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Job Demands and presenteeism: a moderated-mediation analysis of menopausal symptoms and selection strategy among social service women employees

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Work and health-related factors of presenteeism: a mediation analysis on the role of menopausal symptoms between job demands and presenteeism among a sample of social service women employee

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3 **Work and health-related factors of presenteeism: a mediation analysis on the role of**
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5 **menopausal symptoms between job demands and presenteeism among a sample of social**
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7 **service women employees**
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10 **Abstract**
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12 **Purpose:** Building on prior studies on the role of health-related and job-related issues in affecting
13 presenteeism, the present study tested a mediation model of the relationship between job demands
14 and presenteeism by exploring the mediation effect of menopausal symptoms.
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18 **Design:** Data were collected through a self-report questionnaire involving social service menopausal
19 employees (N. = 204) from a public municipal organization. The survey was cross-sectional and non-
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25 randomized.

26 **Findings:** Results revealed that job demands, namely emotional, cognitive and physical demands
27 were significantly and positively associated to presenteeism. Furthermore, mediation analysis
28 evidenced that physical job demands were also associated to higher levels of menopausal physical
29 symptoms bothersomeness, which in turn serves as a condition for increase the act of presenteeism.
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35 **Originality:** The findings of this study widen the perspective on presenteeism research by evidencing
36 the role of an overlooked health-related factor in relation to the act of presenteeism, that is the
37 menopausal transition. Insights for the development of targeted preventive measures of the act of
38 presenteeism and menopausal symptom management in the workplace may also be derived from
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45 these results.
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49 **Keywords:** Menopausal symptoms, presenteeism, job demands, mediation
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1. Theoretical implications and Development of the Hypothesis

Among the various conceptualizations developed around the study of presenteeism, scholars recognized the basic understanding of presenteeism as the “behavior of working in the state of ill-health” (Ruhle et al., 2020, p. 3). The phenomenon of presenteeism has therefore raised growing attention due to its impact on both health-related, well-being and organizational costs (e.g. Deery, et al., 2014; Demerouti et al., 2009; Frutiger et al., 2019). One of the main lines of research on presenteeism strives to identify correlates, its antecedents and consequences, where health-related events, along with contextual and person-based factors play central roles (Johns, 2010; Lohaus and Habermann, 2019; Whysall et al., 2018). The present study is part of this line of research, proposing an analysis of the correlates of presenteeism in a sample of social service women employees taking work and health-related factors into consideration. Specifically, in Western countries this sector is primarily a female-dominated job (Garrett and Bertotti, 2017) where, due to the lack of staff turnover and increasing retirement age, which has especially affected the public sector in European countries (Astvik and Melin, 2012) the workforce has been significantly increasing its average age over the last ten years. These aspects should be of further relevance to the study of presenteeism since, in light of previous evidence, the middle-aged or older female working population has showed greater propensity for being present at work despite having health-related problems (Eurofound, 2015; Ferreira and Martinez, 2012). In light of these peculiarities and since the study of presenteeism should encompass all kinds of health conditions (Ruhle et al., 2020), the present study will focus on a specific age and gender health-related factor, namely the menopausal symptoms.

Menopause is defined as the end of menstruation due to the loss of ovarian follicular activity. It typically occurs on average between the ages of 45 and 50 and can last for up ten years, representing a significant transition from both a biological and psycho-social perspective. Despite menopausal transition is usually a biological natural change (McKinlay, 1996; Ilankoon et al., 2021), women during this phase typically report vasomotor, psychosocial and physical symptoms, including hot flushes, night sweats, sleep and mood disturbances, fatigue, poor concentration and memory loss

(Mishra and Kuh, 2003) that literature showed to be significantly affecting wellbeing and quality of life (Dennerstein et al., 2002; El Hajj et al., 2020). Furthermore, the study of menopause is also relevant in the work domain because more women than before are working through the entire menopausal status (Jack et al., 2016). Although it should be noted that it is not the menopausal status *per se* or the frequency of menopausal symptoms that may result in difficulties or lower occupational wellbeing (Jack et al., 2016; Hardy et al., 2018), studies highlighted associations between the severity and bothersomeness of menopausal symptoms and lowered work ability (Geukes et al., 2016), job satisfaction (Jack et al., 2016), increased job burnout (Converso et al., 2019) or intention to leave the job (Hardy et al., 2018). Among other occupational outcomes, menopausal symptoms may also affect presenteeism. Indeed, previous studies showed how special health statuses and illnesses that are considered not serious enough to legitimate absence from work, or that are more difficult to disclose in the workplace, may result in presenteeism (d'Errico et al., 2013; Tsuboi et al. 2018). Among these, menopausal status has been evidenced to represent a health-related condition which is difficult to disclose at the workplace and often kept hidden (Griffiths et al., 2013; Sergeant and Rizq, 2017). Even if this aspect may be attenuated in highly feminized jobs, it is well known how, especially in western countries, the menopausal condition tends to be concealed by women since hormonal changes and related symptoms are viewed as embarrassing and socially inappropriate (Kittel et al., 1998; Hardy et al., 2019).

However, to date there is very little and inconsistent knowledge on this topic. Studies have indeed primarily analyzed the relationship between menopausal symptoms and productivity loss associated to presenteeism by evidencing that higher severity of symptomatic experience is associated to higher levels of productivity loss, or impaired work performance (Whiteley et al., 2013a; Whiteley et al., 2013b). On the other side, some other studies reported how menopausal symptoms did not significantly affect job performance, but it rather seems that some women in the menopausal transition work harder in order to prevent their performance from being affected (Griffiths et al., 2013; Hardy et al., 2018). In light of these inconsistencies, in the present study we choose not to

measure presenteeism as the reason for health productivity loss, that is the main line of research among US scholars (Schultz and Edington, 2007) but rather the behaviour of presenteeism and precisely, following the definition provided by Aronsson and Gustafsson (2005), as “the phenomenon that people, despite complaints and ill-health that should prompt them to rest and take sick leave, go to work in any case” (p. 958). We believe that this approach to the study of presenteeism, that on the contrary has much more proliferated among European scholars, is suitable for understanding if, even in presence of higher level of symptoms’ bothersomeness, women still choose to work, and thus understanding when menopausal women act presenteeism in a dysfunctional manner. Furthermore, among the extant literature actually emerges a variegated picture regarding the impact of each specific symptom on work outcomes (Jack et al., 2016). For example, concerning presenteeism, Whiteley and colleagues (2013a; 2013b) evidenced how hot flushes, among vasomotor symptoms, and joint stiffness, among physical symptoms, significantly impacted on productivity loss due to presenteeism. Moreover, from qualitative interviews Im and Meleis (2001) found that menopausal women may work harder than before in order to deal with psychological symptoms, as are depressive thoughts. According to this empirical evidence, the present study will consider both vasomotor, physical and psychosocial symptoms in relation to the act of presenteeism. However, in order to provide less contradictory and fragmented evidence, it has been suggested to overcome the analysis of each specific symptoms (Jack et al., 2016). Rather the different facets of menopausal symptoms, namely vasomotor, psychosocial and physical, should be considered each as a constellation of symptoms (Jack et al., 2016). Based on these assumptions we hypothesize that:

H1a: Menopausal vasomotor symptoms are positively related to presenteeism. H1b: Menopausal psychosocial symptoms are positively related to presenteeism. H1c: Menopausal physical symptoms are positively related to presenteeism.

Besides health-related conditions, it has also been evidenced the role played by the psychosocial characteristics of the work environment in the emergence of presenteeism. For example, among other professions, those that are employed in the human service sector seem the most

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3 vulnerable to presenteeism due to the nature of their work and the high commitment of caring for
4 users and patients (d'Errico et al., 2015; Ruhle et al., 2020). Several studies showed the role of factors
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6 pertaining to the content of the work, such as work overload (quantitative demands), emotional,
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8 patient, or physical demands (Deery, et al. 2014; Demerouti et al., 2009; d'Errico et al., 2015; Elstad
9
10 and VabØ, 2008; Gillet et al., 2019). Although the evidence providing the higher incidence of
11
12 presenteeism in the care and help sectors (Ferreira and Martinez, 2012), social services employees
13
14 have only rarely been taken into account (Ravalier, 2019). However, social service workers stand out
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16 as a particularly exposed occupational group, reporting high workload and difficult demands
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18 (Aronsson et al., 2019; Tham and Meagher, 2008) and similarly to other human service occupations
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20 they must deal with physical, cognitive and social or emotional demands (Astvik and Melin; 2012;
21
22 Garrett and Bertotti, 2017). Emotional demands can be defined as those aspects of the job that require
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24 sustained emotional effort because of interactional contact with clients or users (de Jonge and
25
26 Dormann, 2003); psychological or cognitive demands refer to “how hard a worker works” due to
27
28 organization constraints to task completion, time pressure and conflicting demands (Karasek, et al.,
29
30 1998); physical demands concern the physical load in doing one's work (Karasek et al., 1998). Even
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32 if social service employees are more involved in cognitive and emotional demands, factors related to
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34 both static and dynamic physical loads may be relevant as well (Federation of European Social
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36 Employers, 2019).

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45 As previously proposed (Demerouti et al., 2009; Deery et al., 2014; McGregor et al., 2016),
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47 the link between job demands and presenteeism may be explained in light of the Job Demands-
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49 Resources model (JD-R – Demerouti et al., 2001). This model states that job demands are those
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51 features of a job that necessitate protracted physical and psychological effort to be met and may
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53 therefore evoke a health impairment process. Specifically, although job demands are not necessarily
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55 negative, the strain associated with managing an increase in demands may drain the employee's
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57 energy, leaving them fatigued or resulting in elevated stress and medical problems (Bakker et al.,
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59 2014). Following these assumptions, job demands have been directly linked to presenteeism (e.g.
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3 Demerouti et al., 2009; Deery et al., 2014; Panari and Simbula, 2016). In this vein, it should be noted
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5 that facing higher job requests may result in employees working harder and attending work when ill
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7 to meet those workload requests. Therefore, for the purpose of the present study, the relationship
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9 between emotional, cognitive and physical demands experienced by social service women employees
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11 will be tested, hypothesizing as follow:
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14 *HP2a: Emotional job demands are positively related to presenteeism; HP2b: Cognitive job*
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16 *demands are positively related to presenteeism; HP2c: Physical job demands are positively related*
17
18 *to presenteeism.*
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21 In addition, it has also been showed that job demands might trigger presenteeism via
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23 underlying mechanism capable of mediating the relationship with presentism. Specifically, these
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25 findings highlighted how the process of energy depletion, evoked by the presence of overtaxing job
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27 demands, have the potential to increase burnout or by contributing to mental and general physical
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29 health impairments, that in turn mediates the connection between workplace features and
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31 presenteeism (Vinod Nair et al., 2020; McGregor et al., 2014; McGregor et al., 2016; Miraglia and
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33 Johns, 2016; Ruhle et al., 2020; Pohling et al., 2016). Therefore, it should be argued that presenteeism
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35 may originate from a decline in psycho-physical health, following a negative strain path caused by
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37 job demands and constraints in the psychosocial work environment. This path may be further
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39 explained in light of the *substitution hypothesis* (Aronsson et al., 2011; Caverley et al., 2007) which
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41 states that “under circumstances that preclude staying home whilst being ill, employees will substitute
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43 absenteeism with presenteeism behavior” (Pohling et al., 2016, p. 9).
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49 According to these assumptions also menopausal symptoms may assume the mediational role
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51 linking job demands to the act of presenteeism. On the one hand, the extra effort required to face job
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53 demands is likely to negatively affect menopausal symptoms. To support this claim, it has been found
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55 that unfavorable working conditions are associated to the perception of higher menopausal symptoms
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57 severity. For example, work overload, elevated job responsibility, a poor physical environment and
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59 static postures, along with poor social support, were the main factors associated to aggravated
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3 academics and teachers' menopausal symptoms (Hammam et al., 2014; Bariola et al., 2017). Among
4
5 a sample of nurses Matsuzaki and colleagues (2014) found on the other side a significant association
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7 between interpersonal demands and higher scores on psychological menopausal symptoms. Based on
8
9 these results, we thus may extend the analysis also to social service women employees, by
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11 hypothesizing that a positive association will emerge between both emotional, cognitive and physical
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13 demands with both vasomotor, psychosocial and physical menopausal symptoms.
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17 In light of these assumptions, we can thus hypothesize that:

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19 *HP3*: Job demands (emotional, cognitive and physical demands) are positively related to
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21 increased severity of menopausal symptoms. Specifically:

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24 *HP3a*: Emotional job demands are positively related to increase vasomotor (1), psychosocial
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26 (2) and physical (3) menopausal symptoms;

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29 *HP3b*: Cognitive job demands are positively related to vasomotor (1), psychosocial (2) and
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31 physical (3) menopausal symptoms;

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34 *HP3c*: Physical job demands are positively related to vasomotor (1), psychosocial (2) and
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36 physical (3) menopausal symptoms.

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38 Based on the J D-R model, it can finally hypothesize that the health impairment process
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40 induced by higher job demands through a worsening of menopausal symptoms may serve as a
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42 condition for increase the act of presenteeism.
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45 *HP4*: Menopausal symptoms mediate the relationship between job demands and presenteeism.
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47 Specifically:

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50 *HP4a*: Emotional job demands are indirectly related to presenteeism by the mediation effect
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52 of vasomotor (1), psychosocial (2) and physical (3) menopausal symptoms;

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55 *HP4b*: Cognitive job demands are indirectly related to presenteeism by the mediation effect
56
57 of vasomotor (1), psychosocial (2) and physical (3) menopausal symptoms;

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60 *HP4c*: Physical job demands are indirectly related to presenteeism by the mediation effect of
vasomotor (1), psychosocial (2) and physical (3) menopausal symptoms.

2. Method

2.1 Participants and procedure

After an agreement with the Department of Psychology of the University of Turin, a research project aimed at assessing work life quality was conducted within a social service department of a public municipal organization in the north of Italy. An online questionnaire was sent to the whole work population of the social service department in December 2017. The social service department is in charges of providing services to vulnerable users, bearers of suffering and multi-problematicity, such as disabled, elderly or child welfare, concerning home and family care, residential family assignments, day and residential fostering. Therefore, a cross-sectional design was used to collect data on psychosocial working conditions relating to both cognitive, emotional and physical demands on which social service employees may be exposed, as well as to occupational and wellbeing outcomes.

Participants volunteered for the research without receiving any reward, signed an informed consent, and agreed to anonymously complete the questionnaire. The research conforms to the Declaration of Helsinki (and following revision) and all ethical guidelines were followed as required for conducting human research, including adherence to legal requirements of the studied country.

As the research project included the entire working population employed at the social service department, the initial sample comprised 460 employees (83,3% females and 16,7% males) that filled out the questionnaire. For the purposes of the present study, we retain valid the responses given by a sub-sample of 204 women that declared to be in menopause by answering to the question “Are you in menopause? (Yes/No). While responding, please consider that menopause is diagnosed when a woman has gone without a menstrual period for 12 consecutive months”.

The subsample of menopausal women then completed a dedicated part of the questionnaire set to evaluate the experienced severity of menopausal symptoms. The final sample had a mean age

of 55.71 (SD = 3,64; min = 45, max = 65), and 197 (96.1%) had a permanent contract. On average the duration of the menopausal status was 6.07 years (SD = 4.64), ranging from 1 year to 22 years.

2.2 Measures

Presenteeism. According to the extant literature on the act of presenteeism that mainly developed and used single-item measures (e.g Deery et al. 2014; Johns, 2011; Ravalier, 2019; Ruhle et al., 2020), presenteeism was assessed with the single item “How often during the past 6 months have you gone to work despite feeling that you really should have taken sick leave because of your state of health?”. This is a measure of the act of presenteeism derived from Aronsson and Gustafsson, (2005). The state of art of presenteeism evidence a wide range of response formats (Ruhle et al., 2020). Based on previous and reliable findings adopting single items to measure the act of presenteeism (Lu et al., 2013; Ravalier, 2019), a 4-point Likert scale ranging from 0 (Never) to 3 (Always) has been used. Moreover, in the present study presenteeism has been measured referring to a recall period of 6 months. Among the single-item measures aimed at evaluating the act of presenteeism, it is possible to find different recall periods (from 12 months to 1 week). According to Ruhle and colleagues (2020) the appropriate time frame for measuring presenteeism is still unclear and may depend on research interest. For the purpose of the present study, we choose a recall time period of six months (Martinez et al., 2018) in order to limit biases linked to longer recall periods (e.g 12 months) that may be affected by poor memory or difficulties in recall the behavior, as well as to shorter recall (less than 6 months) period that may be affected by seasonal fluctuation (Ruhle et al. 2020).

Menopausal symptoms were measured with the Menopause-Specific Quality of Life (MENQOL) (Lewis et al., 2005) which is a self-reported measure aimed at evaluating menopausal symptoms where each item was rated on a scale ranging from 0 (not experiencing a symptom) to 6 (symptom extremely bothersome). For the aims of the present study, we measured vasomotor (3 items, e.g. “hot flushes”, “night sweats”), psychosocial (7 items, e.g. “feeling anxious or nervous”),

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3 and physical (16 items, e.g. “muscle and joint pain”; “decrease physical strength”) symptoms which
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5 were rated referring to the past 6 months.
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8 *Job demands* were measured using adaptation of subscales from the Job Content
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10 Questionnaire (Karasek, 1985; Baldasseroni et al., 2001; Cho et al., 2005): emotional (3 items, e.g.
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12 “My work is emotionally demanding”), cognitive (3 items, e.g. “My job requires me working hard”)
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14 and physical demands (4 items, e.g. “My job requires quick and constant physical activity”) rated on
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16 a Lickert scale ranging from 0 (Never) to 3 (Always).
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19 Menqol (Lewis et al., 2005) was translated into Italian following the back-translation
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21 procedure (Brislin, 1970).
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24 *Control variables:* in our analyses we controlled for the number of pathologies reported at the
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26 time of filling in the questionnaire verified by medical diagnosis using the subscale of the Work
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28 Ability Index (Tuomi et al., 1998).
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30 31 32 33 *2.3 Data Analysis*

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35 The data were analyzed using the IBM Statistical Package for the Social Sciences (SPSS 25).
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37 The hypothesized model was tested using the macro “Process” for SPSS (Preacher and Heyes, 2004).
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39 As recommended by Preacher and Heyes (2004) we ran the model three separated times using model
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41 4 for simple mediation analysis in PROCESS macro (Preacher and Heyes, 2004). This allows to
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43 generate the indirect effect calculation for each of the three independent variables (emotional,
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45 cognitive and physical demands) testing for the mediation of each single menopausal symptoms
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47 (vasomotor, psychosocial and physical symptoms). Using this approach proposed by Preacher and
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49 Heyes (2004), no requirements for a direct effect between the independent and the dependent
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51 variables have to be met, as the focus of the mediation test is on the indirect effect only (Deery et al.,
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53 2014; Pohling et al., 2016). The bootstrap sampling procedure for making inferences about the
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55 existence of indirect or mediation effect was used to generate a 95% confidence interval (CI). The
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57 bootstrap confidence intervals were constructed using 5,000 samples.
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No serious violations of the normal distribution were found (all the skewness and kurtosis values of the variables considered were within +/- 1). No violations of homoscedasticity assumption were met after testing for the Breush-Pagan Test.

3. Results

3.1 Descriptive statistics

Regarding diagnosed diseases, 26.3% reported no diagnoses, 1 diagnosis were reported by 22.9%, 2 diagnoses were reported by 20%, 3 diagnoses by 12.2%, 4 diagnoses by 10.2%, 5 diagnosis by 5.4% and 6 and 7 diagnoses reported by 1.5% respectively.

Table I shows the results of descriptive, correlations and reliability statistics. Overall, the correlations were in the expected direction. Presenteeism was positively and significantly associated to all the job demands and to psychosocial and physical menopausal symptoms. Vasomotor symptoms were not related to presenteeism. Physical job demands were significantly and positively related to both vasomotor, psychosocial and physical menopausal symptoms, whereas neither emotional nor cognitive demands were significantly associated to menopausal symptoms. Moreover, the number of diagnosis for medical diseases was positively associated to menopausal symptoms and presenteeism, and with cognitive and physical job demands, but not with emotional demands.

Chronbach's alphas were satisfactory for most of the variables. However, emotional and cognitive demands were below the .70 cutoff scores (Nunnally and Bernstein, 1994). This result is in line with previous studies that showed that psychological demands scale of the JCQ (Karasek, 1985) tend to be borderline and presenting low satisfactory levels of internal consistency (Choi et al., 2012; Vilas-Boas and Cerqueira, 2017).

[TABLE I ABOUT HERE]

3.2 Results of hypothesis tests

Results of direct and indirect effect of emotional, cognitive and physical demands on presenteeism through psychosocial, physical and vasomotor symptoms are provided in table II, III and IV respectively. As can be seen, concerning HP1, only physical menopausal symptoms resulted to be significantly associated to presenteeism, whereas neither vasomotor nor psychosocial symptoms were significantly and positively related to presenteeism. Therefore, only H1c was confirmed.

Regarding HP2a (table II), emotional demands resulted to be significantly associated to presenteeism ($\beta = .10$; $p < .05$ for the total effect and $\beta = .26$; $p < .05$ for the direct effect). Regarding HP3a (table II), results evidenced that emotional demands were not significantly associated to any of the menopausal symptoms ($\beta_{\text{vasomotor}} = .03$; $p > .05$; ($\beta_{\text{psychosocial}} = .06$; $p > .05$; ($\beta_{\text{physical}} = .07$; $p > .05$). Regarding HP4a, bootstrap indirect effect revealed that menopausal symptoms did not significantly mediate the relationship between emotional demands and presenteeism as indicated by the lower and upper limits of the confidence intervals, which contained zero.

Regarding HP2b (table III), cognitive demands resulted to be significantly associated to presenteeism ($\beta = .19$; $p < .01$ for the total effect and $\beta = .18$; $p < .01$ for the direct effect). Regarding Hypothesis 3b, results evidenced that cognitive demands were not significantly associated to any of the menopausal symptoms ($\beta_{\text{vasomotor}} = -.01$; $p > .05$; ($\beta_{\text{psychosocial}} = .03$; $p > .05$; ($\beta_{\text{physical}} = .04$; $p > .05$). Regarding HP4b, bootstrap indirect effect revealed that menopausal symptoms did not significantly mediate the relationship between cognitive demands and presenteeism as indicated by the lower and upper limits of the confidence intervals, which contained zero.

Regarding HP2c (table IV), physical demands resulted to be significantly associated to presenteeism only in the total effect model ($\beta = .13$; $p < .01$ for the total effect and $\beta = .07$; $p > .05$ for the direct effect). This means that, after inserting the mediators, the relationship between physical demands and presenteeism stop being significant. Regarding Hypothesis 3c, results evidenced that physical demands were significantly associated to vasomotor ($\beta = .16$, $p < .05$), psychosocial ($\beta = .22$,

p<.01) and physical ($\beta = .29$, $p<.05$) menopausal symptoms. Therefore, both H3c1, H3c2 and H3c3 were confirmed. Finally Regarding HP4c, physical menopausal symptoms functioned as mediators for transmitting the indirect effect of physical demands. Bootstrap procedure showed that the indirect effect on presenteeism was significant at 95% of the level of significance, as indicated by the lower and upper limits of the confidence intervals, which did not contain zero [LL .01; UL .12] and HP4c3 was confirmed. Moreover, since no significant direct effect emerged, a total mediated model has been observed.

Finally, among the control variables, the increasing amount of diagnosis for medical diseases was significantly associated to increase both vasomotor, psychosocial and physical menopausal symptoms and presenteeism. The final mediation model of the relationship between physical job demands and presenteeism through menopausal symptoms is depicted in figure I.

Because our data were cross-sectional and no temporal association between the variables can be detected, we also calculated inverse mediation models (Callea et al., 2019; Winer et al., 2016) to prove additional support to hypothesis about the mediating role of menopausal symptoms in the relationship between job demands and presenteeism. Specifically, we tested a model where presenteeism mediating between physical job demands and physical menopausal symptoms, and physical demands mediating between physical menopausal symptoms and presenteeism. None of the indirect effects proved to be significant: CI for the indirect effect of physical job demands through presenteeism on physical menopausal symptoms = [LL -.003; UL .02], and CI for the indirect effect of physical menopausal symptoms through physical demands on presenteeism [LL -.02; .07].

[TABLE II ABOUT HERE]

[TABLE III ABOUT HERE]

[TABLE IV ABOUT HERE]

[FIGURE I ABOUT HERE]

4. Discussion

The present study examined the relationship between job demands, menopausal symptoms and the act of presenteeism in a sample of social service women employees. In particular it was hypothesized that, following the J D-R model assumptions (Demerouti et al., 2001) job demands may affect presenteeism via the mediating role of menopausal symptoms.

Our findings extend previous research in several ways. Firstly, although extant studies highlighted the relationship between job demands and presenteeism among several human service occupations (Deery et al., 2014; Demerouti et al., 2009; d'Errico et al., 2015; Gillet et al., 2019; Panari and Simbula, 2016), this is the one of first studies that also expands this research question to social service employees, analyzing the different role demands of this occupation. According to our hypothesis both emotional, cognitive and physical job demands were positively and significantly associated to presenteeism. On the one hand these findings are in line with the results demonstrated in other human service work, such as nursing, where emotional dissonance showed a direct relationship with presenteeism (Gillet et al., 2019). Therefore, this might reflect the nature of social service work. The interpersonal relationship with vulnerable people is indeed one of the more demanding aspects of their job (Astvik and Melin, 2012; Coffey et al., 2004) which, according to the J D-R model (Demerouti et al., 2001), may imply an extra effort that favors the act of presenteeism. Moreover, they also corroborate previous findings evidencing how heavy workloads and physical demanding aspect of a job may also represent relevant factors in affecting presenteeism (e.g. Deery et al., 2014; Vinod Nair et al., 2020; Miraglia and Johns, 2016).

Secondly, we expanded extant research assuming that menopausal symptoms act as a mediator between job demands and presenteeism. To test this hypothesis, we firstly analyzed associations between menopausal symptoms and presenteeism and evidencing that the physical aspect was the most relevant. Indeed, testing for hypothesis 2, our results showed that only the increased severity of physical menopausal symptoms, which refers to changes in physical endurance, pain and decreased energy, was positively associated with presenteeism. On the other side, neither vasomotor nor

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3 psychosocial symptoms were significantly associated with presenteeism. To date, scarce research has
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5 been developed on the association between menopause and the act of presenteeism, and, to the best
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7 of our knowledge only a paucity of studies (Whiteley et al. 2013a; 2013b) provided evidence
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9 regarding the impact exerted by hot flushes and joint stiffness on productivity loss due to
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11 presenteeism. The partly inconsistency between our findings and the extant evidence may be due to
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13 the different measurement perspective, since the present study measured the behaviour of
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15 presenteeism and not the productivity loss associated to it. Furthermore, we did not analyze the
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17 relationship between each single menopausal symptom, but rather the constellation of symptoms that
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19 define vasomotor, psychosocial and physical symptoms.
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24 Thirdly, it has been tested for the relationship between job demands and menopausal
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26 symptoms evidencing that only physical demands were significantly associated to menopausal
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28 symptoms. This is in line with previous studies (Bariola et al., 2017; Hammam et al., 2017; Jack et
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30 al., 2016) that evidenced how especially a poor physical working environment may aggravate
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32 menopausal symptoms. However, our study provides a further contribution by focusing on the
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34 physical load experienced by menopausal women as a demanding aspect of the work that reflects the
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36 strain process leading to a deterioration of menopausal health. Regarding the role of the physical load
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38 in affecting menopausal symptoms, to the best of our knowledge only a paucity of qualitative studies
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40 have been conducted among samples of women in manual and low paid jobs (Im and Meleis, 2001;
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42 Giron et al., 2012). Therefore, our results should be of value since highlight how the physical load
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44 may be relevant in affecting menopausal symptoms even among those workers, as social service
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46 employees, that usually experience lower levels of physical demands, compared to other sources of
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48 job demands (Federation of European Social Employers, 2019).
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54 Finally, the test of mediational model has shown that a significant indirect path emerged
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56 between physical job demands and presenteeism, and this relationship was totally mediated by
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58 physical menopausal symptoms. According to the theoretical assumptions of the J D-R model
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60 (Demerouti et al., 2001), this result provides evidence for the hypothesized path between job demands

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3 and presenteeism and shows that this link can be explained if we consider the mediating role of a
4 health impairment process. Specifically, we can argue that for menopausal women being exposed
5 even to low levels of physical demands, the normal load reactions implied in effort expenditure can
6 gradually turn into more serious chronic load reactions, worsening the physical symptoms of
7 menopause which subsequent leads to presenteeism.
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14 Moreover, this result is in line with past evidence on the mediating role of mental and general
15 health complaints between work strain and sickness presenteeism (Miraglia and Johns, 2016; Pohling,
16 2016), further improving the extant knowledge focusing on the role of menopausal symptoms. As
17 evidenced by Pohling et al. (2016), the *substitution hypothesis* (Aronsson et al., 2011; Caverley et al.,
18 2007) may give a further explanation of this path since it implies that the nature and the severity of
19 health-events that lead to sickness absenteeism and presenteeism are similar. Yet, results regarding
20 the association between menopausal symptoms and sick leave are inconsistent. Indeed, even if studies
21 indirectly supposed that symptomatic menopausal women with impaired levels of work ability may
22 be at higher risk for sickness absenteeism (Geukes et al., 2016), Hardy and colleagues (2018) and
23 Hickey and colleagues (2017) challenged this assumption, hypothesizing that, according to Griffith
24 and colleagues (2013), menopausal women may work harder to respond to work burden. Rather,
25 absenteeism is likely to be the consequence of sickness presenteeism (Deery et al., 2014; Demerouti
26 et al., 2009). In light of these propositions, we can therefore support the present findings, where social
27 service female employees experiencing higher physical menopausal symptoms may feel like they
28 have to go to work even though they do not feel well enough to sustain the physical burden.
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51 **5. Limitations and future directions**

52 Limitations of the present study can be referred, first, on the fact that it was solely based on
53 self-reported data. This issue may indeed affect common method variance (Podsakoff et al., 2003). It
54 would be highly informative for future studies to expand on the current results using more objective
55 measures, especially regarding the symptomatology of the menopausal transition.
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3 Secondly, the cross-sectional nature of the design does not allow to make temporal causal
4 inferences for relationship among the variables (Winer et al. 2016). Even if our analysis evidenced
5 that no inverse causality was present among the hypothesized paths, a reciprocal relationship could
6 exist between presenteeism and menopausal symptoms, as evidenced from past research on the
7 deleterious effect of presenteeism on subsequent well-being status (Demerouti et al., 2009).
8 Therefore, future research should enhance longitudinal studies in order to more rigorously assess
9 causal relationships of the association between job demands, menopausal symptoms and
10 presenteeism.
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21 Thirdly, this study relied on a small sample of Italian social service employees in the public
22 sector. Therefore, future studies may expand this analysis to other human service occupations that,
23 due to the high prevalence of women in the menopausal stage, may include important conditions for
24 the study of menopause at work.
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30 Finally, future studies may also consider developing and validate multidimensional
31 presenteeism measurement (e.g. Hägerbäumer, 2017) in order to overcome biases related to single
32 item measurement methods (see Ruhle et al., 2020).
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40 **6. Conclusions**

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42 Despite these limitations, the findings of this study may offer further knowledge about the
43 aspects that can contribute to the onset of presenteeism. This study thus follows the call for a more
44 systematic research on the association between presenteeism, occupation and gender (Ruhle et al.,
45 2020) by also contributing to the study of menopause in the workplace. Suggestions for health
46 promotion programs to tackle with dysfunctional presenteeism behaviors may therefore derived from
47 the present findings. From a practical perspective, implications can be found for the improvement of
48 the middle-aged and older female working population in social service jobs, which, along with other
49 human sectors, show greater risk of presenteeism (Eurofound, 2015; Martinez and Ferreira, 2012).
50 Because social service employees who attend work while ill may provide worsened care to service
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3 users under their charge (Ravalier, 2019), understanding the factors related to presenteeism
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5 constitutes the first step in promoting better occupational health and consequently the quality of the
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7 service provided.
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10 In this vein, the results of this study can favor higher attention to menopause at work and
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12 related aspects. In light of our findings, organizations should direct attention to the needs of
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14 menopausal women employees especially in order to lessen the physical burden, which resulted to be
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16 the main trigger for worsening the physical dimension of menopausal symptoms. Therefore, the
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18 implementation of techniques such as focus groups should be used to better understand what type of
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20 job design or ergonomic intervention may be applied specifically in the context of social service
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22 work. At the same time, occupational physicians should be involved in the development of a
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24 monitoring system to identify the needs of those women with more severe physical menopausal
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26 symptoms as well as to prevent negative physical load reactions. Furthermore, psycho-educational
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28 programs may also represent adequate intervention directed at improving women's ways of coping
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30 with both menopause symptoms (Rotem et al., 2006) and job demands in order to prevent
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32 presenteeism attitudes at the workplace. In addition to this type of intervention, which can be placed
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34 among secondary and tertiary prevention strategies, intervention aimed at changing organizational
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36 health cultures may also be applied. As evidenced by Cocker and colleagues (2012), managers and
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38 supervisors often have difficulty in certifying and describing people's chronic health problems and
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40 presenteeism behaviors, being unaware about the negative organizational repercussions. This aspect
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42 is of further relevance for the health problems associated with menopause, which are often the subject
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44 of taboo in the workplace (Hardy et al., 2019), preventing the real possibility of providing support
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46 and resources in their management. Therefore, strategies aimed at improving health literacy among
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48 managers and supervisors may increase awareness and solution exploration on how to deal with
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50 menopausal symptoms and by encouraging women to raise health concerns in order to prevent the
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52 act of presenteeism. In this vein, future studies should enhance, based on the dynamic, not exclusively
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54 negative, nature of presenteeism (Karanika-Murray and Biron, 2020; Whysall et al., 2018) the role of
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3 organizational resources that may prevent dysfunctional presenteeism behaviors and promoting more
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5 adaptive and restorative ones.
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8 Ultimately, the findings of the present study may help expand future research on psychosocial
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10 working conditions that can affect menopause-related health. For example, by further investigate the
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12 role played by physical load among both manual and non-manual jobs and using design research
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14 methods, such as diary studies. These might capture more accurate information on daily or weekly
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16 based experiences of menopausal symptoms and presenteeism behaviors.
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Figures legend:

Figure I. Model of observed relationships between physical job demands, menopausal symptoms and presenteeism controlling for diagnosed diseases.

Tables

Table I. Descriptive statistics and correlations among the study variables

	1	2	3	4	5	6	7	8
1. Emotional Demands	1	.48**	.21**	-.05	.04	.08	.23**	-.05
2. Cognitive Demands		1	.19**	-.02	.03	.032	.17*	.14*
3. Physical Demands			1	.18**	.23**	.32**	.15*	.14*
4. Vasomotor symptoms				1	.51**	.48**	.12	.31**
5. Psychosocial symptoms					1	.69**	.26**	.42**
6. Physical symptoms						1	.33**	.52**
7. Presenteeism							1	.41**
8. Diagnosed diseases								1
Means (SD)	7.4 (1.5)	5.9 (1.5)	3.16 (2.3)	5.99 (5.3)	15.29 (9.7)	39.14 (20.2)	1.51(.69)	
Cronbach α	.63	.68	.83	.91	.93	.92		

Note: Pearson correlation are significant at * $p < .05$; ** $p < .01$ (two tailed test)

Table II. Simple mediation results of direct and indirect effect of emotional demands on presenteeism through psychosocial, physical and vasomotor symptoms

	Vasomotor symptoms β (SE)	Psychosocial symptoms β (SE)	Physical symptoms β (SE)	Presenteeism β (SE)
Control variables				
Diagnosed diseases	.21(.21) *	.19(.42) **	.35(.78) **	.26 (.03) **
Independent variables				
Emotional demands	.03(.20)	.06(.39)	.07(.72)	c ¹ .25 (.01)** c .28 (.02)**
Vasomotor symptoms	-	-	-	-.06(.00)
Psychosocial symptoms	-	-	-	.09(.00)
Physical symptoms	-	-	-	.19(.00) *
R ²	.04	.03	.12	.22
Bootstrap indirect effect on presenteeism				
	β (SE)	LL 95% CI	UL 95% CI	
Vasomotor symptoms	-.00(.01)	-.02	.01	
Psychosocial symptoms	.01(.01)	-.01	.04	
Physical symptoms	.02(.02)	-.01	.06	

Note: LL = Lower limit; UL = Upper limit; CI = confidence interval; SE = Standard error; Standardized coefficients are reported. c¹ = Direct effect; c = Total effect; ** p<.01; *<.05

Table III. Simple mediation results of direct and indirect effect of cognitive demands on presenteeism through psychosocial, physical and vasomotor symptoms

	Vasomotor symptoms β (SE)	Psychosocial symptoms β (SE)	Physical symptoms β (SE)	Presenteeism β (SE)
Control variables				
Diagnosed diseases	.21(.21) *	.18(.43) **	.34(.78) **	.23 (.02) **
Independent variables				
Cognitive demands	-.01(.24)	.03(.48)	.04(.87)	c ¹ .18 (.02)** c .19 (.02)**
Vasomotor symptoms	-	-	-	-.07(.00)
Psychosocial symptoms	-	-	-	.10(.00)
Physical symptoms	-	-	-	.20(.00) *
R ²	.04	.03	.11	.19
Bootstrap indirect effect on presenteeism				
	β (SE)	LL 95% CI	UL 95% CI	
Vasomotor symptoms	.00(.00)	-.01	.01	
Psychosocial symptoms	.00(.00)	-.01	.02	
Physical symptoms	.00(.01)	-.02	.05	

Note: LL = Lower limit; UL = Upper limit; CI = confidence interval; SE = Standard error; Standardized coefficients are reported. c¹ = Direct effect; c = Total effect; ** p<.01; *<.05

Table IV. Simple mediation results of direct and indirect effect of physical demands on presenteeism through psychosocial, physical and vasomotor symptoms

	Vasomotor symptoms β (SE)	Psychosocial symptoms β (SE)	Physical symptoms β (SE)	Presenteeism β (SE)
Control variables				
Diagnosed diseases	.19(.21) *	.16(.42) *	.31(.75) **	.22 (.03) **
Independent variables				
Physical demands	.16(.13) *	.22(.25) **	.29(.45) **	c ¹ .07 (.01) c .13 (.01)*
Vasomotor symptoms	-	-	-	-.08(.00)
Psychosocial symptoms	-	-	-	.11(.00)
Physical symptoms	-	-	-	.19(.00) *
R ²	.07	.08	.20	.16
Bootstrap indirect effect on presenteeism				
	β (SE)	LL 95% CI	UL 95% CI	
Vasomotor symptoms	-.01(.01)	-.04	.01	
Psychosocial symptoms	.02(.02)	-.02	.06	
Physical symptoms	.06(.03)*	.01	.12	

Note: LL = Lower limit; UL = Upper limit; CI = confidence interval; SE = Standard error; Standardized coefficients are reported. c¹ = Direct effect; c = Total effect; ** p<.01; *<.05

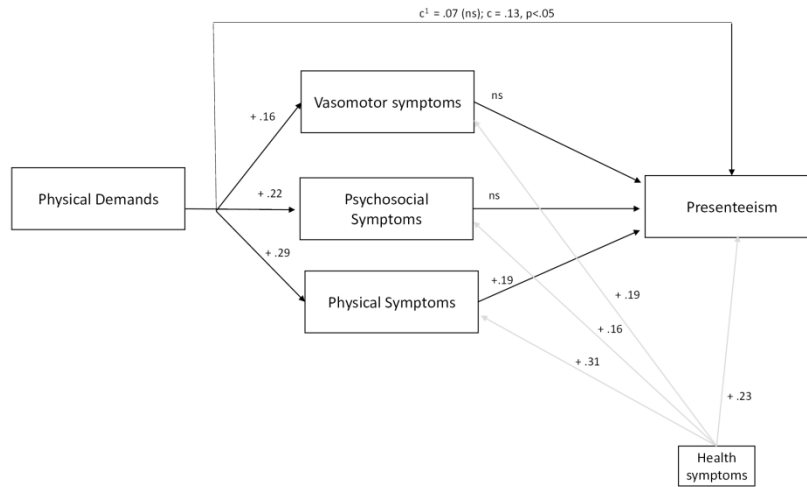


Figure 1. Model of observed relationships between physical job demands, menopausal symptoms and presenteeism controlling for diagnosed diseases.
 Note: c^1 = direct effect of physical demands on presenteeism c = total effect of physical demands on presenteeism

figure 1

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