Original Article

Present situation and analysis of factors affecting perimenopausal syndrome among clinical nurses—a cross-sectional survey

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Background: The quality of life of women is seriously affected by perimenopausal symptoms and related diseases. Clinical nurses often suffer from job burnout due to high pressure and intensity of work and life, which is easy to induce and aggravate perimenopausal syndrome. Nursing occupational environment varies greatly in different economic regions, but relevant studies are limited to northern cities, and are often confined to the second and third grade hospitals or a hospital in a certain region, lacking multi-center studies on hospitals of different grades. Therefore, it is necessary to understand the occurrence of perimenopausal syndrome in clinical nurses in Chongqing and its influencing factors, so as to provide reference for managers to take targeted intervention measures.

Methods: The investigation was conducted using the method of stratified random cluster sampling. A questionnaire survey was conducted among 933 clinical nurses aged from 40 to 55 in primary, secondary and tertiary hospitals. Kupperman's total symptom score ranged from 0 to 63, while a score of ≥7 can determine the existence of perimenopausal syndrome.

Results: Among the 933 clinical nurses surveyed, 662 (70.95%) had perimenopausal syndrome, the results of the multivariate unconditional logistic regression analysis showed that The age ranges from 51 to 55 (OR =2.035, 95% CI: 1.070–3.872), the presence of chronic diseases (OR =1.659, 95% CI: 1.095–2.512), menopause (OR =1.989, 95% CI: 1.198–3.303), moderate family function impairment (OR =1.940, 95% CI: 1.356–2.776), severe family dysfunction weekly (OR =2.309, 95% CI: 1.178–4.524), never participation in sports (OR =3.328, 95% CI: 1.657–6.684) and exercising 1–5 times per week (OR =2.689, 95% CI: 1.516–4.768) were risk factors for perimenopausal syndrome in clinical nurses, basic security (OR =0.939, 95% CI: 0.887–0.994), and sufficient manpower (OR =0.915, 95% CI: 0.855–0.979) were protective factors for perimenopausal syndrome in clinical nurses.

Conclusions: The incidence of perimenopausal syndrome in clinical nurses at all levels of hospitals situated in Chongqing is relatively high. It is suggested that nursing managers should attach great importance to the physical and mental condition of this population and timely take targeted intervention measures to prevent or alleviate the occurrence and development of perimenopausal syndrome in clinical nurses.

Keywords: Clinical nurses; influencing factors; middle-aged nurses; perimenopausal syndrome

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Introduction

There is a trend towards an aging population, and in addition, women tend to live longer than men and develop more diseases (1). Perimenopause is defined as the permanent cessation of menstruation and a decrease in the levels of ovarian steroid hormones (i.e., estrogen and progesterone) due to the loss of ovarian follicular function (2). The perimenopausal phase generally refers to women aged between 40–55 years and indicates that women are entering a period of physiological change related to reproductive aging (3). Perimenopausal syndrome is characterized by a range of specific symptoms due to dynamic changes in sex hormones and reproductive function (4), such as hot flushes, vaginal dryness, sleep disturbances, and joint pains (5-7). It has been reported that there are approximately 167 million women in the perimenopausal phase in China at present, and that the incidence of perimenopausal syndrome is 68.1% (8). To a certain extent, the occurrence of perimenopausal syndrome is related to the population aging (9). Thus, the proportion of perimenopausal females will continue to rise as the global population ages.

It has been shown that at least 30% of menopausal women suffer from perimenopausal symptoms that are both frequent and bothersome (10). Menopausal symptoms are influenced by many factors, including psychological status, hormonal status, lifestyle, and social and psychosocial factors. Women with perimenopausal symptoms are prone to develop a variety of physiological, psychological, and societal problems that greatly affect their quality of life (11). Further, it has been shown that the occurrence and severity of perimenopausal is closely related to women's occupation (12).

Clinical nurses, as a specific group, may experience job burnout due to their high-pressure work and life, which may aggravate their perimenopausal symptoms (13). Clinical nurses with high seniority, rich clinical experience and theoretical knowledge, and proficient skills play a leading role in hospitals. However, perimenopausal symptoms have negative effects on clinical nurses, which makes their work ability decline sharply, and increases their work pressure, which in turn may damage their physical and mental health tremendously (14-16). The physical and mental health of nurses is closely related to patient safety (11). Thus, it is necessary to attach importance to the physical and mental health of nurses. It is imperative that we identify the factors influencing perimenopausal syndrome among clinical nurses and implement effective preventive measures.

A study has analyzed the prevalence of perimenopausal symptoms in Chinese middle-aged women and identified their healthcare needs to improve their quality of life (17). However, to date, very few studies have focused on clinical nurses. In this study, we sought to investigate the prevalence and severity of perimenopausal syndrome and analyze the influencing factors among clinical nurses, and thus provide a reference for nursing managers to implement effective preventive measures. We present the following article in accordance with the SURGE reporting checklist (available at https://apm.amegroups.com/article/view/10.21037/apm-22-563/rc).

Methods

Study design and participants

This investigation was conducted using the method of stratified random cluster sampling. A survey was administered from August to December 2020 in Chongqing, China. According to 2018 figures from the Chongqing Municipal Bureau of Health, there were 26,751 registered nurses in tertiary hospitals, secondary hospitals with 25,497 registered nurses and primary hospitals with 4,788 registered nurses. we set parameters of incidence at 50%, accuracy at 0.05, and bilateral confidence interval at 95%. Thus, the estimated sample size was 876. According to the proportion of nurses aged 40–55 in each level of hospital, 384 patients were selected from tertiary hospitals, 417 from secondary hospitals and 75 from primary hospitals. Final inclusion: A total of 933 clinical nurses, comprising 86 nurses from 1st-level hospitals, 418 from 2nd-level hospitals, and 429 from 3rd-level hospitals, aged 40–55 years, participated in this study. To be eligible to participate in the study, participants had to meet the following inclusion criteria: (I) be a clinical nurse aged 40–55 years who volunteered to complete the survey; and (II) have no history of hysterectomy or ovariectomy. Participants were excluded from the study if they met any of the following exclusion criteria: (I) had irregular menstruation or abnormal anatomical structures of the uterus and ovary; (II) were pregnant; (III) had mental or cognitive dysfunction; (IV) had communication difficulties; and/or (V) had an unstable chronic disease.

Survey tools

The general information survey

The general information survey was designed by the authors of this study. It included questions related to age, education level, marital status, nursing age, position, title, shift work, annual income, and current menstrual status.

Kupperman self-rating scale

The modified Kupperman menopausal symptoms self-rating scale (the Kupperman self-rating scale) (18) was used to diagnose and classify perimenopausal syndrome, including headaches, dizziness, heart palpitations, insomnia, hot flushes, sweating, fatigue, muscle and bone joint pain, mood swings, depression, paresthesia, formication, decreased quality of sexual life, urinary tract infection, and 13 other assessment criteria According to its severity, each symptom, was divided into the following 4 grades: none, mild, moderate, and severe based on a score of 0 to 3, respectively. A higher score indicated more severe, and the total score ranged from 0 to 63. The specific criteria of symptom degree score are: a score of ≤6 is normal, while a score of ≥7 can determine the existence of perimenopausal syndrome. According to Kupperman's total score, the severity of symptoms was classified as follows: (I) 0–6: asymptomatic; (II) 7–15: mild; (III)16–30: moderate, and (IV) >30: severe.

SSRS

The Social Support Scale (SSRS) was used to measure the 3 dimensions of individual social relations; that is, objective support, subjective support, and the utilization of support (19). The SRSS comprises 10 items and had a test-retest reliability of 0.92 and a consistency for each item of 0.89–0.94; thus, its reliability and validity were acceptable. The highest possible total score is 66, and a total score of ≤22 indicates low-level support, 23–44 indicates medium-level support, and 45–66 indicates high-level support.

APGAR

The Family Care Index Survey (APGAR) was designed by Good *et al.* (20), and is a universal self-evaluation scale for the subjective and quantitative evaluation of one's own family functions. The scale contains the following 5 items: adaptation, partnership, growth, affection, and resolve. They are all positive entries and contain the following 3 options: 0= almost rarely, 1= sometimes, and 2= always. A total score of 7–10 indicates good family functioning, a total score of 4–6 indicates moderate family dysfunction, and a total score of 0–3 indicates severe family dysfunction. The test-retest reliability coefficient of the survey was 0.80–0.83.

Nursing Work Environment Scale

This scale was designed by Lake (21) and contains the following 7 dimensions: career development, leadership and management, medical-nursing relationship, recognition atmosphere, professional autonomy, basic security, and sufficient manpower, with a total of 26 criteria. A Likert 6-level scoring was used to evaluate each item. The Cronbach's α of this survey was 0.97, and the Cronbach's α coefficient of the subscale was between 0.77 and 0.97.

Data collection

The surveys were completed by the participants online via a mobile application named "WeChat". An IP address could only be used once to avoid repeat answers. A total of 968 surveys were collected, of which 933 were valid, with an effective rate of 96.4%.

Statistical analysis

The data were analyzed using SPSS statistical software (version 23.0). In this study, 2 independent samples tests were used for the measurement data, and the χ^2 test was used for the count data for the single-factor analysis. If the data did not satisfy the χ^2 test analysis condition, the Fisher exact probability method was used. Variables with a P value <0.05 in the univariate analysis were included in the multivariate logistic regression analysis, and the forward method was used to screen the variables. The outcome of logistic regression was the binary level of perimenopausal syndrome. P<0.5 means the difference is statistically significant.

Ethical approvals

The study was approved by the Ethics Committee of The First Affiliated Hospital of Chongqing Medical University (No. 2019-241) and performed in accordance with the principles of the Declaration of Helsinki (as revised in 2013). Informed consent was obtained from all the participants included in our study.

Table 1 The occurrence of perimenopausal syndrome symptoms in clinical nurses

Symptoms	Number of cases	Percentage (%)
Tired	731	78.35
Mood swings	727	77.92
Insomnia	649	69.56
Headache	563	60.34
Bone and joint pain	547	58.63
Dizziness	470	50.38
Palpitations	453	48.55
Depression and suspicion	448	48.02
Urinary tract infection	437	46.84
Sensory disturbance	251	26.90
Hot flashes and sweating	244	26.15
Sexual life status	190	20.36
Formication	160	17.15

Results

Perimenopausal syndrome status among clinical nurses

Among the 933 clinical nurses, 662 (70.95%) showed perimenopausal symptoms, and of these 439 nurses (66.31%) had mild symptoms, 208 (31.42%) had moderate symptoms, and 15 (2.27%) had severe symptoms. The incidence of each symptom is shown in *Table 1*.

Single-factor analysis of the influencing factors

The mean and standard deviation were used to statistically describe the scores of the samples. There were statistically significant differences (P<0.05) between the symptomatic and asymptomatic patients in relation to age, education, working hours, the presence or absence of chronic diseases, spousal health, major negative events, weekly participation in sports, menopause, different levels of social support, and family care. There were also statistically significant differences between the symptomatic and asymptomatic participants in relation to the medical-care relationship, leadership and management, basic security, career development, professional autonomy, recognition atmosphere, and sufficient manpower. Thus, these factors appeared to differ between the groups (see *Table 2*).

Multi-factor analysis of the influencing factors

The presence or absence of perimenopausal syndrome was used as the dependent variable (0= No, 1= Yes), and the statistically significant influencing factors in the univariate analysis were used as the independent variables in the regression analysis. The standard for inclusion in the equation was 0.05, and the standard for rejection was 0.1. The independent variables were assigned in accordance with the requirements of the logistic forward stepwise regression analysis (see Table S1). The data indicated that the presence or absence of chronic diseases, menopause, family care, weekly participation in sports, basic security, and sufficient manpower were the main influencing factors of perimenopausal syndrome (see *Table 3*).

Discussion

In this study, the incidence of perimenopausal syndrome among clinical nurses in Chongqing was 70.95%, which is higher than that in Beijing 37.83% (22). This may be related to the city's economic level, hospital management mode, or work intensity. The top 5 reported symptoms were fatigue, mood swings, insomnia, headaches, and bone and joint pain. Notably, fatigue was particularly prominent, which may be related to the high intensity of clinical work, which places clinical nurses under pressure for long periods. The perimenopausal symptoms affected the majority of nurses in terms of their physical and mental health, life, and work, and to some extent, also affected the quality of nursing care and patient safety. Thus, nursing managers are encouraged to pay attention to the physical and mental health of senior nurses, especially those >40 years of age.

Studies have shown that menopause is closely related to the severity of perimenopausal syndrome (23). This is because women after menopause, estrogen deficiency will lead to a series of serious harm to the quality of life health events, Menopausal hormone therapy (MHT) is the only comprehensive solution to menopausal-related symptoms and disorders (24). However, medical staff are not aware of the long-term dangers of menopause and lack objective understanding of hormone therapy (25). In this study, we found that the risk of perimenopausal syndrome in menopausal nurses was 1.989 times that of non-menopausal nurses, which was consistent with the findings of previous study (26). Therefore, for menopausal nurses, hospitals should strengthen the publicity of knowledge related to

Table 2 General data of the research objects and the results of the single-factor analysis of the influencing factors

Variable	N	Sick or not		χ^2/t	P
		No (n, %)	Yes (n, %)		
Age, years				15.262	<0.001
40–50	803	252 (31.38)	551(68.62)		
51–55	130	19 (14.62)	111 (85.38)		
Education				8.728	0.032
Technical secondary school	63	9 (14.30)	54 (85.70)		
Junior college	360	109 (30.30)	251 (69.70)		
Undergraduate	502	149 (29.70)	353 (70.30)		
Master's degree and above (including master and doctoral students)	8	4 (50.00)	4 (50.00)		
Technical titles				2.750	0.601
Primary	184	46 (25.00)	138 (75.00)		
Intermediate	551	168 (30.50)	383 (69.50)		
Advanced	198	57 (28.80)	141 (71.20)		
Hospital level				0.071	0.965
1st-level	93	26 (28.00)	67 (72.00)		
2nd-level	383	111 (29.00)	272 (71.00)		
3rd-level	457	134 (29.30)	322 (70.70)		
Time of participation in work				11.987	0.002
11–20 years	165	59 (35.80)	106 (64.20)		
21–30 years	592	178 (30.10)	414 (69.90)		
>30 years	176	34 (19.30)	142 (80.70)		
Number of night shifts per month				0.840	0.840
No	691	199 (28.80)	492 (71.20)		
<5	164	49 (29.90)	115 (70.10)		
5–9	53	14 (26.40)	39 (73.60)		
≥10	25	9 (36.00)	16 (64.00)		
Suffers from chronic disease	199	36 (18.10)	163 (81.90)	14.732	<0.001
Marital status				–	0.615*
Married	826	241 (29.20)	585 (70.80)		
Unmarried	3	2 (66.70)	1 (33.30)		
Divorced	70	18 (25.70)	52 (74.30)		
Widowed	6	2 (33.30)	4 (66.70)		
Remarried	28	8 (28.60)	20 (71.40)		

Table 2 (*continued*)

Table 2 (*continued*)

Variable	N	Sick or not		χ^2/t	P
		No (n, %)	Yes (n, %)		
Spouse's health				7.953	0.019
Enjoys good health	714	223 (31.20)	491 (68.80)		
Suffers from chronic disease	146	29 (19.90)	117 (80.10)		
Not involved	73	19 (26.00)	54 (74.00)		
Major negative event				5.203	0.023
No	863	259 (30.00)	604 (70.00)		
Yes (mainly refers to medical disputes, house demolition, traffic accidents, the death of family members, etc.)	70	12 (17.10)	58 (82.90)		
Participates in sports weekly				18.549	0.001
Never	134	29 (21.64)	105 (78.36)		
1–6 day/week	739	211 (28.55)	528 (71.45)		
≥6 day/week	60	31 (51.67)	29 (48.33)		
Weekly drinking				–	0.142*
Never	619	187 (30.20)	432 (69.80)		
<1 day/week	259	66 (25.50)	193 (74.50)		
1 day/week	35	10 (28.60)	25 (71.40)		
2–3 day/week	16	6 (37.50)	10 (62.50)		
4–6 day/week	2	0 (0.00)	2 (100.00)		
Daily	2	2 (100.00)	0 (0.00)		
Menopause				22.21	<0.001
No	730	239 (32.74)	491(67.26)		
Yes	203	32 (15.80)	171 (84.20)		
Social support				22.451	<0.001
Low level	9	2 (22.20)	7 (77.80)		
Medium level	523	120 (22.90)	403 (77.10)		
High level	401	149 (37.20)	252 (62.80)		
Family care				32.059	<0.001
Severe family dysfunction	76	12 (15.80)	64 (84.20)		
Moderate family function impairment	282	54 (19.10)	228 (80.90)		
Good family function	575	205 (35.70)	370 (64.30)		

Table 2 (*continued*)

Table 2 (*continued*)

Variable	N	Sick or not		χ^2/t	P
		No (n, %)	Yes (n, %)		
Medical-care relationship		19.24±2.73	18.40±2.80	4.140	<0.001
Leadership and management		17.68±3.94	16.67±3.81	3.648	<0.001
Basic guarantee (compensation, vacation time, benefits)		12.42±3.23	11.02±3.42	5.721	<0.001
Career development		22.24±4.42	21.05±4.51	3.701	<0.001
Professional autonomy		19.41±2.65	18.68±2.64	3.801	<0.001
Recognition atmosphere		14.79±1.96	14.3±12.04	3.379	0.001
Sufficient manpower		13.24±2.74	12.10±3.00	5.573	<0.001

The mean and standard deviation were used to statistically describe the scores of the samples. *, indicates Fisher's exact probability method. Major negative events refer to traffic accidents or death of family members, medical disputes, etc.

Table 3 Results of the multi-factor unconditional logistic regression analysis

Factors	β	SE	Wald	P value	OR value	95% CI
Age						
40–50 years old (reference)						
51–55 years old	0.711	0.328	4.694	0.030	2.035	1.070–3.872
Chronic disease						
No (reference)						
Yes	0.506	0.212	5.708	0.017	1.659	1.095–2.512
Menopause						
No (reference)						
Yes	0.688	0.259	7.062	0.008	1.989	1.198–3.303
Family care						
Good family function (reference)						
Moderate family function impairment	0.663	0.183	13.134	<0.001	1.940	1.356–2.776
Severe family dysfunction	0.837	0.343	5.943	0.015	2.309	1.178–4.524
Participates in sports weekly						
≥6 (reference)						
Never	1.202	0.356	11.42	0.001	3.328	1.657–6.684
1–5	0.989	0.292	11.457	0.001	2.689	1.516–4.768
Basic guarantee (compensation, vacation time, benefits)	–0.063	0.029	4.669	0.031	0.939	0.887–0.994
Sufficient manpower	–0.089	0.034	6.651	0.010	0.915	0.855–0.979

SE, standard error; OR, odds ratio; CI, confidence interval.

menopause, At the same time, more training courses and seminars on menopause health care have been established to further raise the awareness of health workers to benefit from MHT.

In this study, nurses with chronic diseases had a higher risk of perimenopausal syndrome than those with non-chronic diseases (1.659 times), and chronic disease was an independent risk factor for perimenopausal syndrome. This may be due to the fact that chronic diseases generally require the long-term use of pharmaceuticals, which can lead to various complications (27), and may affect nurses' daily work and life. Additionally, this can create economic and mental burdens, which in turn can aggravate nurses' perimenopausal symptoms. Consequently, nursing managers should increase their focus on perimenopausal nurses with chronic diseases and implement measures to help them address any issues that may arise in routine work.

This study indicated that the more severe the degree of family dysfunction, the higher the risk of perimenopausal syndrome. Due to the irregular nature of work and work schedule of clinical nurses, there are conflicts between work and family care, and they are in a state of mental tension for a long time, so they need more support and understanding from families (28). Further, nurses may feel disappointed, or even hopeless, without their family members' understanding, support, and encouragement. Such factors directly affect their emotions and physical condition, which can lead to severe perimenopausal symptoms. It is thus necessary for nurses' family members to provide effective support in a timely manner, which in turn is conducive in relieving perimenopausal syndrome among middle-aged nurses.

In recent years, exercise therapy has gradually been implemented in clinical practice due to its low costs. Long-term regular physical exercise can help control the emotional disorders and physical symptoms of perimenopausal women, enhance women's ability to resist the stress of negative events, and prevent perimenopausal syndrome to some extent (29). However, it is difficult for clinical nurses to form good exercise habits due to busy and irregular work schedules; It is suggested that perimenopausal nurses should do physical exercise every day after work as much as possible, and hospitals with conditions can establish staff activity rooms, which can help prevent the occurrence of perimenopausal syndrome. Tai Chi may be recommended as an effective and safe adjunct treatment for patients with perimenopausal syndrome (30). Therefore, Tai Chi is a very core exercise program that should be considered and applied to clinical nurses to alleviate perimenopausal symptoms.

Previous research has focused on the risk factors for perimenopausal syndrome related to the work environment, such as loud noise, frequent contact with patients' body fluids, and frequent or occasional death at work (31). However, few studies have examined the effects of the social environment on nurses' perimenopausal syndrome. In the present study, basic guarantees (i.e., salary, vacation time, and benefits at work) were considered protective factors. This may be because salary and benefits provide the most intuitive return for nurses' work, ensure that their basic living needs are met, and provide a foundation for pursuing a higher quality of life. Nurses entering the perimenopausal period often have aging parents, live with many diseases and expend large sums on their children's education. Their satisfaction with salary and benefits will directly affect the perception of their own health, albeit this is subjective (32).

Sufficient manpower can prevent or decrease the occurrence of perimenopausal syndrome. Work overload is a risk factor in nurses developing menstrual disorders, which lead to an increased risk of perimenopausal syndrome (33). Nurses' workloads have increased due to the shortage of nurses in China, and current workloads exceed the work intensity that nurses can bear. Middle-aged nurses have decreased physical function and a lack of energy, resulting in long-term fatigue (15). Additionally, the insufficient allocation of nurses will increase the incidence of adverse nursing events (34). Middle-aged women often lead teaching or nursing teams. When an adverse event occurs, they believe that they have an inescapable responsibility, which may lead to negative feelings, such as self-blame, regret, depression, and fear, that can last for months or years (35). Some nurses can never overcome this, which places greater psychological pressure on them, thereby increasing their risk of perimenopausal syndrome. Thus, nursing managers should optimize the allocation of human resources. Additionally, increasing salaries or benefits may help enhance job wellbeing, improve job satisfaction, and reduce the occurrence of perimenopausal syndrome.

Limitations

This cross-sectional survey analyzed the factors influencing perimenopausal syndrome from the following 3 aspects: (I) the work environment; (II) personal; and (III) family social support. However, variations in the influencing factors of

different degrees of perimenopausal syndrome were not considered; thus, these need to be further refined in future research. As this was a cross-sectional study, recall bias and report bias could not be completely avoided, especially in relation to the approximate onset time of symptoms. However, the bias may have occurred evenly among the participants, and thus may have had little effect on the results. Additionally, some items in the survey related to personal and private issues, such as nurses' sexual life, and participants may not have felt comfortable answering these questions. Thus, the morbidity and severity of menopausal symptoms could have been underestimated to some extent.

Conclusions

This study showed that the incidence of perimenopausal syndrome in clinical nurses at all levels of hospitals in Chongqing was not ideal and was affected by personal, family, and working-environment factors. Living with an illness or poor family support aggravates the occurrence of perimenopausal syndrome among middle-aged nurses. Regular exercise, basic security at work, and sufficient manpower have a direct effect on perimenopausal symptoms. Thus, nursing managers should identify and improve controllable adverse environmental factors in a timely manner to prevent perimenopausal syndrome in middle-aged nurses.

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Footnote

Reporting Checklist: The authors have completed the SURGE reporting checklist. Available at https://apm.amegroups.com/article/view/10.21037/apm-22-563/rc

Data Sharing Statement: Available at https://apm.amegroups.com/article/view/10.21037/apm-22-563/dss

Conflicts of Interest: All authors have completed the ICMJE uniform disclosure form (available at https://apm.amegroups.com/article/view/10.21037/apm-22-563/coif). The authors have no conflicts of interest to declare.

Ethical Statement: The authors are accountable for all aspects of the work in ensuring that questions related to the accuracy or integrity of any part of the work are appropriately investigated and resolved. The study was approved by the Ethics Committee of The First Affiliated Hospital of Chongqing Medical University (No. 2019-241) and performed in accordance with the principles of the Declaration of Helsinki (as revised in 2013). Informed consent was obtained from all the participants included in our study.

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Supplementary

Table S1 Assignment table of independent variables

Variable	Assignment
Perimenopausal syndrome	0=No, 1=Yes
Age	1=40–50 years old, 2=51—55 years old
Education	1=Secondary school, 2=College, 3=Undergraduate, 4=Master and above (including master and doctoral students)
Time of participation in work	1=11–20 years, 2=21–30 years, 3=>30 years
Chronic disease	0=No, 1=Yes
Spouse's health	1=healthy, 2=chronic disease, 3=not involved
Major negative event	0=No, 1=Yes
Participates in sports weekly	1=never, 2=1—5 times,3=≥6
Menopause	0=No, 1=Yes
Different levels of social support	1=low level, 2=medium level, 3=high level
Family care	1=Family function is good, 2=Family function is moderately disabled, 3=Family function is severely disabled
Medical care relationship	Continuous variable
Leadership and management	Continuous variable
Basic guarantee	Continuous variable
Career development	Continuous variable
Professional autonomy	Continuous variable
Recognition atmosphere	Continuous variable
Sufficient manpower	Continuous variable

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