Original Article

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Influence of overcommitment on the quality of life and on climacteric symptoms in nursing professionals

Influência do comprometimento excessivo na qualidade de vida e nos sintomas do climatério de profissionais da enfermagem

Influencia del compromiso excesivo sobre la calidad de la vida y en los síntomas del climaterio de profesionales de enfermería

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ABSTRACT

Objective: To describe the general characteristics of nursing professionals and assess the influence of overcommitment on perceived climacteric symptoms and on the quality of life of nursing professionals.

Method: A cross-sectional, analytical study of 152 nursing auxiliaries and assistants aged 40 years or older was conducted at 3 hospitals in the interior of São Paulo state. Sociodemographic data were collected and the Blatt-Kupperman Menopausal Index, Women´s Health Questionnaire, Medical Outcome Study 36-item Short Form Health Survey and Effort-Reward Imbalance were applied in 2017. A descriptive analysis was performed and network analysis was carried out.

Results: Participants had a mean age of 50.23 years (SD ±7.1). Group 1 comprising 61 (40.1%) women with overcommitment had poorer quality of life as well as more severe climacteric symptoms.

Conclusions: Presence of overcommitment seems to influence the negative perception of climacteric symptomatology and quality of life.

Keywords: Climacteric. Quality of life. Occupational stress.

RESUMO

Objetivo: Descrever as características gerais das profissionais de enfermagem e avaliar como o comprometimento excessivo pode influenciar na percepção dos sintomas do climatério e na qualidade de vida dessas mulheres.

Método: Trata-se de estudo transversal analítico, que avaliou 152 auxiliares e técnicas da enfermagem, na faixa etária de 40 anos ou mais, em 3 hospitais do interior do estado de São Paulo. Em 2017, foram coletados dados sociodemográficos e aplicados os instrumentos Índice Menopausal de Blatt-Kupperman, Questionário Saúde da Mulher, *Medical Outcome Study 36-item short form Health Survey* e *Effort Reward Imbalance.* Foi realizada análise descritiva e análise de rede.

Resultados: A idade média das participantes foi de 50,23 anos (DP = ±7,1). O grupo 1, composto por 61(40,1%) mulheres com comprometimento excessivo apresentou pior qualidade de vida e maior intensidade de sintomas climatéricos.

Conclusões: Presença de comprometimento excessivo parece influenciar em uma percepção negativa da sintomatologia do climatério e em uma pior qualidade de vida.

Palavras-chave: Climatério. Qualidade de vida. Estresse ocupacional.

RESUMEN

Objetivo: Describir las características generales de los profesionales de enfermería y evaluar cómo el compromiso excesivo puede influir en la percepción de los síntomas del climaterio y la calidad de vida de estas mujeres.

Métodos: Este es un estudio analítico de corte transversal que evaluó a 152 auxiliares de enfermería y técnicas en el grupo de edad de 40 años en 3 hospitales em el interior del estado de São Paulo. En 2017, se recopilaron los datos sociodemográficos y se aplicaron el Índice de Menopausia de Blatt-Kupperman, *Women´s Health Questionnaire,* El Cuestionario de Salud SF-36 y El Cuestionario *Effort-reward Imbalance.* Análisis descriptivo y análisis de red se realizó.

Resultados: La edad promedio de los participantes fue de 50,23 años (DP = ± 7,1). Grupo 1 compuesto por 61 (40.1%) mujeres con compromiso excesivo fue la peor calidad de vida y la mayor intensidad de síntomas climáticos.

Conclusiones: La presencia de compromiso excesivo parece influir en una percepción negativa de la sintomatología climática y una peor calidad de vida.

Palabras clave: Climaterio. Calidad de vida. Estrés laboral.

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INTRODUCTION

The World Health Organization (WHO) defines quality of life as an individual's perception of their position in life in the context of the culture and value systems in which they live and in relation to their goals, expectations, standards and concerns[1].

Women undergo a series of physical and social changes which intensify after the age of 40 years, owing to hormonal shifts inherent to senescence and environmental factors. Besides affecting quality of life, around 30-40% of women with menopausal symptoms experience a decline in performance at work[2–4].

Nursing professionals are exposed to job stressors like staffing shortages, overwork and lack of professional recognition which increase the risk of work stress[5–6]. This risk can be measured using the effort-reward imbalance model, which incorporates an extrinsic component centered on working conditions indicating effort (demands, obligations) and rewards (pay, support, career opportunities and job security). Beside that an intrinsic component which includes personal coping style, called overcommitment, which encompasses a lifestyle or cognitive pattern which renders employees unable to mentally disengage themselves from the job[7].

Overcommitment at work is associated with poor quality of life. People who are overcommitted to their work have more fatigue and insomnia than their more relaxed, less involved colleagues[7]. In nurses, overcommitted was associate with elevated malondialdehyde levels, which means that the balance between free radicals production and the ant oxidative defense activity is disrupted[8]. Findings are in line with pathogenic consequences of a pro-inflammatory activity caused by an intrinsic component of work stress[7–8].

Considering that both overcommitment and climacteric symptoms can influence on the quality of life of women but there are no studies that address these aspects together, the objective of this study was to describe the general characteristics of nursing professionals and asses the influence of overcommitment on perceived climacteric symptoms and on the quality of life of these professionals.

METHOD

We conducted a cross-sectional analytical study at three public university hospitals in Marília, state of São Paulo. Eligible workers were all registered female nursing auxiliaries and assistants aged 40 years or older currently working at the selected hospitals. The exclusion criteria were being away from work for vacation or sick leave during the data collection period. Using human resources data we identified 268 workers with eligible criteria.

The sample size was calculated based on a 35% prevalence of women in the climactic period among women aged 40 years or older, a type 1 error of 0.05 and 80% power. The formula Np(1-p)]/ [(d2/Z21-α/2*(N-1)+p*(1-p)] was used, where N represents the total of 268 female nursing auxiliaries and assistants aged ≥ 40 years and p is the expected frequency of climacteric women resulting in a sample of 152 women.

After the authorization of the supervisors of each team, a single person collect data by interviewed using sociodemographic questionnaire and self-administered paper questionnaires filled in by the worker at their workplace, during the work shift. The interviews took 30 to 40 minutes and happened between April and August, 2017. We had a convenience sample of 152 individuals. Sixteen workers were on sick leave at the time of data collection and three refused to take part.

Four instruments were applied: the modified Blatt-Kupperman Menopausal Index (BKMI), Women´s Health Questionnaire (WHQ), SF-36 and Effort-Reward Imbalance (ERI)[9–12]. WHQ, SF-36 and ERI were validated for Brazilian portuguese[10–12].

The BKMI assesses 11 climacteric symptoms: hot flushes, paresthesia, insomnia, nervousness, depression, fatigue, arthralgia/myalgia, headache, palpitations, tinnitus and vertigo. Each item is multiplied by a predetermined weight. The sum of all items allows classification of the symptomatology into mild (score ≤ 19), moderate (20-35) and severe (> 35 points)[9].

The WHQ assesses 36 signs and symptoms grouped under nine domains: sexual behavior, attractiveness, sleep problems, vasomotor symptoms, memory concentration, menstrual symptoms, somatic symptoms, depressed mood and anxiety/fears. Higher scores indicate worse dysfunction[10].

The SF-36 is a generic instrument for assessing quality of life composed by 36-item scale assessing eight domains: physical role functioning, physical functioning, bodily pain, general health perceptions, vitality, social role functioning, emotional role functioning and mental health. Each domain is scored on a 0-100 scale. The higher the score, the less the disability[11].

The ERI is a 23-item scale divided into three parts: effort, reward and overcommitment. Imbalance between effort and reward is define as when the sum of effort divided by sum of reward multiplied by the correction factor (c= 0.54) yields a score >1. Overcommitment is assessed by dividing the score into tertiles (low, moderate and high). The value of the third tertile is used as a cut-off point for the presence of overcommitment[12].

The statistical analysis was carried out using the SPSS statistics software, version 17.0 for Windows. A descriptive analysis of data was performed in which categorical variables were expressed as percentages, while continuous numerical variables were expressed as mean, median, and standard deviation. The normality of the data distribution was assessed using the Shapiro-Wilk test. Student´s *t*-test was used to compare continuous variables with a normal distribution, whereas the Mann-Whitney-U-Test was employed for outcomes with a non-normal distribution. Categorical variables were compared using the Chi-squared or Fisher exact tests when required. The significance level for all analyses was 0.05. The application of the ERI revealed two groups of employees: Group 1 comprising 61 (40.1%) women with overcommitment, and Group 2 comprising 91 (59.9%) women without overcommitment.

The JASP software, version 0.8.5.1, was employed for the network analysis as complementary method to help us identify the way in which symptoms interact. The results were shown using Gaussian graphical models opting for weighted networks. Networks were constructed using the LASSO (Least Absolute Shrinkage and Selection Operator) graphical model. The adaptive LASSO procedure was used for network shrinkage, selecting the most relevant connection for the data structure. This algorithm reduces lower correlations to a magnitude of zero, resulting in a less parsimonious network, using the Extended Bayesian Information Criterion (EBIC) function. Centrality measures were calculated for each node, determining the degree of importance of the node for the rest of the network. Lines and colors were standardized, where the color identified the type of association and thickness indicated the magnitude of the association. Green indicated a positive relationship among the variables, whereas red indicated a negative relationship. Three centrality measures were determined: betweenness, closeness and degree. The betweenness is defined as the number of shortest paths that flow through a node connected in the network. The closeness measure is calculated by the reciprocal of the average distance a node has to each of the others in the system, and the degree measure is derived from the sum of all weights of the paths connecting a node to the others. The non-parametric bootstrap with 1000 samples was used to measure the stability of the properties of nodes. Confidence intervals of 95% were used.

This research was approved by the Research Ethics Committee under of Faculdade de Medicina de Marília, under opinion No.3.207.272, CAAE 64640217.9.0000.5413. All participants signed the free and informed consent form, after being informed about the study and agreeing to take part.

RESULTS

Sociodemographic and work characteristics were given in Table 1.

With respect to gynecologic history, 33 (21.7%) women were hysterectomized and 3 (2.0%) reported having used or being in use of hormone therapy. A total of 105 women provided the date of last menstruation and, based on this information, 38 (25%) were classified as menopausal and 82 (54%) perimenopausal. On the assessment of climacteric symptoms, measured using BKMI, 110 (72.4%) women had mild symptoms and 42 (27.6%) moderate or severe symptoms. Headache was reported by 84 (55.3%), nervousness by 79 (52%), hot flushes by 70 (47.4%) and insomnia by 67 (45.4%) of the women. Median score on the WHQ was 66.5 points. The most affected domains were: somatic symptoms (median 15 points), followed by memory concentration, sleep problems and attractiveness (median 6 points each). The assessment of quality of life using the SF-36 showed that the domains bodily pain, general health perceptions and vitality were the most affected.

Table 1 – Sociodemographic and work characteristics of female nursing assistants and technicians from 3 hospitals in Marília assessed between April and August 2017

	N (%)
Mean Age in years (SD*)	50.23 (7.1)
Minimum-maximum	40 - 73
Marital status	
Single	26 (17.1%)
Married/stable union	88 (57.9%)
Separated	33 (21.7%)
Widowed	5 (3.3%)

Table 1 – Cont.

	N (%)
Number of children	
0	22 (14.5%)
1	27 (17.7%)
2	65 (42.8%)
>=3	38 (25.0%)
Work shift	
Day	83 (54.6%)
Night	69 (45.4%)
Hours worked per day	
6	30 (20.0)
8	16 (10.0%)
12	106 (70.0%)
Work area	
Urgent and Emergency	12 (7.9%)
Intensive Care Unit	30 (19.7%)
Wards	58 (38.2%)
Surgery Center	10 (6.6%)
Out-patient unit	4 (2.6%)
Support services	38 (25.0%)
Holding another job	
Yes	30 (19.7%)
No	122 (80.3%)
Total	152

Source: Research data, 2017.
*SD: standard deviation

On the ERI assessment, five employees (3.3%) exhibited effort-reward imbalance, while 61 (40.1%) showed work-related overcommitment. The application of the ERI revealed two groups of employees: Group 1 comprising 61 (40.1%) women with overcommitment and Group 2 comprising 91 (59.9%) women without overcommitment.

The groups with overcommitment (Group 1) and without overcommitment (Group 2) were compared for performance on the IMBK, WHQ and SF36.

Moderate or severe climacteric symptoms on the BKMI were associated with greater median overcommitment (p=0.009).

Comparison of the two groups on the WHQ showed a statistically significant association between overcommitment and worse quality of life associated with somatic symptoms (p<0.0001), depressed mood (p<0.0001), memory concentration (p<0.0001), anxiety/fears (p<0.0001), sexual behavior (p<0.0001), sleep problems (p<0.0001), attractiveness (p=0.001) and total score (p<0.0001).

Comparison of the two groups for the SF-36, the presence of overcommitment had a statistically significant association with poor quality of life on all domains (Table 2).

Network analysis was performed to identify the relationships of symptoms or conditions identified by the assessment scales with the presence or absence or overcommitment. The sample was insufficient to produce a single network encompassing all the scales. Three networks proved stable – the network of the 8 domains of the SF36 (Figure 1), the network of 8 items corresponding to the domains bodily pain, vitality and social role functioning of the SF36 (Figure 2), and the network of 4 symptoms of the BKMI (Figure 3) in Groups 1 and 2 (with and without overcommitment, respectively).

In Group 1, bodily pain and general health perceptions were the domains which most influenced the others (greater closeness), while vitality had the highest (as single domain) impact on total SF36 score (greater degree and betweenness). In Group 2, vitality was the most important domain (greater degree). Bodily pain had the most influencing power and number of connections (greater closeness and betweenness) (Figure 1).

In the network of questions on the domains bodily pain, social role functioning and vitality, each question is represented by a node. We found strongest association existed between questions of the same domain in the two groups, SF9A (pep - vigor, strength and motivation) and SF9E (energy), which corresponds to the questions from the vitality domain, and between SF7 (bodily pain) and SF8 (pain interference with work), which correspond to the questions from the bodily pain domain (Figure 2).

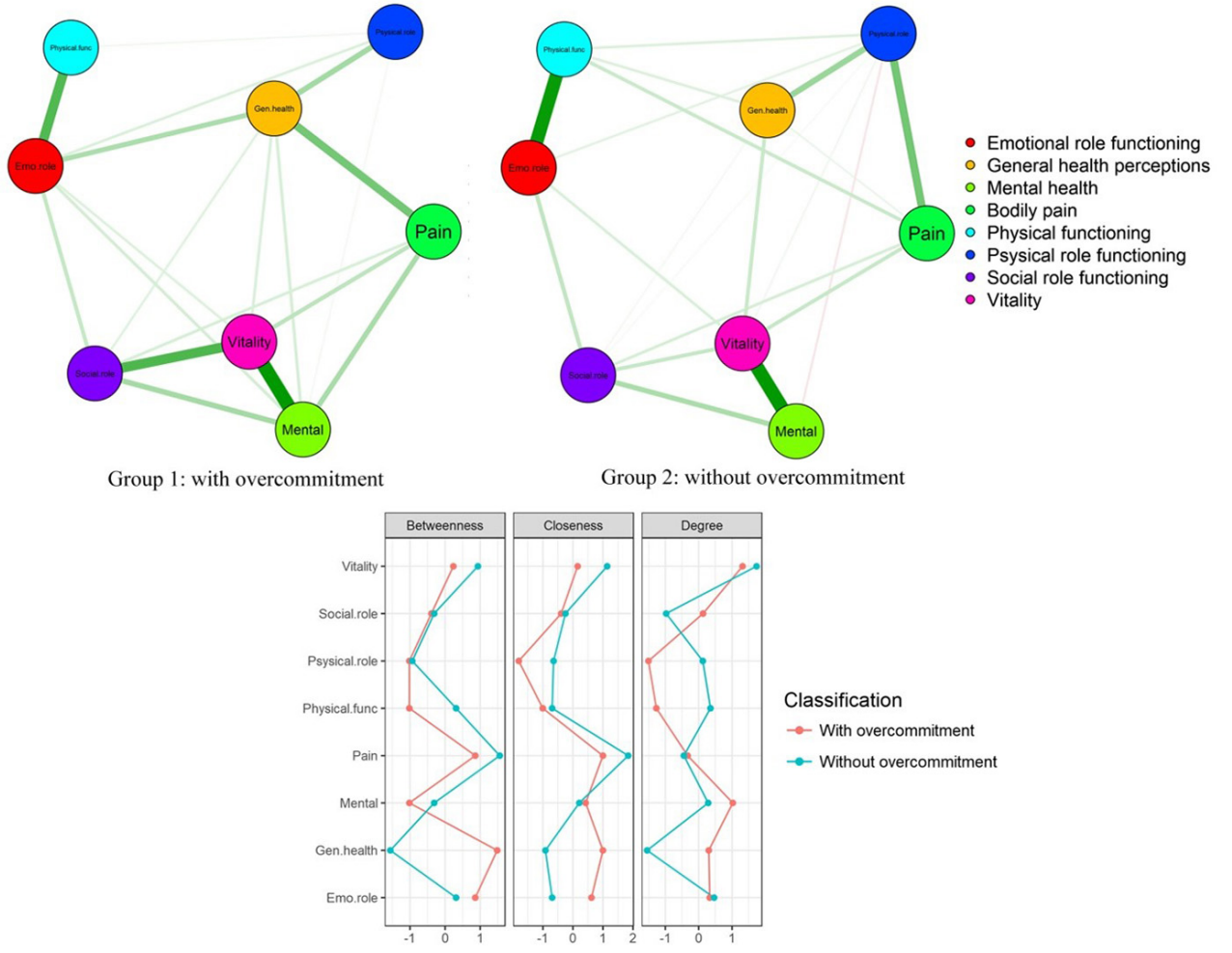

Figure 1– Network analysis of SF36 in the two groups of professionals with and without overcommitment.

Source: The Authors, 2017

Legend: The size of the absolute polychoric partial correlation between two nodes is represented using the color and thickness of an edge. Green indicated a positive relationship among the variables, whereas red indicated a negative relationship Node colors corresponds to the eight domains according to legend.

Table 2 – Comparative analysis of values of domains assessed by SF-36* and the presence or absent of overcommitment assessed by ERI***

Domain	Questions**	Overcommitment						P value****
		Presence			Absent			
		Median	25th Percentile	75th Percentile	Median	25th Percentile	75th Percentile	
Physical role functioning	3A – 3J	75	60	90	85	70	95	0,012
Physical functioning	4A – 4D	75	50	100	100	75	100	<0,001
Pain	7 and 8	51	41	62	62	51	84	0,001
General health perceptions	1 and 11 A to 11D	57	47	67	62	52	72	0,007
Vitality	9A, 9E, 9G and 9I	60	42,5	75	70	60	80	0,002
Social role functioning	6 and 10	75	50	87,5	87,5	75	100	0,001
Emotional role functioning	5A – 5C	66,67	33,33	100	100	100	100	0,001
Mental health	9B, 9C, 9D, 9F, 9H	64	48	80	80	68	88	<0,001

Source: Research data, 2017.
*Medical Outcomes Study 36 – Item Short-Form Health Survey
**Numbers correspond to question number and letters refer to items of the questions as contained in SF36 questionnaire. Question 2 is not part of a domain but used to assess degree of improvement or decline of individual in past year
***Effort-Reward Imbalance
****MannWhitney test was used for comparision of median

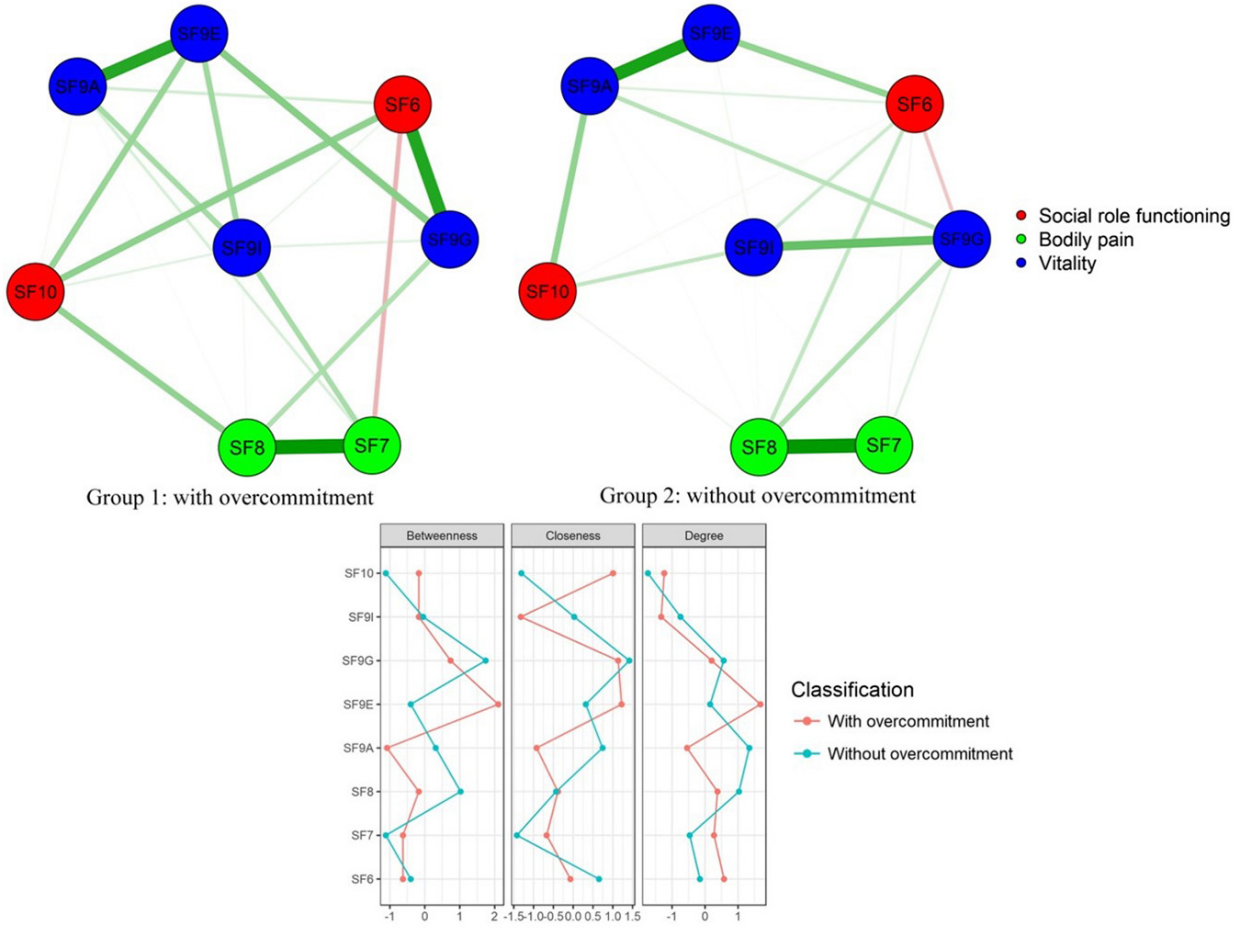

Figure 2– Network analysis of questions from SF36 domains – social role functioning, bodily pain and vitality, in the two groups of professionals with and without overcommitment.

Source: The Authors, 2017.

Legend: The size of the absolute polychoric partial correlation between two nodes is represented using the color and thickness of an edge. Green indicated a positive relationship among the variables, whereas red indicated a negative relationship Node colors corresponds to the three domains of the SF36: RED social role functioning, GREEN bodily pain and BLUE vitality. Alphabet letters inside the nodes indicate the question of SF36: SF6 question about how physical health or emotional problems interferes with normal social activities, SF7 question about bodily pain, SF8 question about how pain interferes in normal work, SF9A question about having pep, SF9E asks about having a lot of energy, SF9G asks about feeling worn out, SF9I asks about feeling tired and SF10 asks about how much physical health or emotional problems interferes in normal social activities.

In Group 1, SF9E, which assesses energy, had greater betweenness, closeness and degree. This question was the most influential on and predictive of quality of life. In Group 2, the question with greatest degree was S9FA, which assesses pep (vigor, strength and motivation). The question SF9G, which assesses feeling worn out, was the most influential in the network (Figure 2). Note that feeling worn out (SF9G) influences positively in social role functioning in Group 1, that influence is negative in Group 2.

A network analysis of the most prevalent symptoms on the BKMI was carried out. Nervousness and headache were the symptoms with the greatest connectivity and proximity being the symptoms that most influenced the other symptoms and nervousness was a predictor of climacteric symptoms (greater degree) in Group 1. In Group 2, nervousness was the symptom with the highest value for the three centrality measures, i.e. the symptoms which promoted most discomfort, had greatest influence and associations within the network (Figure 3).

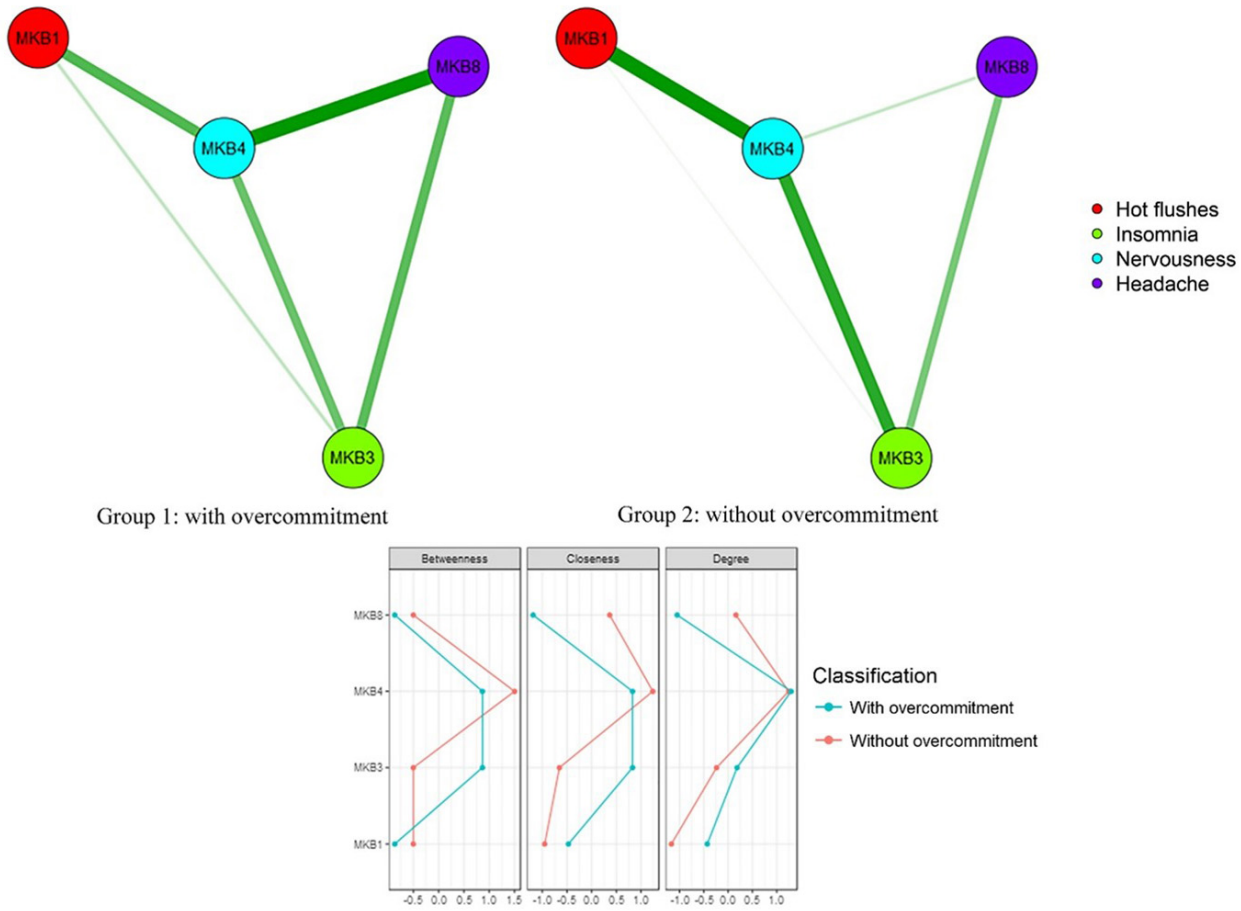

Figure 3– Network analysis of four symptoms on the BKMI (hot flushes, insomnia, nervousness and headache) in the two groups of professionals with and without overcommitment.

Source: The Authors, 2017.

Legend: Figure 3 The size of the absolute polychoric partial correlation between two nodes is represented using the color an thickness of an edge. Green indicated a positive relationship among the variables. The colors and letters inside the circles identify the symptoms: MKB1 (hot flushes), MKB3 (insomnia), MBK4 nervousness and MKB8 (headache)

DISCUSSION

This study assessed whether overcommitment influenced the perceived climacteric symptoms and quality of life of nursing professionals.

Considering the neuroendocrine changes typical of climacteric and job stressors observed in nursing auxiliaries and assistants, several studies attributed to these factors a worse quality of life in these women[2,13]. A biological explanation for this phenomenon can be found in evidence gathered using functional neuroimaging techniques, where an increase in negative climacteric symptoms is associated with lower activation of regions governing emotions together with higher activation of regions responsible for cognitive processing[14]. This shift in emotion processing might explain some women´s difficulty coping with job demands, favoring the occurrence of overcommitment[14–15].

Two symptoms which also assess mental health (headache and nervousness) were more prevalent than the hot flushes symptom, commonly associated with hypogonadism, thereby suggesting that changes in mood, cognition or stress impact the quality of life of this group[3].

In this study, bodily pain was the SF36 domain with the worst score. Presence of pain among healthcare workers is common and is generally attributed to the physical demands of the job and poor ergonomics of the working environment[6–7].

The job stress risk assessment showed that the vast majority (96.7%) of health professionals studied had an adequate effort-reward ratio in our analysis. The fact that the present study sample was drawn from a public institution and most of the professionals held only one job, thereby avoiding double shifts, may partially explain these findings.

Surprisingly, 61% women present overcommitment. Overcommitment involves the employee´s self-assessment of their dedication to the job, and may be influenced by a need for greater control over working conditions, the individual's ability to cope with work demands, or difficulty withdrawing from the job after the end of the working day[7,13].

The presence/absence of overcommitment on the ERI analysis defined two groups of women, allowing subsequent comparisons.

No statistically significant association was found between overcommitment and level of job satisfaction, marital status, shift type, area worked, number of hours worked, or maternity. These findings support the description provided with the scale, which suggests that overcommitment stems more from intrinsic characteristics and personality of the individual than from the environment[13].

The groups were compared for presence/absence of overcommitment in a bid to determine whether the same intrinsic characteristics that influence psychological stress in the work place also impact coping with the daily climacteric symptoms[6–7].

The group with overcommitment had more severe climacteric symptoms, the most prevalent being: nervousness, vertigo, headache and insomnia. Quality of life, measured by specific (WHQ) and general (SF36) scales, was worse in the group with overcommitment.

Network analysis was chosen for being a useful tool to identify the role of each variable studied in maintaining a particular symptomatology, such as the climacteric. In the context of the broad symptomatology assessed in the study, identifying the most influential symptoms can aid the planning of targeted interventions in groups that have specific characteristics[16].

On the traditional SF36 analysis, the domains are divided into two main dimensions: physical (bodily pain, physical role functioning, physical functioning and general health perceptions) and emotional (mental health, emotional role functioning, vitality and social role functioning)[11]. Questions for the same dimension are expected to be close on the Gaussian graph, forming small groups called communities[16]. On the present SF36 analysis, some domains mixed instead of forming communities for physical and mental health. This relationship supports the hypothesis of influence of the same symptom on the two groups, physical and mental, where the distinction between somatic and psychologic symptoms was not clear cut in the health assessment of climacteric women.

The network formed by the questions from the social role functioning, bodily pain and vitality domains was analyzed to elucidate the connections between the SF36 questions. The strong connections between the questions SF9A (pep – vigor, motivation and strength) and SF9E (energy) is explained by the fact they belong to the same vitality domain. Questions SF7 and SF8 belong to the bodily pain domain, are complementary, and also had a strong connection. Question SF7 enquires about bodily pain while SF8 explores the extent to which pain interferes with work. The vitality domain had a greater negative impact on quality of life in both groups. In the group without overcommitment, the influence of pain on quality of life of the health professionals suggests that interventions which reduce physical effort and joint overload are likely to promote health benefits and reduce absenteeism in the work place.

In the group with overcommitment, intervention should be aimed at improving social role functioning by strengthening social support networks or addressing mood disorders[7,13].

Comparison of connections in the overcommitment group revealed a strong connection between exhaustion and social role functioning, suggesting that feeling exhausted negatively affects social activities. Our finding corroborate that the overcommitment component appears to be secondary to difficulties in withdrawing focus away from work activities[7,13]. It is believed that these women, although tired, prioritize work-related activities over leisure time activities, negatively impacting social functioning. Social functioning was unimpaired in the group without overcommitment[17].

On the network analysis of the BKMI, headache and nervousness were identified as bridge symptoms, triggering the other climacteric symptoms in women with overcommitment.

The hot flushes symptom proved independent. In the group with overcommitment, therapies to control vasomotor symptoms may help relieve the symptom, but will have little positive impact on quality of life. Again in the overcommitment group, nervousness was a trigger of climacteric-related discomfort, suggesting greater discriminatory power in identifying the source of the discomfort[16].

These suppositions were based on the network built, but the absence of an assessment of all the symptoms together calls for a more in-depth investigation and further analysis to confirm the hypothesis.

This analysis shed light on the overcommitment group. Mental distress resulting from intrinsic factors can hamper

the management of climacteric symptoms when drug therapy based on climacteric signs and symptoms is employed alone, without the inclusion of social support networks as an element of treatment. Work demands may not be the most important element, where intrinsic aspects of personality, concerns and relationship with work, appear to have a negative impact in quality of life[17–18].

Workplace interventions to improve temperature, ventilation and flexible working hours are welcome, but remain futile in the absence of interventions targeting individuals with overcommitment.

The present study has some limitations. A number of respondents failed to provide the date of last menstruation, leading to underestimation of the number of menopausal women. The fact that professionals on sick leave or leave of absence for long periods did not take part in the study may have distorted some data, such as the number of professionals presenting job stress.

With regard to the network analysis, the sample size was relatively small. Analysis of all the scales was not possible. Future studies should replicate this analysis with a larger sample and carry out comparisons using specific techniques, such as permutation between networks.

CONCLUSION

Health professionals with overcommitment had more severe climacteric symptoms and worse quality of life, as measured by different scales. The evidence in this study suggests this is a unique sub-group.

The connections identified in the network analysis suggest that interventions which reduce psychological stress may offer a broader approach for factors that influence quality of life and climacteric symptoms in working women with overcommitment, particularly in the health area and within the dynamic of the hospital setting.

It is hoped that the results of this study can contribute to a better quality of life for nursing professionals. Understanding how the intrinsic characteristics presents in women with overcommitted can influence the perception of climacteric symptoms, allows actions to be developed to help them cope with job stressors through changes in lifestyle.

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