1	5	1.049	.307
46	1	5	.821	-.085
48	1	5	-.808	.005
49	1	5	-.685	.081
50	1	5	-1.117	1.463
51	1	5	-.573	-.676
52	1	5	-.355	-1.000
53	1	5	.004	-1.025
54	1	5	-.216	-1.041
55	1	5	-.924	.485
56	1	5	-1.649	2.452
57	1	5	-.784	-.549
58	1	5	.741	-.081
59	1	5	-.870	-.225
60	1	5	-1.350	1.461
61	1	5	-.389	-.927
62	1	5	-.776	.239

Shortened version with three items for each subscale of subjective well-being scale

The items with the highest structural weights were items 24, 25 and 29 for the positive affect; 13, 30 and 45 for the negative affect and 48, 55 and 62 regarding life satisfaction.

Confirmatory factor analysis

The subjective well-being measurement model with only the nine items mentioned above, presented an acceptable fit ($X^2/df=4.388$; $CFI=.983$; $GFI=.977$; $RMSEA=.058$; $p<.001$; $C.I. 90\%=[.047; .070]$).

Convergent validity

All subscales measured with the three items presented good AVE scores (namely, above .450), as seen in table 5.

Table 5 – Subjective well-being – shortened version: convergent validity

Subjective well-being	AVE
Positive affect	.640
Negative affect	.691
Life satisfaction	.696

Reliability

Although Cronbach's alpha values were very good for all subscales, the overall scale showed a very low internal consistency, as presented in table 6.

Table 6 – Subjective well-being – shortened version: reliability

Subjective well-being	Cronbach's Alpha
Positive affect	.835
Negative affect	.869
Life satisfaction	.871
Overall scale	.271

Depression, Anxiety and Stress Scales

(Lovibond & Lovibond, 1995; Pais-Ribeiro, Horando, & Leal, 2004)

Construct Validity

Confirmatory factor analysis

The Depression, Anxiety and Stress Scales (DASS) evidenced a measurement model with an acceptable fit ($\chi^2/df=4.210$; $CFI=.947$; $GFI=.934$; $RMSEA=.057$; $p<.001$; $C.I. 90\%=[.052; .061]$).

Convergent validity

Depression and stress subscales presented good AVE scores (i.e., equal or above .450). However, anxiety evidenced a low AVE value, as evidenced in the table 7.

Table 7 – Depression, Anxiety and Stress Scales: convergent validity

DASS subscales	AVE
Depression	.568
Anxiety	.403
Stress	.486

Discriminant validity

Of the three paired-factors possible comparisons, none presented discriminant validity.

Table 8 – Depression, Anxiety and Stress Scales: discriminant validity

Association between different factors	Squared correlations
Stress – Anxiety	.689
Anxiety – Depression	.624
Depression – Stress	.568

Criterion validity

DASS' depression subscale was positively and highly related with depressive mood subscale from the Menopausal Symptoms' Severity Inventory, MSSSI-38 ($r=.737$; $p<.001$).

Similarly, DASS' anxiety subscale was positively and strongly connected with the anxiety subscale from the MSSSI-38 ($r=.607$; $p<.001$).

There was also a moderate and positive association between the factor of perceived loss of control (MSSI-38) and the stress subscale (DASS) ($r=.479$; $p<.001$).

External Validity

The model presents a good fit ($X^2/df=3.171$; $CFI=.919$; $GFI=.889$; $RMSEA=.047$; $p=.976$; $C.I. 90\%=[.044; .049]$) in both groups (60% and 40% of the total sample).

The unconstrained measurement model does not have a significantly better fit than the model with constrained factorial weights ($X^2(18)=21.165$; $p=.271$), hence confirming the external validity of the measurement model. Therefore, there are no significant differences in the factorial measurement weights between both groups (60% of the sample versus 40%) confirming the stability of the depression, anxiety and stress constructs, as measure with DASS.

Reliability

The internal consistency of three subscales was also explored. All subscales presented a very good Cronbach's alpha, as shown in table 9.

Table 9 – Depression, Anxiety and Stress Scales: reliability

Subscales	Cronbach's Alpha
Stress	.867
Anxiety	.819
Depression	.898

Sensitivity

To address sensitivity, the range of the Likert-type scale was explored as well as the skewness and kurtosis values of the 21 items. All items presented answers ranging from 1 to 4 and the majority of items manifested values of kurtosis and skewness below 7 and 3, respectively, as recommended. The only exceptions were items 9 and 15 regarding kurtosis, both from anxiety subscale.

Table 10 – Depression, Anxiety and Stress Subscales: values regarding minimum and maximum scores, skewness and kurtosis

Items	Minimum	Maximum	Skewness	Kurtosis
1	1	4	1.207	1.262
2	1	4	1.537	1.877
3	1	4	1.857	3.112
4	1	4	2.486	6.445
5	1	4	1.527	2.319
6	1	4	.901	.675
7	1	4	2.520	6.293
8	1	4	1.027	.686
9	1	4	2.727	7.807
10	1	4	2.383	5.480
11	1	4	1.047	.833
12	1	4	.940	.455
13	1	4	1.123	.721
14	1	4	1.473	1.954
15	1	4	2.936	8.966
16	1	4	2.076	4.211
17	1	4	2.195	4.381
18	1	4	.621	.316
19	1	4	1.425	1.374
20	1	4	2.073	4.293
21	1	4	2.440	5.474

Shortened version with three items for the stress subscale

The items with the highest structural weights were items 8, 11 and 12 for the stress subscale.

Confirmatory factor analysis

The stress measurement model with only the three items mentioned above, was saturated and therefore its fit ($X^2/df=.000$; $CFI=1.000$; $GFI=1.000$) should not be evaluated.

Convergent validity

The subscale measured with the three items showed a good AVE score (namely, .629).

Reliability

Cronbach's alpha value for the shortened version of the stress subscale was good (.834).

Utian Quality of Life Scale

(Utian, Janata, Kingsberg, Schluchter, & Hamilton, 2002)

Construct Validity

Confirmatory factor analysis

The residual of item 20 manifested covariances with other factors (and with modification indices extremely above the admissible value, that is, equal or below 11) (Maroco, 2010a), namely, occupational factor ($MI=152.972$) and health subscale ($MI=17.333$). The item itself, although belonging to the emotional subscale, was reflected in the factor health-related quality of life (QoL) ($MI=38.273$), occupational QoL ($MI=99.409$) and thirteen other items of the QoL scale with modification indices equally high. For these reasons, item 20 was excluded.

The Utian QoL Scale without item 20 evidenced a measurement model with an acceptable fit ($X^2/df=4.899$; $CFI=.887$; $GFI=.913$; $RMSEA=.062$; $p<.001$; $C.I. 90\%=[.059; .066]$).

Convergent validity

All subscales presented an AVE scores below the admissible (i.e., equal or above .450) to be considered to have convergent validity, as evidenced in the table 11.

Table 11 – Utian QoL Scale: convergent validity

Utian QoL Scale	AVE
Occupational	.444
Health	.288
Emotional	.336
Sexual	.375

Discriminant validity

Of the six paired-factors possible comparisons, four presented discriminant validity. As shown in table 12 there was no discriminant validity between occupational and health, and between health and emotional subscales.

Table 12 – Utian QoL Scale: discriminant validity

Association between different factors	Squared correlations
Occupational – Health	.397
Health – Emotional	.303
Emotional – Sexual	.194
Sexual – Occupational	.123
Sexual – Health	.096
Emotional – Occupational	.260

Criterion validity

The depressive mood subscale from the Menopausal Symptoms' Severity Inventory (MSSI-38) presented a strong and negative relation with the emotional QoL subscale ($r_p = -.669$; $p < .001$), as did the anxiety subscale from MSSI-38 ($r_p = -.662$; $p < .001$).

Similarly, the MSSI-38's sexual symptoms factor was negatively and significantly (although weakly) related with the sexual QoL subscale ($r_p = -.236$; $p < .001$).

Cognitive impairment (MSSI-38) was also negatively (though the relation was weak) and significantly associated with occupational QoL ($r_p = -.341$; $p < .001$).

Aches and pain ($r_p = -.384$; $p < .001$) and body shape changes ($r_p = -.393$; $p < .001$) MSSI-38's subscales were both associated with health-related QoL, although the associations were only close to moderate.

Although QoL and well-being are two constructs theoretically close, the association between these two in the present study, although positive and significant, was weak ($r_p=.209$; $p<.001$); this might be due partially to the fact that the measure used to assess QoL is specific to menopause, narrowing the construct.

External Validity

The model presents a good fit ($X^2/df=2.800$; $CFI=.882$; $GFI=.892$; $RMSEA=.042$; $p=1.000$; $C.I. 90\%=[.040; .045]$) in both groups (60% versus 40% of the total sample).

The unconstrained measurement model does not have a significantly better fit than the model with constrained factorial weights ($X^2(18)=27.194$; $p=.075$), hence confirming the external validity of the measurement model. Therefore, there are no significant differences in the factorial measurement weights between both groups (60% of the sample versus 40%) confirming the stability of the quality of life construct assessed with Utian QoL Scale.

Reliability

The internal consistency of four subscales and overall scale were also explored. Subscales presented an acceptable Cronbach's alpha as shown in table 13.

Table 13 - Utian QoL Scale: reliability

Scale	Cronbach's Alpha
Occupational	.864
Emotional	.680
Health	.693
Sexual	.617
QoL overall scale	.857

Sensitivity

To address sensitivity, the range of the Likert-type scale was explored as well as the skewness and kurtosis values the 22 items. All items presented answers ranging from 1 to 5 and values of kurtosis and skewness were below 7 and 3, respectively, as recommended.

Table 14 – Utian QoL Scale: values regarding minimum and maximum scores, skewness and kurtosis

Items	Minimum	Maximum	Skewness	Kurtosis
1	1	5	-.327	-.408
2	1	5	-.168	-.877
3	1	5	-.465	-.727
4	1	5	-.425	-1.134
5	1	5	-.370	-1.149
6	1	5	-.100	-.831
7	1	5	-.401	-.824
8	1	5	-.472	-.686
9	1	5	.015	-.826
10	1	5	.983	-.488
11	1	5	-.906	-.154
12	1	5	-.715	-.351
13	1	5	-.947	.076
14	1	5	-.021	-1.161
15	1	5	-1.520	1.308
16	1	5	-.629	-.529
17	1	5	-.327	-.805
18	1	5	-.161	-.538
19	1	5	-.469	-.506
21	1	5	-.273	-.431
22	1	5	-.023	-.705
23	1	5	-.328	-.997

Spiritual Well-being Scale

(Gomez & Fisher, 2003; Gouveia, Marques, & Pais-Ribeiro, 2009)

Construct Validity

Confirmatory factor analysis

The Spiritual Well-being Scale evidenced a measurement model with an acceptable fit ($X^2/df=5.364$; $CFI=.938$; $GFI=.916$; $RMSEA=.066$; $p<.001$; $C.I. 90\%=[.062; .070]$).

Convergent validity

All subscales presented good AVE scores (i.e., equal or above .450), as evidenced in the table 15.

Table 15 – Spiritual Well-being Scale: convergent validity

Spiritual Well-being Scale	AVE
Personal	.521
Communal	.453
Environmental	.588
Transcendental	.641

Discriminant validity

Of the six paired-factors possible comparisons, only one (personal-communal) did not present discriminant validity.

Table 16 – Spiritual Well-being Scale: discriminant validity

Association between different factors	Squared correlations
Personal - Communal	.533
Communal – Environmental	.36
Environmental – Transcendental	.36
Transcendental – Personal	.240
Transcendental – Communal	.25
Personal – Environmental	.397

Criterion validity

Both the depressive mood ($r=-.486$; $p<.001$) and anxiety's ($r=-.429$; $p<.001$) subscales from the Menopausal Symptoms' Severity Inventory (MSSI-38) presented a moderated and negative relation with the personal dimension of spiritual well-being.

Additionally, personal spiritual well-being manifested a moderate and positive association with positive affect ($r=.592$; $p<.001$) and life satisfaction ($r=.594$; $p<.001$), and a negative one with the negative affect factor ($r=-.450$; $p<.001$), from the Subjective Well-being Scale.

External Validity

The model presents a very good fit ($X^2/df=2.461$; $CFI=.939$; $GFI=.891$; $RMSEA=.043$; $p=1.000$; $C.I. 90\%=[.039; .046]$) in both groups (60% and 40% of the total sample).

The unconstrained measurement model does not have a significantly better fit than the model with constrained factorial weights ($X^2(16)=.000$; $p=1.000$), hence confirming the external validity of the measurement model. Therefore, there are no significant differences in the factorial measurement weights between both groups (60% of the sample versus 40%) confirming the stability of the spiritual well-being construct, assessed with this instrument.

Reliability

The internal consistency of four subscales was also explored. The subscales presented a good Cronbach's alpha as shown in table 17.

Table 17 - Spiritual Well-being Scale: reliability

Scale	Cronbach's Alpha
Personal subscale	.842
Communal subscale	.874
Environmental subscale	.879
Transcendental subscale	.894
Spiritual well-being (overall scale)	.866

Sensitivity

To address sensitivity, the range of the Likert-type scale was explored as well as the skewness and kurtosis values for the 20 items. All items presented answers ranging from 1 to 5 and values of kurtosis and skewness were below 7 and 3, respectively, as recommended.

Table 18 – Spiritual Well-being: values regarding minimum and maximum scores, skewness and kurtosis

Items	Minimum	Maximum	Skewness	Kurtosis
1	1	5	-.377	.387
2	1	5	-.155	-.645
3	1	5	-.303	.389
4	1	5	-.354	-.176
5	1	5	-.267	-.005
6	1	5	-.828	.289
7	1	5	-1.044	.942
8	1	5	-.191	.052
9	1	5	-.465	.474
10	1	5	-.429	-.198
11	1	5	-.360	-.632
12	1	5	-.374	-.020
13	1	5	-.476	-.486
14	1	5	-.368	-.166
15	1	5	.205	-.618
16	1	5	-.267	.031
17	1	5	-.898	1.550
18	1	5	-.549	.190
19	1	5	-.271	-.149
20	1	5	-.448	-.284

Shortened version with three items for each subscale

The items with the highest structural weights were items 5, 9 and 14 for the personal subscale; 3, 17 and 19 for the communal spiritual well-being; 2, 11 and 13 for the transcendental subscale; and items 10, 12 and 20 for the environmental subscale.

Confirmatory factor analysis

The spiritual well-being measurement model with only the twelve items mentioned above, presented an acceptable fit ($X^2/df=5.452$; $CFI=.966$; $GFI=.958$; $RMSEA=.067$; $p<.001$; $C.I. 90\%=[.059; .075]$).

Convergent validity

All subscales measured with the three items presented good AVE scores (namely, above .450), as seen in table 19.

Table 19 – Spiritual well-being – shortened version: convergent validity

Spiritual well-being	AVE
Personal	.475
Communal	.559
Environmental	.674
Transcendental	.766

Reliability

Cronbach's alpha values were good for all subscales, as presented in table 20.

Table 20 – Spiritual well-being – shortened version: reliability

Spiritual well-being	Cronbach's Alpha
Personal	.724
Communal	.779
Environmental	.857
Transcendental	.907
Overall scale	.884

Body Shape Questionnaire
(Cooper, Taylor, Cooper, & Fairburn, 1987)

Construct Validity

Confirmatory factor analysis

A confirmatory factor analysis was done. Item 26 had the highest modification index ($MI=66.421$), its residual evidenced covariance with several other residuals and it presented the lowest correlation with the construct (.301). Furthermore, this item had a kurtosis higher than 7 ($|ku|=78.359$) and a skewness superior to 3 ($|sk|=8.201$) and, thus, was excluded.

The Body Shape Questionnaire evidenced a measurement model with an acceptable fit ($X^2/df=7.390$; $CFI=.869$; $GFI=.767$; $RMSEA=.080$; $p<.001$; $C.I. 90\%=[.077; .082]$).

Convergent validity

The scale presented an acceptable AVE score, i.e., equal or above .450 ($AVE=0.484$).

Criterion validity

The body shape changes subscale (MSSI-38) evidenced a significant and positive association with body shape concerns, as measured by the Body Shape Questionnaire ($r=.561$; $p<.001$).

External Validity

The model presents an acceptable fit ($X^2/df=4.392$; $CFI=.853$; $GFI=.733$; $RMSEA=.058$; $p<.001$; $C.I. 90\%=[.056; .060]$) in both groups (60% and 40% of the total sample).

However, the unconstrained measurement model has a significantly better fit than the model with constrained factorial weights ($X^2(32)=82.437$; $p<.001$). Therefore, the external validity of the measurement model was not confirmed. Hence, there are significant differences in the factorial measurement weights between both groups (60% of the sample versus 40%) and the stability of the body shape concerns' construct, as measured by the Body Shape Questionnaire, was not confirmed. This instrument presents factorial validity in the present sample, however, it is not possible to assure its validity in a different sample.

Reliability

The internal consistency of the Body Shape Questionnaire (without item 26), given by the Cronbach's alpha was very good (.967).

Sensitivity

To address sensitivity, the range of the Likert-type scale was explored as well as the skewness and kurtosis values for the 20 items. All items presented answers ranging from 1 to 6; for the majority of the items, values of kurtosis and skewness were below 7 and 3, respectively, as recommended. However, items 7, 8, 13, 18, 27 and 32 presented values of kurtosis and/or skewness above the reference values.

Table 21 – Body Shape Questionnaire: values regarding minimum and maximum scores, skewness and kurtosis

Items	Minimum	Maximum	Skewness	Kurtosis
1	1	6	.613	-.031
2	1	6	.570	-.425
3	1	6	1.172	.583
4	1	6	.398	-.719
5	1	6	.466	-.411
6	1	6	.559	-.435
7	1	6	2.887	8.921
8	1	6	3.192	11.633
9	1	6	1.852	3.238
10	1	6	2.128	4.507
11	1	6	2.028	4.173
12	1	6	.995	.571
13	1	6	2.516	7.260
14	1	6	1.249	1.020
15	1	6	.861	.027
16	1	6	1.232	.571
17	1	6	.972	.362
18	1	6	3.386	13.045
19	1	6	1.704	2.346

20	1	6	1.911	3.450
21	1	6	.842	.105
22	1	6	1.164	-.656
23	1	6	.965	.202
24	1	6	1.085	.603
25	1	6	2.209	4.821
27	1	6	3.963	18.377
28	1	6	1.364	1.552
29	1	6	1.197	.923
30	1	6	1.450	1.919
31	1	6	1.753	2.479
32	1	6	2.707	7.691
33	1	6	1.717	2.930
34	1	6	.416	-.722

Shortened version with three items for the body shape questionnaire

The items with the highest structural weights were the 14, 29 and 33.

Confirmatory factor analysis

The body shape questionnaire measurement model, with the three items mentioned above, was saturated; hence its fit ($X^2/df=.000$; $CFI=1.000$; $GFI=1.000$) should not be considered.

Convergent validity

The subscale measured with the three items showed a good AVE score (namely, .715).

Reliability

Cronbach's alpha value for the shortened version of the body shape questionnaire was very good (.878).

Perceived Control over Hot Flushes Index
(Reynolds, 1997)

Construct Validity

Confirmatory factor analysis

The item 15 was not significantly correlated with the construct, presenting a negative standardized estimate ($\lambda=-.105$; $p=.134$) and only 1.1% of its variance was explained by the construct. Moreover, the modification index ($MI=33.785$) evidenced this item as the strongest negative influence on the quality of fit of the measurement model. Therefore, this item was excluded.

The instrument without item 15 evidenced a measurement model with a good fit ($X^2/df=2.786$; $CFI=.891$; $GFI=.910$; $RMSEA=.077$; $p<.001$; $C.I. 90\%=[.065; .090]$).

Convergent validity

The two subscales presented weak AVE's scores (i.e., lower than .450) as evidenced in table 22.

Table 22 – Perceived Control over Hot Flushes Index: convergent validity

Scale	AVE
Control	.401
Lack of control	.285

Discriminant validity

The two subscales presented discriminant validity, as evidenced in table 23.

Table 23 – Perceived Control over Hot Flushes Index: discriminant validity

Association between different factors	Squared correlations
Control - Lack of control	.102

Criterion validity

The perceived loss of control ($r=-.156$; $p=.012$) and vasomotor symptoms ($r=-.209$; $p=.001$) subscales, from the MSSSI-38, evidenced a significant, although very weak, correlation with the perceived control over hot flushes' dimension. The same was observed for lack of control again in relation with perceived loss of control ($r=.162$; $p=.010$) and vasomotor symptoms' factor ($r=.483$; $p<.001$), presenting the latter a moderate correlation.

External Validity

The model presents an acceptable adjustment ($X^2/df=1.640$; $CFI=.864$; $GFI=.856$; $RMSEA=.052$; $p=.395$; $C.I. 90\%=[.041; .062]$) in both groups (60% and 40% of the total sample).

The unconstrained measurement model does not have a significantly better fit than the model with constrained factorial weights ($X^2(12)=12.488$; $p=.407$), hence confirming the external validity of the measurement model. Therefore, there are no significant differences in the factorial measurement weights between both groups (60% of the sample versus 40%) confirming the stability of the perceived control over hot flushes index.

Reliability

The internal consistency of the Perceived Control over Hot Flashes Index (without item 15), given by the Cronbach's alpha was good, as evidenced in table 24.

Table 24 - Perceived Control over Hot Flashes Index: reliability

Scale	Cronbach's Alpha
Control subscale	.851
Lack of control subscale	.703
Overall scale	.782

Sensitivity

To address sensitivity, the range of the Likert-type scale was explored as well as the skewness and kurtosis values for the 14 items. All items presented answers ranging

from 1 to 4 and evidenced values of kurtosis and skewness below 7 and 3, respectively, as recommended.

Table 25 – Perceived Control over Hot Flashes Index: values regarding minimum and maximum scores, skewness and kurtosis

Items	Maximum	Minimum	Skewness	Kurtosis
1	1	4	-.787	.307
2	1	4	.043	-.844
3	1	4	-.370	-.206
4	1	4	.308	-.674
5	1	4	-.058	-.726
6	1	4	-.313	-.461
7	1	4	-.105	-.681
8	1	4	.068	-.490
9	1	4	-.098	-.592
10	1	4	-.821	.156
11	1	4	.919	.458
12	1	4	-.290	-.539
13	1	4	-.561	-.261
14	1	4	.407	-.498

Life Events Survey

(Sarason, Johnson, & Siegel, 1978; Silva, Pais-Ribeiro, Cardoso, & Ramos, 2003)

Quality of the fit of the measurement model

Only the events identified as present in the last year by at least 10% of the participants were included in the analysis. Therefore, items 2, 3, 7, 10, 12, 23, 25, 30, 31, 32, 34, 35, 38, 40, 42, 43, 44, 45, 46 and 47 were excluded. Items 11, 27 and 33 were not included in the instrument given they were addressed to men and all participants of this study were female.

The measurement model with the remain items presented an acceptable fit ($X^2/df=4.770$; $CFI=.645$; $GFI=.904$; $RMSEA=.061$; $p<.001$; $C.I. 90\%=[.058; .065]$)

External Validity

The model presents an acceptable adjustment ($X^2/df=3.089$; $CFI=.594$; $GFI=.871$; $RMSEA=.046$; $p=.997$; $C.I. 90\%=[.043; .048]$) in both groups (60% and 40% of the total sample).

The unconstrained measurement model does not have a significantly better fit than the model with constrained factorial weights ($X^2(22)=23.044$; $p=.399$), hence confirming the external validity of the measurement model. Therefore, there are no significant differences in the factorial measurement weights between both groups (60% of the sample versus 40%) confirming the stability of the life events assessment, as measured with these items.

Reliability

The internal consistency of the Life Events Scale, as used in this sample (that is, including only the situations identified by at least 10% of the participants), and given by the Cronbach's alpha, was acceptable (.721).

Sensitivity

To address sensitivity, the range of the Likert-type scale was explored as well as the skewness and kurtosis values for the 20 items. All items presented answers ranging from 1 to 4 and the majority evidenced values of kurtosis and skewness below 7 and 3, respectively, as recommended. However, items 14, 17, 22, 24, 28 and 39 manifested values of kurtosis and/or skewness above the reference values recommended as optimal scores.

Table 26 – Life Events Survey: values regarding minimum and maximum scores, skewness and kurtosis

Items	Minimum	Maximum	Skewness	Kurtosis
1	-3	3	.664	1.048
4	-3	3	-.146	1.195
5	-3	3	-1.449	1.068

6	-3	3	.259	2.362
8	-3	3	-2.410	6.475
9	-3	3	.688	.707
13	-3	3	.220	1.839
14	-3	3	2.357	11.813
15	-3	3	-1.264	.651
16	-3	3	-1.116	5.633
17	-3	3	-3.071	15.492
18	-3	3	-1.812	6.998
19	-3	3	-.124	2.008
20	-3	3	.364	3.642
21	-3	3	1.623	3.224
22	-3	3	1.503	9.366
24	-3	3	1.354	9.744
26	-3	3	.232	4.265
28	-3	3	-.057	9.125
29	-3	3	.498	1.775
36	-3	3	.377	1.885
37	-3	3	1.194	5.406
39	-3	3	-18.033	36.168
41	-3	3	.570	6.313

Menopause Symptoms' Severity Inventory (MSSI-38)

(Pimenta, Leal, Maroco, & Ramos, in press)

Shortened version with three items for each subscale

The only subscales which were shortened were depressive mood, anxiety and aches and pain, since the other nine subscales already had three or two items.

The items with the highest structural weights were 2, 4 and 10 for the anxiety subscale; 9, 12 and 18 for the depressive mood; and 23, 27 and 34 for aches and pain's subscale.

Confirmatory factor analysis

The MSSSI-38's measurement model with the shortened subscales presented a good fit ($X^2/df=2.380$; $CFI=.943$; $GFI=.927$; $RMSEA=.044$; $p<.001$; $C.I. 90\%=[.040; .048]$).

Convergent validity

The subscales measured with the three items presented good AVE scores (namely, above .450), as seen in table 27.

Table 27 – Depressive mood, anxiety and aches/pain subscales (MSSI-38) – shortened version: convergent validity

Subscales	AVE
Depressive mood	.482
Anxiety	.641
Aches and pain	.540

Reliability

Cronbach's alpha values were good for the three subscales, as presented in table 28.

Table 28 – Depressive mood, anxiety and aches/pain subscales (MSSI-38) – shortened version: reliability

Subscales	Cronbach's Alpha
Depressive mood	.741
Anxiety	.840
Aches and pain	.794

Dutch Eating Behaviour Questionnaire
(van Strien, Frijters, Bergers, & Defares, 1986; Viana & Singe, 2003)

Reliability

The internal consistency of the three subscales is good, as evidenced in table 29.

Table 29 - Dutch Eating Behaviour Questionnaire: reliability

Scale	Cronbach's alpha
Emotional eating	.945
External eating	.780
Restrained eating	.914

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APPENDIX D

Interviews' Contents and Emergent Categories from Content Analysis (Paper 1)

Análise de conteúdo

Participante	a) Prof., Hab. lit. e Est. civil b) Idade Actual: Idade menopausa c) Terapia hormonal, produto natural ou nada	O que é para si a menopausa? (Represent.)	Se existir(em) alguma(a), que consequência(s) positiva(s) associa à menopausa? (C+)	Se existir(em) alguma(a), que consequência(s) negativa(s) associa à menopausa? (C-)
1	a) Reformada, Ensino médio, Casada b) 59:54 c) Produto natural (PN)	- uma forma de crescimento. Cresci/o - pela ordem da vida, o período aparece e depois desaparece. Term_Menst_Menst	- Deixei de me preocupar com contraceção Termin_Menst_Contracp - Mais calma Alt_Psic_Calma	- os afrontamentos são um pequeno incómodo Sint_Vas - preocupação com osteoporose Preoc_Doença_Osteo
2	a) Reformada, Ensino Secundário, Casada b) 59:50 c) Terapia hormonal (TH)	- é uma fase natural que faz parte do ciclo da vida. Fase_CV_NN - é uma fase que nós aceitamos Fase_CV_Aceitação - é a consequência da passagem dos anos. Env_Idade	- nada, foi muito soft Nenhuma	- nada, além da osteoporose Preoc_Doença_Osteo
3	a) Funcionária administrativa, Ensino médio, Solteira b) 64:48 c) Nada	- para mim não significa nada porque não lhe dei nenhuma importância. Desval No meu caso não senti que fosse o virar de 1 página dado que não lhe dei importância. Desval	Nenhuma Nenhuma	- tensão arterial descontrolada Preoc_Doença_TA

4	<p>a) Reformada, Ensino médio, Viúva. b) 63:51 c) TH</p>	<p>- Um descanso (pelo término da menstruação). Term_Menst_Menst - Limpeza Term_Menst_Hig</p>	<p>- liberdade para planear férias de praia (ausência de menstruação) Termin_Menst_Férias</p>	<p>- tirando os afrontamentos, não senti nada de negativo Sint_Vas</p>
5	<p>a) Reformada, Ensino Secundário, Casada. b) 58:52 c) TH</p>	<p>- Não aceitei a menopausa, foi um alívio conseguir superá-la Fase_Neg_Exp_Neg</p>	<p>- O terminar da menstruação: isso foi um alívio Term_Menst_Menst - o terminar do mal-estar por altura do período foi muito bom pois deixei de ter dores de cabeça que acompanhavam sempre o período Termin_Menst_SPM - deixar de ter menstruação foi bom porque não é uma coisa prática Term_Menst_Menst</p>	<p>- Angústia e tristeza logo aos 48/49 anos Alt_Psic_Humor - Agravamento da osteopenia (já perto da osteoporose) Preoc_Doença_Osteo - Medo de não ficar bem em termos de saúde, concretamente, em relação às dores nas articulações devido à presença de osteopenia Preoc_Doença_Osteo - Senti que a vida terminava ali, Alt_Psic_Desperança - senti que já não tinha nada para dar Alt_Psic_desvalorização - estava a ficar velha Env - Engordei muito com a medicação Aum_Peso</p>
6	<p>a) Funcionária administrativa, Ensino médio, Divorciada b) 60:43 c) Nada</p>	<p>- é uma coisa normal; Fase_CV_NN - é uma fase natural Fase_CV_NN - é o terminar de um ciclo e o começo de outro ciclo que também é maravilhoso Fase_Pos_Exp_Pos - é uma nova vida que pelo término da menstruação traz uma libertação (sexual) Fase_Pos_Ganho e um condicionamento pois já não se pode ter filhos Fase_Neg_Perda</p>	<p>- Término da menstruação Termin_Menst_Menst - higiene Term_Menst_Hig - Se tivesse parceiro, sentir-me-ia mais liberta em termos sexuais Term_Menst_Liberdd_Sxl</p>	<p>- A menopausa precoce vai afectar os ossos mais precocemente Preoc_doença_Osteo mas com cuidados - alimentação equilibrada e suplementos naturais - diminui-se os riscos</p>

7	a) Desempregada, Ensino Secundário, Divorciada b) 58:52 c) TH	---	- deixar de ter a menstruação: já não tenho de me chatear com tampões Termin_Menst_Tampões - já não me preocupo com o controlo da natalidade Termin_Menst_Contracp	- Senti muita angústia e ansiedade na altura da menopausa Alt_Psic_Ansiedd - A menopausa veio agravar uma vulnerabilidade que já existia por acontecimentos familiares stressantes anteriores Alt_Psic_Vulnerabilidd - Flacidez da carne (pescoço) Alt_Fís_Flacidez
8	a) Arquitecta, Licenciatura, Casada b) 53: (ainda não teve menopausa) c) Nada	- esta fase é uma maravilha Fase_Pos_Exp_Pos - é uma 2ª adolescência: irreverência, digo o que penso e sinto-me livre Fase_Pos_Exp_Pos - eu não penso na menopausa: não existe, isto é, não tem importância Desval	- busco saber mais daquilo que me interessa Alt_Psic_Invest	Nenhuma
9	a) Professora, Licenciatura, União de facto b) 59:49 c) Nada	-é um problema que temos que ultrapassar Fase_Neg_Exp_Neg - temos que passar por esta etapa, mas não é uma transição fácil Fase_Neg_Exp_Neg - perda de 1 capacidade Fase_Neg_Perda - é a chegada à velhice Env_Id	Nenhuma	- Foi mau, tive a sensação de chegar ao fim, Alt_Psic_Desperança - senti-me a perder a capacidade de ser mulher Perda_Mulher - perde-se algo que não é recuperável; a incapacidade para ter filhos foi para mim chocante. Perda_Capac_reprod - Houve uma diminuição do desejo sexual, Alt_Sx_Desejo mas não me aborreci com isto.
10	a) Médica, Licenciatura, Divorciada	- é uma coisa natural Fase_CV_NN - é mais um ciclo da vida Fase_CV_Outra_Fase	- deixei de me preocupar com os pensos Termin_Menst_Tampões; - maior higiene Term_Menst_Hig	As perdas não têm a ver com a menopausa Nenhuma

	<p>b) 55 (ainda não teve menopausa) c) Nada</p>	<p>- é o fim da <i>fábrica</i> Term_Menst_Reprod - é o final da procriação Term_Menst_Reprod - é o aparecimento de alterações no corpo (ex., articulações) Conseq_Fís_Neg - degenerescência Fase_Neg_Perda - a fase de envelhecimento Env_Idade - é também uma <i>involução</i> Fase_Neg_Perda - os ovários deixam de funcionar Term_Menst_Ovár_Estrog - a evolução da idade e do físico Env_Idade</p>	<p>- deixa de haver um impedimento ao acto sexual Term_Menst_Liberdd_Sxl</p>	
11	<p>a) Funcionária administrativa, Ensino secundário, Casada; b) 59:50 c) PN</p>	<p>- é uma coisa natural Fase_CV_NN - a paragem dos ovários Term_Menst_Ovár_Estrog</p>	<p>- foi um alívio em termos da menstruação Termin_Menst_Menst</p>	Nenhuma
12	<p>a) Gestora, Licenciatura, Casada b) 53 (ainda não teve menopausa) c) Nada</p>	<p>- não tenho pensado muito nisso Desval - é algo que faz parte da natureza Fase_CV_NN - é um processo natural Fase_CV_NN</p>	<p>- Ausência do período Termin_Menst_Menst - estou livre de engravidar o que é um alívio Termin_Menst_Contracp</p>	<p>- Diminuição do apetite sexual, Alt_Sx_Desejo que é natural, mas pode ser preocupante se o parceiro estiver sempre disposto para sexo e a mulher não - pode-se ficar com a saúde física mais debilitada Preoc_Doença_SOE</p>
13	<p>a) Tradutora, Bacharelato, Casada</p>	<p>- é uma grande seca Fase_Neg_Exp_Neg</p>	<p>- há muitas que posso agora fazer Alt_Psic_Invest</p>	<p>- começamos a sentir que o físico está a ceder Alt_Fís_Mudança_Corpo e arrasta a</p>

	<p>b) 54:45 c) Nada</p>	<p>- é quando nos apercebemos que a idade está a passar Env_Id - altura em que se olha para trás para ver as minhas pegadas. Até à menopausa não há tempo para pensar; nesta altura há mais tempo e as coisas ganham um ritmo e um significado diferente que pode ser bom Fase_Pos_Ganho - A vida é um continuum e a menopausa é mais um apeadeiro Fase_CV_Outra_Fase - é uma etapa compensadora: há uma procura de algo mais profundo e permanente Fase_Pos_Exp_Pos - Fase muito boa Fase_Pos_Exp_Pos excepto o condicionamento físico Conseq_Fís_Neg</p>	<p>- Tranquilidade Alt_Psic_Calma - Tenho mais certezas Alt_Psic_Confiança_Certezas - já tenho experiência que me leva a dizer “isto sim, isto não” e com esta idade já não faço fretes; digo sim e não sem remorsos e lamentos Alt_Psic_Assertividd - Tenho mais confiança Alt_Psic_Confiança_Certezas</p>	<p>parte psicológica Alt_Psic_SOE - em termo físicos já não somos capazes de fazer o que queremos Alt_Fís_Dificuldd_Fís - perdas de memória Alt_Psic_Memória - dificuldades físicas (já me custa subir escadas) Alt_Fís_Dificuldd_Fís</p>
14	<p>a) Reformada, Ensino secundário, Divorciada b) 60:49 c) Nada</p>	<p>- é uma experiência positiva Fase_Pos_Exp_Pos</p>	<p>Só vejo consequências positivas; o período por exemplo era um condicionamento em relação às férias Termin_Menst_Férias - A perspectiva positiva a partir de agora pesa mais Alt_Psic_Valoriz_Exp_Pos - A pessoa fique mais livre e começa a ver outros interesses Alt_Psic_Invest</p>	<p>Nenhuma</p>
15	<p>a) Bancária, Ensino secundário, Casada b) 57:45 c) TH</p>	<p>- a continuação do sentimento de ser mulher Manut_Mulher - alívio por deixar de ter o período por causa da praia e piscina</p>	<p>- Foi um alívio deixar de ter o período Termin_Menst_Menst - deixei de me preocupar com contraceção Termin_Menst_Contracep</p>	<p>- aumento de kg, Aum_Peso - há uma mudança no corpo, Alt_Fís_Mudança_Corpo - secura vaginal Alt_Sxl_Sec_Vaginal</p>

		<p>Term_Menst_Praia e por causa da higiene Term_Menst_Hig</p> <ul style="list-style-type: none"> - No meu caso foi um pouco cedo de mais, mas também acho que já não queria mais filhos Fase_Neg_Perda - A menopausa é uma fase como qualquer outra Fase_CV_Outra_Fase - é um marco, isto é, natural, na nossa vida, tal como o aparecimento da menstruação também o é Fase_CV_NN - o desaparecer da menstruação também é importante <p>Term_Menst_Menst</p> <ul style="list-style-type: none"> - metade da vida já passou Env_Idd, - fase de decadência <p>Fase_Neg_Exp_Neg,</p> <ul style="list-style-type: none"> - deixamos de ser reprodutivas <p>Term_menst_reprod</p>	<ul style="list-style-type: none"> - Poupança de dinheiro com pensos <p>Termin_Menst_Tampões</p> <ul style="list-style-type: none"> - Higiene Term_Menst_Hig 	
16	<p>a) Professora, Licenciatura, Solteira</p> <p>b) 57:52</p> <p>c) PN</p>	<ul style="list-style-type: none"> - a menopausa é um sinal que nós não queremos muito encarar <p>Fase_Neg_Exp_Neg</p> <ul style="list-style-type: none"> - início de uma nova fase de envelhecimento Env_Idd - menopausa são a secura vaginal, rugas, perdas de memória, osteoporose <p>Conseq_Fís_Neg</p> <ul style="list-style-type: none"> - Menopausa é um sinónimo de envelhecimento Env_Id 	<ul style="list-style-type: none"> - sinto uma maior paz Alt_Psic_Calma - amadurecimento Alt_Psic_Amadur - sinto que estou menos preocupada <p>Alt_Psic_Despreoc</p> <ul style="list-style-type: none"> - vou aceitando mais as coisas (as pessoas à minha volta, da minha idade, começam a morrer, mas vou aceitando); há uma maior capacidade de aceitação <p>Alt_Psic_Aceitaç_Toler</p> <ul style="list-style-type: none"> - nesta fase faço massagens, viagens, espectáculos; deixei de adiar as coisas 	<ul style="list-style-type: none"> - senti algum angústia devido a grandes hemorragias Alt_psic_Ansiedd - falhas de memória, Alt_Psic_memória - canso-me um bocadinho mais <p>Alt_Fís_Dim_Energia</p>

			lúdicas Alt_Psic_Invest	
17	a) Farmacêutica, Licenciatura, Solteira b) 45:40 c) Nada	- ausência do ciclo de menstruação Term_Menst_Menst - o início de uma outra fase da mulher Fase_CV_Outra_Fase - faz parte de um crescimento Cresci/o e do envelhecimento Env_Id	Nada Nenhuma	- sintomas da menopausa (afrontamentos) Sint_Vas - preocupação com consequências a longo prazo, isto é, osteoporose Preoc_Doença_Osteo e doenças cardio-vasculares Preoc_Doença_DCV - ter afrontamentos, sentir a cabeça suada: na altura sentia vergonha Sint_Vas_Vergonha - também houve um mal-estar psicológico, Alt_Psic_SOE - senti mais irritabilidade, falta de paciência Alt_Psic_Irritab_Impaciên que tiveram um impacto médio - em relação à sexualidade, dado haver algumas alterações sexuais Alt_Sx_SOE há que fazer um maior investimento
18	a) Professora, Licenciatura, Casada b) 47:42 c) Nada	---	- Deixar de ter o período Termin_menst_menst	- uma indisposição horrorosa, calores muito grandes Sint_Vas acordava de noite toda suada: tinha vergonha pois parecia que tinha feito chichi na cama Sint_Vas_Vergonha - a mulher sente-se..., não é bem rejeitada, é mais acabrunhada porque as outras pessoas vêem-na a abanar-se Sint_Vas_Vergonha

				<p>- tive que deixar de beber álcool em situações sociais; quando saía só bebia água. Perda_Rotinas</p> <p>- Teve impacto porque passei a sair menos e a isolar-me mais nesta fase</p> <p>Perda_rotinas</p> <p>- na presença dos outros sinto-me inferiorizada Alt_Psic_Desvalorização</p>
19	<p>a) Professora, Licenciatura, Casada</p> <p>b) 57:50</p> <p>c) Nada</p>	<p>- envelhecimento do corpo Env_Id</p> <p>- a partir daqui a sociedade põe a mulher de lado Fase_Neg_Exp_Neg</p> <p>- é outra fase da vida</p> <p>Fase_CV_Outra_Fase</p> <p>- é um período de desconforto (tem-se os afrontamentos e os suores nocturnos), mas que se consegue gerir</p> <p>Conseq_Fís_Neg</p>	<p>- passei a ser mais permissiva e tolerante</p> <p>Alt_Psic_Aceit_Toler</p>	<p>- Em termos físicos vejo os braços flácidos;</p> <p>Alt_Fís_Flacidez</p> <p>- o envelhecimento do corpo Env</p> <p>- aumento do peso, Aum_Peso</p> <p>- há uma mudança no corpo (aparecem os pneus) Alt_Fís_Mudança_Corpo</p> <p>- sinto uma maior flacidez</p> <p>Alt_Fís_Flacidez</p> <p>- sintomas da menopausa: desconforto devido aos afrontamentos, aos suores nocturnos Sint_Vas</p>
20	<p>a) Chefe de secção, Ensino secundário, Casada</p> <p>b) 52:51</p> <p>c) Nada</p>	<p>- é uma coisa normal Fase_CV_NN</p> <p>- é um estado de idade Env_Id</p> <p>- não deixo de ser mulher</p> <p>Manut_Mulher</p> <p>- paragem da menstruação</p> <p>Term_Menst_Menst</p> <p>- é normal, natural Fase_CV_NN</p>	<p>Nada Nenhuma</p>	<p>- aumento do peso Aum_Peso do colesterol</p> <p>Preoc_Doença_Colest e da tensão arterial</p> <p>Preoc_Doença_TA</p>
21	<p>a) Funcionária administrativa,</p>	<p>- bem chata e desagradável só por causa dos afrontamentos</p>	<p>- deixar de ter o período foi bom</p> <p>Termin_Menst_menst</p>	<p>Afrontamentos Sint_Vasomotor</p>

	Ensino médio, União de facto b) 44: (ainda não teve menopausa) c) Nada	Conseq_Fís_Neg - a mulher não deixa de ser mulher, nem deixa de captar o interesse só por causa da menopausa Manut_Mulher	- já não há o condicionamentos do período a nível sexual, é uma libertação Term_Menst_Liberdd_Sxl	
22	a) Funcionária administrativa, Ensino médio Solteira b) 54:50 c) Nada	- uma coisa natural Fase_CV_NN	Deixei de andar com tampões e pensos Termin_Menst_Tampões	Nada Nenhuma
23	a) Reformada, Ensino médio, Casada b)58:48 c) Nada	- nunca pensei na menopausa nem nunca liguei Desval	- o fim do período é um alívio porque uma pessoa deixa de se preocupar com a prevenção da gravidez Termin_Menst_Contracp - não ter menstruação é por si mesmo um alívio Termin_Menst_Menst	Nenhuma
24	a) Professora, Licenciatura, união de facto b) 57: 49 c) TH	- fase da vida como outra fase Fase_CV_Outra_Fase - não é o fim, é uma nova fase Fase_CV_Outra_Fase - é o início de um novo estado de vida: já não sou tão nova como era Env_Id - uma fase diferente em que se está disposta para outras coisas: netos, nova relação, vivência sexual muito boa. Fase_Pos_Exp_Pos - é mais uma etapa, sem sensação de perda Fase_CV_Outra_Fase	- deixar de ser menstruada foi uma libertação porque acabou a contraceção Termin_Menst_Contracp - grande libertação das dores menstruais e das hemorragias Termin_Menst_Menst	- É desagradável suar mas gere-se bem Sint_Vasomotor
25	a) Escriturária,	- quando os órgãos reprodutores	- não me preocupar com o controlo da	Nada Nenhuma

	Ensino secundário, Solteira b) 39:34 c) Nada	deixam de funcionar Term_Menst_Ová_Estrog - envelhecimento Env_Idd	natalidade Termin_Menst_Contracp	
26	a) Reformada, Bacharelato, Casada b) 53:43 c) Nada	- é mais um período da vida Fase_CV_Outra_Fase - é o ponto mais alto em termos intelectuais Fase_Pos_Exp_Pos - o começo do declínio físico (perda de massa óssea, memória, elasticidade e desejo sexual) Conseq_Fís_Neg - para mim a menopausa é um apelo a gozar a vida Fase_Pos_Exp_Pos - diz-me que estou a envelhecer Env_Id	- foi um alívio ver-me livre da menstruação, já estava farta. Term_menst_Menst - psicologicamente, continuo a ser uma nova estudante com vontade de aprender novas coisas Alt_Psic_Invest - maior sensibilidade Alt_Psic_Sensibilidd	- por causa do que se ouve sobre a osteoporose, vigio de perto a minha saúde Preoc_Doença_Osteo - a irritabilidade Alt_Psic_Irrita_Paciência e a mudança de humor Alt_Psic_Humor - os afrontamentos, apesar de terem sido muito poucos Sint_Vas
27	a) Funcionária administrativa, Ensino secundário, Viúva b) 59:55 c) Nada	- fase neutra Fase_CV_Neutra - noção de que estamos a envelhecer e na curva final Env_Id - fase normal da vida, tal como gravidez Fase_CV_NN	- foi ótimo, um alívio em relação ao período Termin_Menst_Menst	- Pele muito seca (pés) Alt_Fís_Pele_Seca - Queda de cabelo Alt_Fís_Queda_Cabelo
28	a) Funcionária administrativa, Bacharelato, Divorciada b)55: (ainda não teve menopausa) c) Nada	- não me vem à cabeça nada de especial Desval - tem a ver com o processo natural Fase_CV_NN - ligo a menopausa ao envelhecimento Env_Id - não é uma doença, é uma característica das mulheres da minha	Nenhuma	- sinto que já não sou jovem, Env - fisicamente já não faço as coisas que fazia. Alt_Fís_Dificuldd_Fís - é uma chatice a perda do desejo sexual, Alt_Sx_Desejo - pele mais flácida Alt_Fís_Flacidez e está tudo a descair

		<p>idade Env_Idd</p> <p>- tenho uma postura neutra, nem positiva, nem negativa. Fase_CV_Neutra</p> <p>- É uma coisa que tem que ser. Temos que aprender a viver com esta característica (menopausa)</p> <p>Fase_CV_Aceitação</p>		
29	<p>a) Professora, Licenciada, Casada</p> <p>b) 50: (ainda não teve menopausa)</p> <p>c) Nada</p>	<p>- deixamos de poder ter filhos</p> <p>Term_Menst_Reprod</p> <p>- faz parte do continuum da vida que temos de aceitar Fase_CV_Aceitação</p>	Não ter o período Termin_Menst_Menst	<p>- receio de ter osteoporose, Preoc_Doença_Osteo</p> <p>- ganho de peso Aum_Peso</p> <p>- redução do desejo sexual Alt_Sx_Desejo</p>
30	<p>a) Bancária, Ensino secundário, Casada</p> <p>b) 59:48</p> <p>c) TH</p>	<p>- para mim, na altura, foi como uma coisa que me tiraram Fase_Neg_Perda</p> <p>- tive uma sensação de perda (concretamente em termos sexuais, excitação, desejo) Fase_Neg_Perda</p> <p>- A ideia de “período” é sinónimo de vida; a menopausa é o oposto, Fase_Neg_Perda</p> <p>- é a entrada na fase descendente da vida da mulher Fase_Neg_Exp_Neg</p> <p>- há uma modificação a partir da menopausa e começa-se a perder Fase_Neg_Perda</p> <p>- A partir da menopausa há qualquer coisa que morre na mulher: a esperança! Fase_Neg_Perda</p>	Nada nenhuma	<p>- fisicamente: nada de significativo, engordei um bocadinho Aum_Peso</p> <p>- menos energia Alt_Fís_Dim_energia</p> <p>- psicologicamente: nenhuma consequência</p> <p>- afectou muito o desejo sexual (diminui): Alt_Sx_Desejo criei expectativas mais exigentes da minha parte, ie, como desejo menos estou à espera de receber mais.</p> <p>- A diminuição de desejo sexual provocou um afastamento do meu marido Alt_Sx_Afastamento (pensava “isto não é justo para a mulher”), criou uma irritação em mim Alt_Psic_irritab_impaciênc</p> <p>- a diminuição do desejo sexual implicou depois o afastamento. Alt_Sx_Afastamento</p>

		Menor capacidade para acreditar, para a esperar. Fase_Neg_Perda - sempre pensei que teria outro filho, mas com a chegada da menopausa isso tornou-se impossível Fase_Neg_Perda		- senti-me a perder um pouco a essência de ser mulher Perda_Mulher . Aparecem medos, insegurança e culpabilização por não conseguir a performance sexual Alt_Sx_Culpa_Inseg e ter desejo. Mas depois as coisas entraram noutra rotina e compensa-se de outra forma.
31	a) TOC, Bacharelato, Casada b) 60:52 c) Nada	- é o fim do período, Term_Menst_Menst - redução do estrogénio Term_menst_Ová_Estrog	Término da menstruação: deixou de interferir com as férias! Termin_Menst_Férias - Acalmei-me (era muito impulsiva); Alt_Psic_Calma - Tranquilidade, Alt_Psic_Calma - paz comigo mesma Alt_Psic_Calma	Nada Nenhuma
32	a) Bancária, Licenciatura, Divorciada b) 57:51 c) PN	- há algo que nos foge, algo que tem a ver com o ser mulher. Fase_Neg_Perda	Nenhuma	Só o receio de perder saúde Preoc_Doença_SOE - a partir daqui começa-se a perder coisas e pode surgir o receio não ser desejada pelo meu companheiro, Alt_Sx_Culpa_Inseg – - tenho medo de perder o poder de sedução Perda_aspecto_sedutor - maior dificuldade em andar Alt_Fís_Dificuldd_Fís , diminuição de energia física Alt_Fís_Dim_Energia tive que abrir mão de alguns hábitos Perda_rotinas - já não posso ser mãe Perda_Capac_Reprod

33	a) Médica, Licenciatura, Casada b) 52: 48 c) TH	- a menopausa é uma fase natural da evolução da mulher Fase_CV_NN	Nenhuma	- aumento de peso Aum_Peso - diminuição da paciência Alt_Psi_Irritab_Impaciênc
34	a) Costureira, Ensino básico, Casada b) 56:51 c) PN	- é outra fase da vida Fase_CV_Outra_Fase - uma mudança na vida: de fresca e nova passa-se para madura e a caminhar para velha Env_Id - é a perda de uma fase produtiva (isto é, já não se pode ter filhos) Fase_Neg_Perda - tem-se menos vitalidade, Conseq_Fís_Neg tem-se menos actividade e que já não conseguimos voltar para trás Fase_Neg_Perda	- alívio por deixar de ter o período Termin_Menst_Menst	- diminuição da vitalidade e actividade Alt_Fís_Dim_Energia - diminuição do desejo sexual Alt_Sx_Desejo
35	a) Comercial, Ensino básico, Viúva b) 52:--- c) Nada	- é uma fase natural Fase_CV_NN	- libertar-me da preocupação de engravidar Termin_Menst_contracp	- aumento do peso Aum_Peso - modificação do corpo Alt_Fís_Mudança_Corpo
36	a) Contabilista, Licenciatura, Casada b) 60:55 c) Nada	- foi um aborrecimento: os afrontamentos, o mal-estar Conseq_Fís_Neg - é uma nova fase da vida Fase_CV_Outra_Fase	- deixei de andar com pensos Termin_Menst_Tampões - deixei de ser menstruada Termin_Menst_Menst	- não poder engravidar mais Perda_Capac_Reprod - receio de estar mais vulnerável a doenças Preoc_Doença_SOE - diminuição do desejo sexual Alt_sx_desejo

CATEGORIAS PARA A REPRESENTAÇÃO DE MENOPAUSA

1 – Crescimento (Cresci/o) - processo ou fase de crescimento

2 - Término da Menstruação (Term_Menst)

- a) término da experiência fisiológica externa que é a menstruação (**Term_Menst_Menst**)
- b) aumento de higiene ou limpeza (**Term_Menst_Hig**)
- c) paragem dos ovários/ diminuição de estrogénios (experiência fisiológica interna, isto é, paragem ou diminuição refere-se objectivamente à gónada ou à hormona) (**Term_Menst_Ovár_Estrog**)
- d) liberdade para ir à praia/piscina (**Term_Menst_Praia**)
- e) Término da capacidade reprodutiva (**Term_Menst_Reprod**) [este término refere-se ao termo da capacidade de ter filhos e não: ao termo do especificado nas alíneas a) e c) ou ainda à perda da menstruação ou a outra perda subjectiva ou objectiva (incluindo a perda da capacidade de ter filhos)]

3 - Fase Normal/Neutra do Ciclo de vida (Fase_CV)

- a) fase normal ou natural da vida (**Fase_CV_NN**)
- b) fase que se aceita ou que tem de ser aceite (**Fase_CV_Aceitação**)
- c) uma outra ou uma nova fase da vida (**Fase_CV_Outra_Fase**)
- d) fase neutra (**Fase_CV_Neutra**)

4 - Manutenção da Feminilidade (Manut_Mulher)

5 - Envelhecimento/Progressão da idade (Env_Idade) – Menopausa como consequência do envelhecimento ou consequência da progressão da idade

6 – Desvalorização (Desval) - Desvalorização da menopausa como uma fase diferente ou com o potencial de ter um impacto significativo na vida da mulher (por ex., não me vem à cabeça nada de especial, não tem importância, não liguei)

7 - Consequências físicas negativas (Conseq_Fís_Neg) – Representação baseada nas consequências físicas negativas (que não sejam genericamente descritas como envelhecimento ou consequência da idade ou referidas como perdas) ou sintomas que resultam da menopausa (tal como afrontamentos ou osteoporose). Deverão ser enunciadas como alterações, presentes na altura da menopausa, mas ausentes antes desta.

8 - Fase Positiva (Fase_Pos)

- a) experiência positiva, enunciação de adjectivação positiva e descrição de acontecimentos ou estados positivos sem os referenciar como ganhos objectivos derivados da menopausa (**Fase_Pos_Exp_Pos**)
- b) Ganho, isto é, descrição de algo que passa a existir a partir da menopausa, que é valorizado e que não existia antes (**Fase_Pos_Ganho**)

9 - Fase negativa (Fase_Neg)

- a) experiência negativa com referência a adjectivação negativa sem referência a perdas objectivas (**Fase_Neg_Exp_Neg**)
- b) Perda de algo (incluir aqui a perda da capacidade de ter filhos, quando o término desta faculdade é visto como uma perda) (**Fase_Neg_Perda**)

CATEGORIAS PARA CONSEQUÊNCIAS POSITIVAS DA MENOPAUSA

1 – Ausência de consequências positivas (Nenhuma)

2 – Término da Menstruação (Termin_Menst)

- a) término da menstruação (**Termin_Menst_Menst**)
- b) higiene (**Termin_Menst_Hig**)
- c) término do uso de contracepção (**Termin_Menst_Contracp**)
- d) término do síndrome pré-menstrual (**Termin_Menst_SPM**)
- e) maior liberdade sexual (**Termin_Menst_Liberdd_Sx**)
- f) término do uso de tampões/pensos (**Termin_Menst_Tampões**)
- g) liberdade para planejar férias (**Termin_Menst_Férias**)

3 – Alterações psicológicas (Alt_Psic)

- a) maior calma (ou sinónimo) (**Alt_Psic_Calma**)
- b) maior despreocupação (**Alt_Psic_Despreoc**)
- c) maior confiança/certezas (**Alt_Psic_Confiança_Certezas**)
- d) maior assertividade (**Alt_Psic_Assertividd**)
- c) maior capacidade de aceitação ou tolerância (**Alt_Psic_Aceit_Toler**)
- d) amadurecimento (**Alt_Psic_Amadur**)
- e) desejo de investir em coisas que gosta/em coisas novas (**Alt_Psic_Invest**)
- f) dar mais valor às experiências positivas (**Alt_Psic_Valoriz_Exp_Pos**)
- g) maior sensibilidade (**Alt_Psic_Sensibilidd**)

CATEGORIAS PARA CONSEQUÊNCIAS NEGATIVAS DA MENOPAUSA

1- Ausência de consequências negativas (Nenhuma)

2- Presença Sintomas Vasomotores

- a. Sintomas vasomotores (**Sint_Vas**)
- b. Vergonha ligada à manifestação dos sintomas vasomotores (**Sint_Vas_Vergonha**)

3- Alterações na vida sexual (Alt_Sx)

- a. diminuição do desejo sexual (**Alt_Sx_desejo**)
- b. secura vaginal (**Alt_Sx_Sec_Vaginal**)
- c. sem outra especificação (**Alt_Sx_SOE**)
- d. alteração da relação com o marido (afastamento entre ambos) (**Alt_Sx_Afastamento**)
- e. culpa ou insegurança relacionadas com a performance sexual da própria mulher (**Alt_Sx_Culpa_Inseg**)

4- Preocupação com surgimento ou agravamento de doença (Preoc_Doença)

- a. Osteoporose/osteopenia (**Preoc_Doença_Osteo**)
- b. Tensão arterial (**Preoc_Doença_TA**)
- c. Doença cardio-vascular (**Preoc_Doença_DCV**)
- d. Colesterol (**Preoc_Doença_Aum_Colest**)
- e. Sem outra especificação (**Preoc_Doença_SOE**)

5- Aumento de peso (Aum_Peso)

6- Alterações psicológicas (Alt_Psic)

- a. Humor deprimido ou alterações de humor (tristeza/angústia/alterações de humor) (**Alt_Psic_Humor**)
- b. Desesperança em relação ao futuro (**Alt_Psic_desesperança**)
- c. Sentimentos de desvalorização ou de inferioridade (**Alt_Psic_desvalorização**)
- d. Irritabilidade ou falta de paciência (**Alt_Psic_irritab_Impaciênc**)
- e. Ansiedade (**Alt_Psic_Ansiedd**)
- f. Agravamento de vulnerabilidade já existente devido a acontecimentos de vida stressantes (**Alt_Psic_vulnerabilidd**)
- g. Dificuldades de memória (**Alt_Psic_Memória**)
- h. Alterações psicológicas sem outra especificação (**Alt_Psic_SOE**)

7- Alterações Físicas

- a. Flacidez de partes do corpo (**Alt_Fís_Flacidez**)
- b. Percepção de mudança corporal (**Alt_Fís_Mudança_Corpo**)
- c. Dificuldade física em fazer determinadas coisas (**Alt_Fís_Dificuldd_fís**)
- d. Pele seca (**Alt_Fís_Pele_Seca**)
- e. Queda de cabelo (**Alt_Fís_Queda_Cabelo**)
- f. Cansaço ou diminuição de energia (**Alt_Fís_Dim_Energia**)

8- Percepção de Perda

- a. Perda relacionada com a feminilidade/natureza de mulher (**Perda_mulher**)
- b. Perda da capacidade de ter filhos (**Perda_capac_reprod**)
- c. Deixar de fazer algumas coisas que gostava de fazer ou isolamento social (**Perda_rotinas**)
- d. Receio de perder um aspecto físico sedutor (**Perda_aspecto_sedutor**)

9- Envelhecimento (Env)

APPENDIX E

Publication's acceptance e-mails (from Climacteric and Maturitas)

De: onbehalfof+nickpanay+msn.com@manuscriptcentral.com em nome de nickpanay@msn.com
Enviado: quarta-feira, 4 de Maio de 2011 11:07
Para: Filipa Fernandes Pimenta
Assunto: Climacteric - Decision on Manuscript ID DCLI-2011-0021.R1

04.05.11

Dear Ms Pimenta:

Ref: Menopause Symptoms' Severity Inventory (MSSI-38): Assessing symptoms' frequency and intensity

I have now carefully considered your revised paper and have recommended publication in Climacteric. We are pleased to accept your paper in its current form which will now be forwarded to the publisher for copy editing and typesetting.

You will receive proofs for checking, and instructions for transfer of copyright in due course.

The publisher also requests that proofs are checked and returned within 48 hours of receipt.

Thank you for your contribution to Climacteric and we look forward to receiving further submissions from you.

Sincerely,
Nick Panay
Editor in Chief (Europe)
Climacteric
nickpanay@msn.com Nick.Panay@imperial.nhs.uk

There are now over 150 Informa Healthcare journals available on our free table of contents alerting service! To register for this free service for Climacteric visit:
<http://informahealthcare.com/page/services/alertingservices>

e: ees.mat.0.10ef9c.0057da5e@eesmail.elsevier.com em nome de Maturitas [mat@elsevier.com]
Enviado: quinta-feira, 5 de Maio de 2011 08:22
Para: Filipa Fernandes Pimenta
Assunto: Ms. No. MAT-D-11-00062R1

Ref.: Ms. No. MAT-D-11-00062R1
Perceived control, lifestyle, health, socio-demographic factors and menopause: impact over hot flashes and night sweats Maturitas

Dear MS Pimenta,

The revised manuscript you submitted for publication in MATURITAS has now been evaluated. After due consideration I am pleased to inform you that the manuscript has now been accepted for publication in Maturitas.

The abstract of your manuscript, and the full article, respectively, will appear in PubMed (MEDLINE) and in the MATURITAS Articles-in-Press section ScienceDirect within 1-4 weeks of receipt of your author corrections. Publication of your article in print in an issue will occur at a later date.

We would like to congratulate you on your successful submission and hope that you will continue considering publishing your work in MATURITAS.

With kind regards,

Virginia O'Brien
Journal Manager
Maturitas

Comments from the Editors and Reviewers:

Reviewer #1: The authors have addressed my previous questions and comments and the paper is now suitable for publication - I would still recommend editing for language though. The authors have made detailed changes and have been responsive to feedback.