Original Article

Psychological capital mediates the association between nurses' practice environment and work engagement among Chinese male nurses

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ABSTRACT

Objectives: This study aims to investigate the environmental and individual factors contributing to male nurses' psychological well-being and to explore the psychological mechanisms that may explain the links between nurses' practice environment and work engagement, thereby presenting the implications for nurse managers.

Methods: A total of 161 male nurses from three tertiary first-class hospitals in Changsha City in China participated in the study. We collected the data using the Practice Environment Scale of the Nursing Work Index, the Psychological Capital Questionnaire, and the Utrecht Work Engagement Scale.

Results: Scores of male nurses' practice environment (2.88 ± 0.31), psychological capital (4.42 ± 0.62), and work engagement (3.17 ± 1.39) were all above the midpoint; however, the subscales "the nursing staffing and resources adequacy" (2.72 ± 0.48), "hope" (4.33 ± 0.72), and "dedication" (2.96 ± 1.61)scored lowest. Nurses' practice environment and psychological capital positively predicted nurses' work engagement; psychological capital fully mediated the influence of nurses' practice environment on work engagement.

Conclusions: Creating a supportive nursing practice environment can increase male nurses' work engagement by developing their psychological capital. Nurse managers can then provide reasonable workload and pathways for male nurses to achieve goals, thereby fostering their hope.

1. Introduction

Male nurses comprise a small group of caregivers in hospital settings in China, but they are important for providing clinical nursing care; furthermore, attracting and retaining male nurses can alleviate the shortage of nurses to some degree. However, nurse managers are frustrated with the higher burnout, turnover intention, and lower work engagement of male nurses than those of female nurses [1,2]. In recent years, positive psychological movement shave provided nurse managers with a new perspective, in that more male nurses will be attracted and have improved psychological well-being if their strengths and capabilities are developed. Nurses' work engagement and psychological capital are important positive psychological concepts that describe the positive psychological well-being and state of nurses [3,4]. Work engagement refers to a fulfilling and persistent work-related state of mind characterized by vigor (high level of energy, physical activation, and mental resilience in the work), dedication (high identification to one's work, feelings of meaning, pride, enthusiasm, and challenge), and absorption (happily immersed in the work) [5]. Nurses' work engagement is associated with their psychological well-being [3]. Nurses' psychological capital describes their positive psychological state, which includes four important personal resources (i.e., self-efficacy, hope, optimism, and resiliency) that can be measurable, developed, and managed [4]. Self-efficacy describes an individual's conviction about his/her ability

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to accomplish challenging tasks. Hope is defined as a positive motivational state; individuals with high hope set realistic goals and find pathways to achieve these goals. Optimism is an explanatory style; optimists explain good events as being permanent, universal, and internal. Resilience describes one's capacity to recover from adversity, setbacks, failure, or even positive changes.

We used the JD-R theory to explain the association between job demands, job resources, work engagement, and psychological capital. Employees' work engagements are not only influenced by two main pathways (an energy-costing pathway induced by job demands and a motivational pathway induced by job resources), but also by personal resources (e.g., psychological capital) [6]. Job demands are "the physical, social, or organizational aspects of the job that require sustained physical, physiological effort or skill … and are associated with certain physiological and/or psychological cost" [6]. According to the motivational potential, job demands can be further classified into hindrance job demands, which promote a health-impairment process, and challenging job demands, which can positively predict work engagement when an individual has abundant job resources or personal resources. This finding can explain why nurses with work—family conflicts and role stresses have low work engagement [5,7,8], whereas nurses with support, recognition, and person—job fit keep high work engagement when they are faced with high workload or challenging job tasks [9]. Job resources are the physical, psychological, social, or organizational aspects of the job that decrease the costs of the associated of physiological and psychological efforts of job demands, and these aspects stimulate personal growth, learning, and development [10]. A supportive practice environment provides nurses with job resources and positively predicts nurses' work engagement [11,12]. As a positive psychological state, work engagement positively predicts job performance, job behaviors, and job attitudes [6]. Nurses with high work engagement, compared with those with low work engagement, will provide patients with better nursing services, have more out-of-role behaviors, higher organizational commitment, higher job satisfaction, lower turnover intention, and create a better clinical learning environment for nursing students [2,13—16]. Furthermore, work engagement plays mediating/moderating roles. For example, transformational leadership positively predicts nurses' extra-role performance by fostering nurses' work engagement and self-efficacy [14]. Many empirical studies have investigated the role of personal resources in predicting nurses' work engagement. For example, Garrosa [5] found that nurses with personal resources, which include hardy personality, optimism, emotional competence, and self-efficacy, have high work engagement and play moderating roles to alleviate the negative effects of role stress on work engagement. Boamah [17] found that psychological capital is positively correlated with nurses' work engagement. Moreover, personal resources play a mediating role, and psychological capital alleviates nurses' burnout by influencing their coping style [18]; work-family conflicts increase nurses' burnout and depressive symptoms by decreasing their psychological capital [8,19].

Magnet hospitals have advantage in attracting and retaining excellent nurses for a supportive practice environment; moreover, this environment has positive influence on nurses. A supportive practice environment can foster nurses' work engagement, job satisfaction, and decrease nurses' burnout [11,12,15,20,21]. As far as we can search, no study has explored the mediating role of psychological capital between nurses' practice environment and work engagement in male nurses. In addition, few studies on this subject regarding male nurses can be referred to. Based on JD-R theory, Luthans's et al. psychological capital theory and literature link nurses' practice environment with nurses' outcomes. We hypothesized that a supportive nurses' practice environment, which is characterized by abundant job resources (e.g., opportunities, support, information, performance feedback, recognition, flexible scheduling shift, good nurse executive, cooperation, trust, and good atmosphere for mutual help and communication), reasonable challenging job demands (e.g., workload and challenging job tasks), and less hindrance job demands (e.g., role stress, abusive supervision, work—family conflict, and emotional labor), would be related to increased levels of male nurses' work engagement, and this process is fully mediated by psychological capital, as shown in Fig. 1.

2. Methods and materials

2.1. Design and sample

This study used a descriptive cross-sectional quantitative design to assess registered male nurses. Participants were180 male nurses working in three first-class and well-known hospitals in Changsha City in China. Inclusion criteria were met if participants were registered male nurses employed in a direct-care nursing position for more than 6 months.

2.2. Measurement tool

2.2.1. Social-demographic questionnaire

The demographics questionnaire was designed to obtain the male nurses' social-demographic information, such as age, educational level, year(s) working, and thoughts or behaviors of hiding their identity as clinical nurses.

2.2.2. Utrecht work engagement scale

The Chinese version of Utrecht work engagement scale developed by Zhang et al. [22] was used. This scale has 3 dimensions: vigor contains 6 items, dedication contains 5 items, and absorption contains 6 items. All items are scored on a Likert scale from 0 (never) to 6 (always). In the study, the overall Cronbach's α for the scale was 0.95; for vigor, dedication, and absorption were 0.89, 0.89, and 0.88respectively.

2.2.3. Practice Environment Scale of the Nursing Work Index

The Chinese version of Practice Environment Scale of the Nursing Work Index (PES-NWI) developed by Zhang et al. [15] was used. The scale has 5 dimensions and 31 items: nurse participation in hospital affairs (9 items); nursing foundations for quality care (10 items); nursing managers' ability, leadership and support of nurses (5 items); staffing and resource adequacy (4 items); and collegial nurse—physician relations (3 items). All the items are scored on a Likert scale from 1 (strongly disagree) to 4 (strongly agree) [20]. In the study, the overall Cronbach's α for the scale was 0.91, and Cronbach's α for each subscale were 0.83, 0.74, 0.66, 0.65, and 0.60.

2.2.4. Psychological Capital Questionnaire

The Chinese version of Psychological Capital Questionnaire developed by Luo et al. [23] was used. The tool has 4 subscales and 24 items: self-efficiency, hope, optimism, and resilience; each subscale contains 6items. All the items are scored on a Likert scale from 1 (strongly disagree) to 6 (strongly agree). In the study, the overall Cronbach's α for the scale was 0.93. Cronbach's α of self-efficacy, hope, optimism, and resilience were 0.85, 0.84, 0.84, and 0.80 respectively.

2.3. Data collection

Before the investigation, three male nurses working in the hospitals were trained as research assistants for data collection. After receiving approval from the Department of Nursing in the
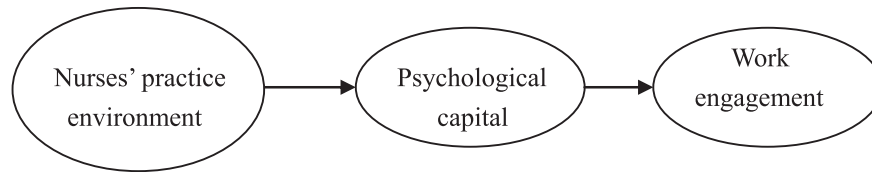
Fig. 1. The hypothesized research model.

three hospitals, at a convenient time, the assistants distributed questionnaires in a packet to the male nurses during September 2014 to January 2015. Male nurses were informed to finish the questionnaires within 2 weeks and return the questionnaires to the assistants. Finally, 161 questionnaires were completed and returned, resulting in an 89.4% response rate. All of the 161 questionnaires were qualified.

2.4. Ethical consideration

In the research, the researchers followed all ethical principles. Before using the Chinese version of PES-NWI, the researchers obtained authorization from the original authors as required. Before distributing the questionnaires, the researchers obtained formal permissions from the deans of the nursing departments in the three hospitals. On the cover page of the questionnaire, the researchers explained the aim of the study. Male nurses participated in the research voluntarily; the participants had the option of not finishing the questionnaires at any time without any consequence. After the questionnaires were collected, the three assistants strictly protected the data, which were used only for academic research.

2.5. Data analysis

The study employed SPSS 17.0 and AMOS 17.0 for data analysis; the statistical methods included descriptive statistics (e.g., frequency, percentage, mean, standard deviation, and correlation analysis) and structural equation modeling with maximum likelihood estimation. Absolute goodness-of-fit indices calculated were chi-square goodness-of-fit statistics, root mean square error of approximation (RMSEA),goodness-of-fit index (GFI), and adjusted goodness-of-fit index (AGFI) [24]. Significant values of chi-square ($P < 0.05$) indicate that the hypothesized model should be rejected. The value of chi-square/df between 1 and 2 is necessary for an acceptable hypothesis model [25]. The calculated relative goodness-of-fit indices were non-normed fit index (NNFI), incremental fit index (IFI), and comparative fit index (CFI). GFI, AGFI, NNFI, IFI, and CFI values larger than 0.90 indicate a good model fit; the value of RMSEA smaller than 0.08 indicates an acceptable fit, and value greater than 0.1 means that the model should be rejected [26].

3. Results

3.1. Demographics information

Among the 161 male nurses, 143 (88.8%) were aged 21−29 years, and 131 have worked for 1−5 years (81.4%). Most of the male nurses were young, unmarried, and have worked for 1−5 years; most of them (72%) have bachelor's degrees and were distributed in the different departments, which included surgery, operating room, and intensive care units. The study further reflected some characteristics of male nurses. On one hand, they received pressure, prejudice, and misunderstanding from the society, because 60.9% of them have had thoughts or behaviors of hiding their identity as

clinical nurses; and 25.5% of them have had experiences in failing in love given their identity. On the other hand, surprisingly, 56.5% male nurses chose nursing in college entrance examinations (Table 1).

3.2. Descriptive statistics

Table 2 shows the descriptive statistics and Cronbach's reliability coefficients of each variable in the study. Scores of nurses' practice environment, psychological capital, and work engagement are all higher than the midpoint.

3.3. Correlation coefficients

Statistically significant positive correlations were found between nurses' practice environment and work engagement ($r = 0.355$, $P < 0.01$), nurses' practice environment and psychological capital ($r = 0.516$, $P < 0.01$), and psychological capital and work engagement ($r = 0.509$, $P < 0.01$). Table 3 shows the correlations between the dimensions of each variable.

3.4. Testing of the research model

The study tested a partially mediated model (NPE→PC→WE, NPE→WE), which includes the direct effect, and a fully mediated

Table 1
Demographic information of the male nurses ($n = 161$).

Variables	n (%)
Age	
21-24	77 (47.8)
25-29	66 (41.0)
≥30	18 (11.2)
Year(s) working	
1-5	131 (81.4)
6-10	26 (16.1)
11-30	4 (2.5)
Department	
Surgery	19 (11.8)
Operating room	40 (24.8)
ICU	64 (39.8)
Others	38 (23.6)
Marital status	
Unmarried	114 (70.8)
Married	47 (29.2)
Educational level	
Secondary technical certificate	42 (26.1)
Bachelor degree	116 (72.0)
Master degree	3 (1.9)
The first choice in the college entrance examination	
Nursing specialty	91 (56.5)
Clinical medicine specialty	30 (18.6)
others	40 (24.9)
Having thoughts or behaviors of hiding their identity as clinical nurses	
Yes	98 (60.9)
No	63 (39.1)
Having experiences of failing in love for the identity as clinical nurses	
Yes	41 (25.5)
No	120 (74.5)

Table 2
Mean, standard deviation, and the cronbach's α coefficients for the variables in the study ($n = 161$).

Variable	Score range	Mean ± SD	Cronbach's α
Nurse practice environment		2.88 ± 0.31	0.91
Nurse participation in hospital affairs	1–4	2.77 ± 0.41	0.83
Nursing foundations for quality of care	1–4	2.93 ± 0.30	0.74
Staffing and resource adequacy	1–4	2.72 ± 0.48	0.66
Manager ability,leadership, support of nurses	1–4	2.96 ± 0.39	0.65
Collegial nurse-physician relations	1–4	3.04 ± 0.36	0.60
Psychological capital		4.42 ± 0.62	0.93
Self-efficiency	1–6	4.44 ± 0.67	0.85
Hope	1–6	4.33 ± 0.72	0.84
Optimism	1–6	4.55 ± 0.86	0.84
Resiliency	1–6	4.42 ± 0.67	0.80
Work engagement		3.17 ± 1.39	0.95
Vigor	0–6	3.30 ± 1.36	0.89
Dedication	0–6	2.96 ± 1.61	0.89
Absorption	0–6	3.20 ± 1.44	0.88

Table 3
Correlation between all the dimensions of the three variables.

Variable	Vigor	Dedication	Absorption
Nurse participation in hospital affairs	0.380**	0.370**	0.344**
Nursing foundations for quality of care	0.244**	0.245**	0.274**
Staffing and resource adequacy	0.269**	0.262**	0.212**
Manager ability,leadership, support of nurses	0.323**	0.296**	0.360**
Collegial nurse-physician relations	0.165*	0.156*	0.163*
Self-efficiency	0.460**	0.442**	0.453**
Hope	0.424**	0.397**	0.388**
Optimism	0.499**	0.510**	0.497**
Resiliency	0.362**	0.346**	0.355**

$^{**}P < 0.01$ (two-tailed test), $^{*}P < 0.05$ (two-tailed test).

model (NPE→WE = 0, constraining coefficients of the path from NPE to WE as zero). Table 4 displays the fit indices of the two model comparisons. The fully mediated model was the only model that had a good fit with the data, because all fit indices were higher than 0.95, RMSEA was lower than 0.08, and the chi-square test was not statistically significant ($P = 0.05$). However, the chi-square test of the partially mediated model was statistically significant ($P < 0.05$). In conclusion, data supported a fully mediated model, in which psychological capital fully mediated the effect of nurses' practice environment on work engagement.

The tested hypothesized model is presented in Fig. 2, where the standardized path coefficients are depicted. The predicted paths (NPE→PC and PC→WE) are statistically significant ($P < 0.05$), with a saturated model and a perfect fit; the path from NPE to WE is statistically insignificant ($P > 0.05$) (Table 4).

3.5. Examination of the full mediating role of psychological capital

Table 5 shows the total, direct, and indirect effects of independent variables on dependent variables. Nurses' practice environment is directly related to psychological capital ($\beta = 0.572, P < 0.01$) and psychological capital is directly related to work engagement ($\beta = 0.638, P < 0.01$). The indirect effect from nurses' practice environment to work engagement is statistically significant
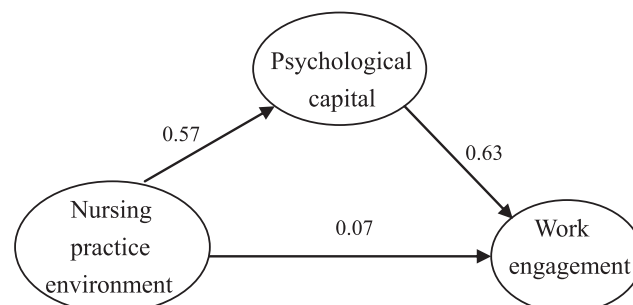
Fig. 2. Final research model with standardized path coefficients.

($\beta = 0.365, P < 0.01$) and the direct effect is statistically insignificant ($\beta = 0.07, P > 0.05$).The hypothesized model is accepted.

4. Discussion

Compared with female nurses, male nurses in China are a small group, which provides them some advantages in searching for a job in tertiary first-class hospitals in big cities. Male nurses investigated in the study work in three well-known hospitals in China, which are ranked in the top 100. Furthermore, the study had a high

Table 4
Fit indices for competitive models ($n = 161$).

Model	χ^2	df	P	GFI	RMSEA	TLI	CFI
M1 (NPE→PC→WE,NPE→WE)	51.014	35	0.039	0.953	0.053	0.978	0.989
M2 (NPE→PC→WE,NPE→WE = 0)	51.022	36	0.050	0.953	0.051	0.980	0.989
Fit criteria	–	–	≥0.05	>0.90	<0.08	>0.90	>0.90

Table 5
Total, direct, and indirect effect of nurses' practice environment (standardized coefficients).

Independent variable	Dependent variable	
	Psychological capital	Work engagement
Nurses' practice environment		
Direct effect	0.572**	0.07
Indirect effect	–	0.365**
Total effect	0.572**	0.370**
psychological capital		
Direct effect	–	0.638**
Indirect effect	–	–
Total effect	–	0.638**

**$P < 0.01$ (two-tailed test).

effective response rate. These factors contributed to the representation of the participants and enhanced the general significance of the conclusions in the study.

The score of nurses' practice environment was higher than the midpoint of 2.5 and higher than the score in Zhang's research, which investigated nurses across China [15]. Consistent with Wang's research, male nurses in the study were satisfied with the collegial nurse–physician relations and the nurse managers' ability, leadership, and support for them [21]. However, the nursing staff and resources were inadequate. The score of psychological capital was higher than the midpoint of 3.5; most of the male nurses in the study were optimistic, whereas, hope dimension scored lowest, which indicated that male nurses in the study did not have clear goals or lacked the pathways towards the goals. The score of work engagement was higher than the midpoint of 3; male nurses in the study had high vigor and absorption, which means that male nurses had high levels of energy in the work and happily concentrated on their work. However, dedication scored lowest, which means that male nurses in the study should have improved enthusiasm, pride, significance, and inspiration from clinical nursing work.

Results of the study supported the hypothesis model, in which supportive nurses' practice environment, psychological capital, and work engagement were positively correlated; these results are consistent with previous empirical studies. For example, Wang et al. [12] investigated the positive influence of supportive nurses' practice environment on nurses' work engagement in our country; Boamah et al. [17] and Laschinger et al. [11] identified the positive relationship between psychological capital and work engagement. As far as we know, the study is the first to find that male nurses in a supportive practice environment have improved psychological capital. As for the psychological mechanisms between nurses' practice environment and work engagement, Wang et al. [12] investigated registered clinical nurses and found the mediating role of psychological empowerment. This study further enriches the psychological mechanisms; the full mediating role of psychological capital demonstrates that male nurses in a supportive practice environment will be more confident, optimistic, resilient, and filled with hope, and thus have improved work engagement; these findings emphasize the importance of developing male nurses' psychological capital in fostering their psychological well-being.

5. Conclusions

Creating a professional nurses' practice environment can increase male nurses' work engagement by developing psychological capital; therefore, we should pay attention to the full mediating role of psychological capital. To increase male nurses' psychological well-being, strategies aimed at creating a professional nurses' practice environment and fostering psychological capital should be taken up. Several suggestions are presented in the study to retain more nurses and increase their psychological well-being at work. The first recommendation is to create a professional nurses' practice environment. Specially, sufficient nursing staff and resources should be available. Furthermore, if male nurses receive positive performance feedback, support, empowerment, pathways to be professional, and recognition from family members, society, and colleagues, then the male nurses will experience improved inspiration, enthusiasm, and challenges from the work; moreover, they will be capable of increased workload and challenging tasks, thereby experiencing enhanced psychological well-being. The second recommendation is to develop male nurses' psychological capital, especially hope. Nurse managers can help male nurses set professional goals and provide opportunities for them to achieve their goals. The third recommendation is that male nurses should try their best to make full use of resources and positively cope with job demands in the workplace, thereby developing their psychological capital and psychological well-being.

Conflict of interest

Acknowledgments

Appendix A. Supplementary data

Supplementary data related to this article can be found at https://doi.org/10.1016/j.ijnss.2017.09.009.

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